Zebo Corporation, Inc.

Marina Owners Manual

Version 1.1 – 05/18/2012

Contents:

FCC Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

Notice: Changes or modifications not expressly approved by Zebo™ Corporation could void the user's authority to operate the equipment.

Receiving your System and Installation Overview

Thank you for your order. When your order arrives, we have custom designed your system for your marina to be as simple as possible for you to setup. Your package should contain the following:

1. Base Station(s).
2. Base Station(s) external mounting hardware if required.
3. Power supply for Base Station(s).
4. Sensors based on your order (water, PIR motion, temperature, humidity,..).
5. Owners Manual (marina management).
6. Print out of the customer's owners manual ready to copy.
7. System Reference page with the marina administrator's Web Application log in credentials.

Your Marina's main administration account on the Zeboport.com web application will already be set up. Here are the steps you will need to take to be ready to start using and selling your system:

1. Install the Base Station(s) in strategically located spots to insure coverage for your entire marina.
2. Log in to the Web Application and test marina coverage by using a Sensor to verify you have good range from a Base Station to all of the target slips.
3. Enter your Base Station Alarm Recipients as desired.
4. Create sub accounts for your customers and assign them the Sensors they will use on their boat.
5. Install the Sensors in the customer's boat and verify signals are getting received.

   Your system is setup!

Base Station Installation and Location

A. Installing a Base Station Indoors.

1. Find a location protected from the elements that is not directly near sources for radio noise (e.g. main electrical closets, refrigeration equipment, or other such appliances) with a power outlet available. Try to avoid rooms with extremely thick or metal walls, and find a location where radio reception will be optimized. Location will be variable and dependent on each marina's specific needs and layout. Some trial and error is to be expected.
2. Plug the included power supply into the Base Station and then plug the power supply into a standard 120V AC Electrical Outlet.
3. Make sure the two antennas on the back of the Base Station are tightened on and orientated in an upright position for maximum range.
4. Power the Base Station on (the main power switch is on the back of the device) and situate the station and power cord in a stable manner to prevent falls.
5. The Green Status Light on the front will be lit and the Orange Cell Status light will blink until it locks on to a network, at which point it will stop blinking and remain off. The Base Station is ready to use.

B. Installing a Base Station Outdoors.

NOTE! *The Base Station is not weather resistant as is the case with most wireless access points, and so it will need to be protected from the elements as you would with any electrical device.*

1. Find a location outside where an electrical outlet is accessible.
2. Install the Base Station in a weather-proof, plastic (not metal) enclosure. For best results, we recommend the base station antennas be allowed to come thru the side walls of the enclosure and the power cord also be fed thru a small hole. A couple of holes may need to be drilled to allow this. Once the Base Station is secured inside, the antennas and power cord may be caulked in place, the goal being to seal up the unit from the elements.
3. Plug the included power supply into the Base Station and then plug the power supply into a standard 120V AC Electrical Outlet.
4. Mount the enclosure securely to a wall, post or other location that is not metal high enough to discourage tampering and optimize the radio range.
5. Power the Base Station on (the main power switch is on the back of the device) and situate the station and power cord in a stable manner to prevent falls.
6. The Green Status Light on the front will be lit and the Orange Cell Status light will blink until it locks on to a network, at which point it will stop blinking and remain off. The Base Station is ready to use.

If you are installing more than one Base Station to cover your entire marina, try to place them strategically to maximize the distance between Bases but allowing some overlap so there aren't any gaps. Location will be variable and dependent on each marina's specific needs and layout. Some trial and error is to be expected.

Installation of Sensors in Customer's Boat

The Sensors will be delivered to you in an ON state and for the most part sealed up and ready to install. Before installing the Sensor in a boat, make sure the following has been completed:

1. The Sensor's data is showing up online in the Web Application and the data is correct. (see sections below about learning Sensor's to a Base Station and Viewing Sensor Data Online).
2. Make sure the Sensor's Activated Setting is set to YES (see Activating a Sensor below)
3. Make sure the Sensor is Powered ON (if not already sealed up) and that it has all three screws in place to hold the case closed.
4. We recommend the case (if the Sensor will be outdoors) be further sealed with water-proof electrical splicing tape for the best resistance to weather.
5. A sub user account has been created for the customer and the Sensor(s) have been assigned to that sub user. We recommend that the customer's sub user account be in place and tested with live data at the time the Sensors are installed.

Now the Sensor is ready to be installed.

PIR MOTION – Install this Sensor inside the cabin of the boat, low on a wall out of direct sunlight and pointing at another wall. Positioning should be such that anyone entering the boat would 'break the beam'.

WATER – Install this Sensor *outside*, mounted on a vertical wall near a hatch with access to the bilge or where you want to sense water making sure the Sensor is sealed up with water-proof electrical splicing tape. Feed the wired lead probe thru the hatch and down to the area to sense water. Mount the water probe with double sided mounting tape or plastic pull ties low enough to sense water should it start to flood in but high enough to prevent false alarms from normal bilge water.

TEMPERATURE (no probe) - Install this Sensor *inside* the cabin of the boat on a wall out of the way.

TEMPERATURE (with probe) - Best used for monitoring the temperature of an engine room, refrigerator/freezer or other sealed up area. Install this Sensor inside the cabin of a boat on a wall near the appliance to be measured. Feed the probe inside the appliance or engine room compartment. If the Sensor needs to be outside to reach into an engine room, mount it similar to the Water Sensor making sure the Sensor is sealed up with water-proof electrical splicing tape.

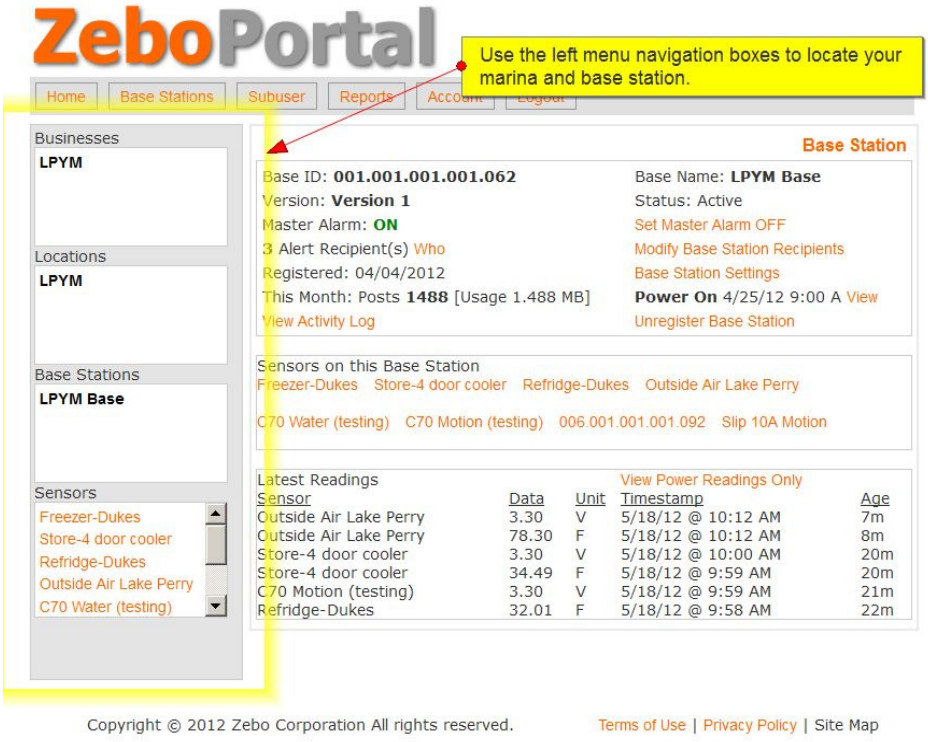
HUMIDITY - Install this Sensor *inside* the cabin of the boat on a wall out of the way.

We recommend using outdoor/indoor Velcro mounting squares for non-permanent mounting of all sensors. This will allow for them to be easily moved/removed if needed.

Administering Your Account (Marina)

Use the log in Username and Passcode provided with your system to log in into your account at http://www.zeboport.com from any web enabled computer with a web browser.

Use the left menu boxes to navigate to your marina and it's Base Station(s).

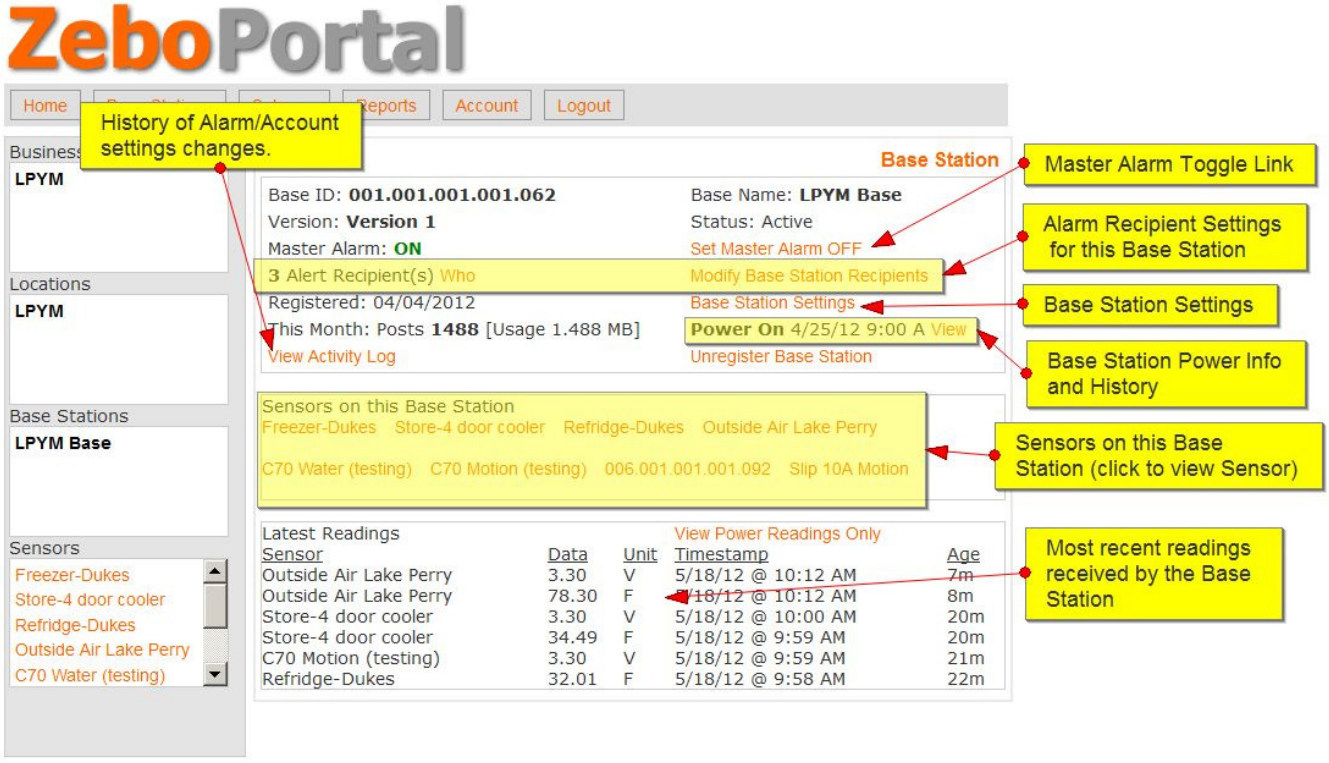


Base Stations

Click on your Base Station in the *Base Stations* box. You will now be on the Base Station page where you control the settings for your Base Station.

1. The Master Alarm Enable setting can be toggled directly from this screen by clicking on 'Set Master Alarm ON/OFF' link. With the Master Alarm OFF, no alerts will be sent from this Base Station.
2. You may enter and edit your alert recipients for the base station. These will be the email address and text message address that receive alerts from any of the Sensors learned to this Base Station. Primarily you will enter marina staff here and not customers.
3. You can view the current state of Power to the Base Station as well as see a history of power outages.
4. You can access the Activity Log that tracks and displays changes to Account and Alarm settings.
5. You can access a list of all the Sensors learned to the base station and link to the Sensors from here or from the left menu box.
6. You can see a list of all the latest Sensor readings that have come in from any Sensor. This is convenient for setting up Sensors and troubleshooting.
7.

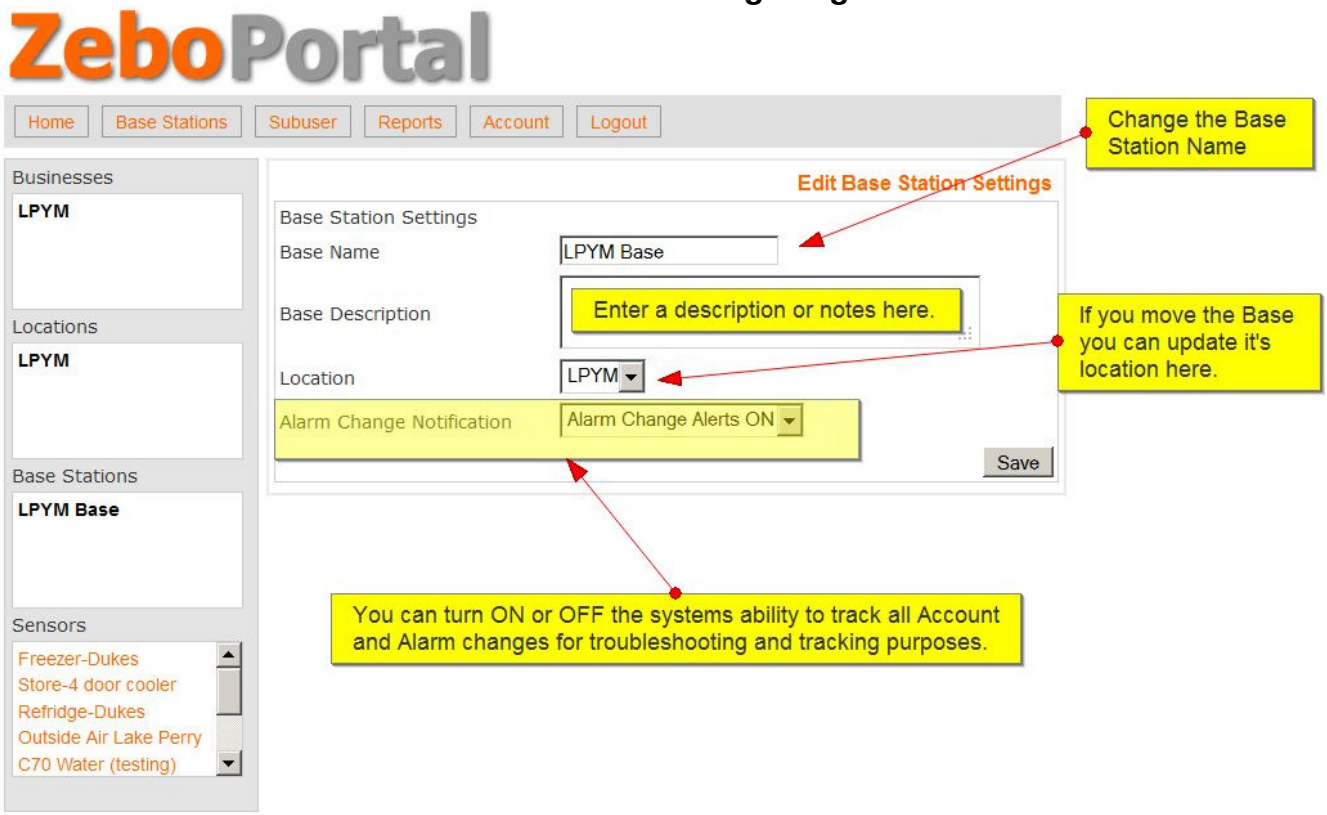
The main Base Station Screen.



If you click on the 'Base Station Settings' link, you can edit the settings for the base.

1. You can change the Base Station's name that displays on the site or update it's description with notes or additional details.
2. If you move the Base to another location, you can update the location.
3. You can toggle ON or OFF the web application's setting that allows the system to send alerts when Account or Alarm changes occur. You may want to turn this off if setting up a large number of sensors at one time.

Base Station Settings Page

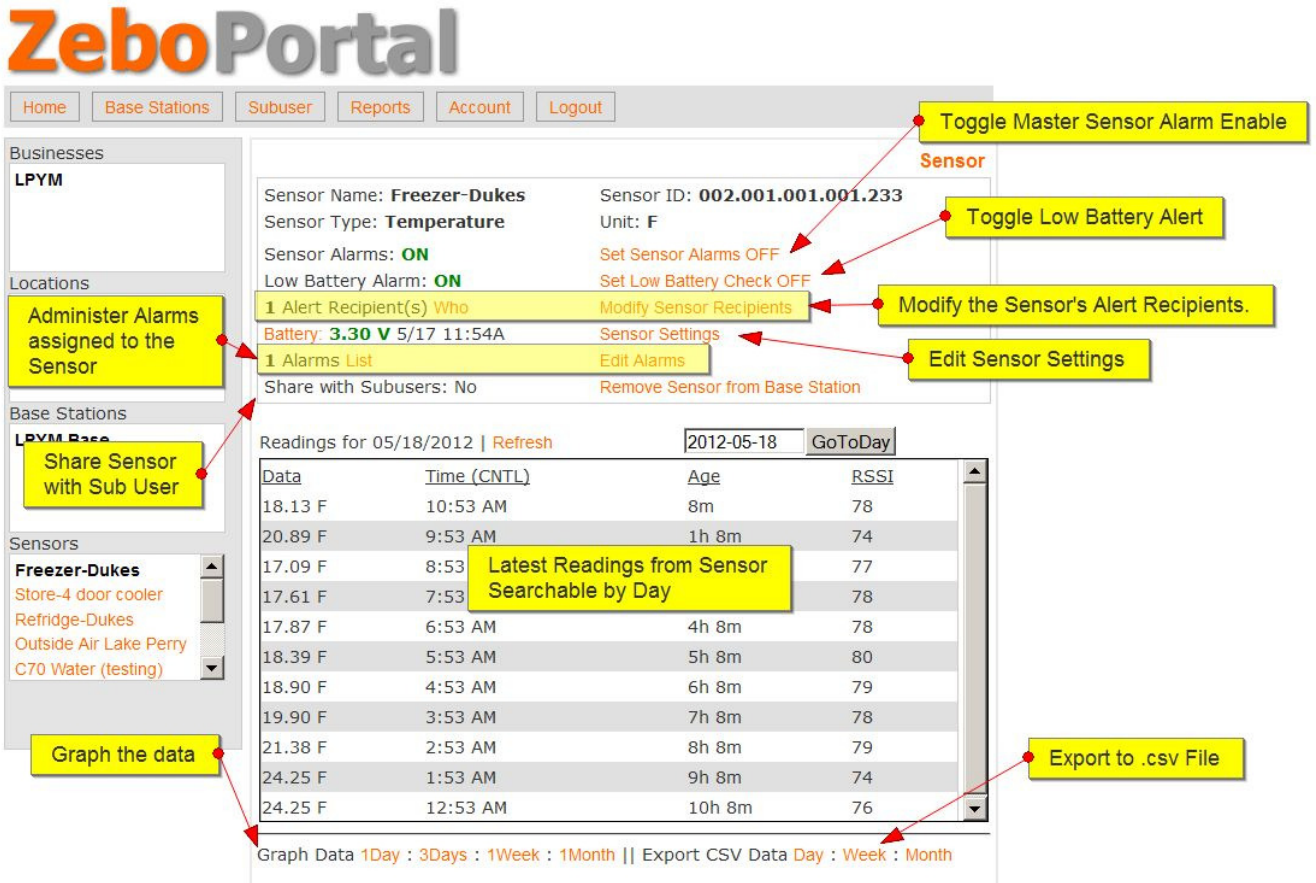


Sensors

If you click on a Sensor link from either the left menu box or a Base Station page, you will now be on the Sensor's page. On this page you can do the following:

1. Toggle the Alarm's Master Alarm Enable ON or OFF. This only effects alarms assigned to this Sensor.
2. Toggle the Low Battery Alarm ON or OFF.
3. Enter and edit Alert Recipients for alarms assigned to this Sensor. This is where you will primarily enter the Customer's email and text recipients.
4. Change the Sensor's Settings.
5. Add/Remove and Edit Alarms assigned to this Sensor.
6. View the latest Battery Readings from the Sensor.
7. View the Readings that have come in from the Sensor.
8. Graph the readings if appropriate.
9. Export the Readings to a .csv file for integration into other programs.

Sensor Main Page

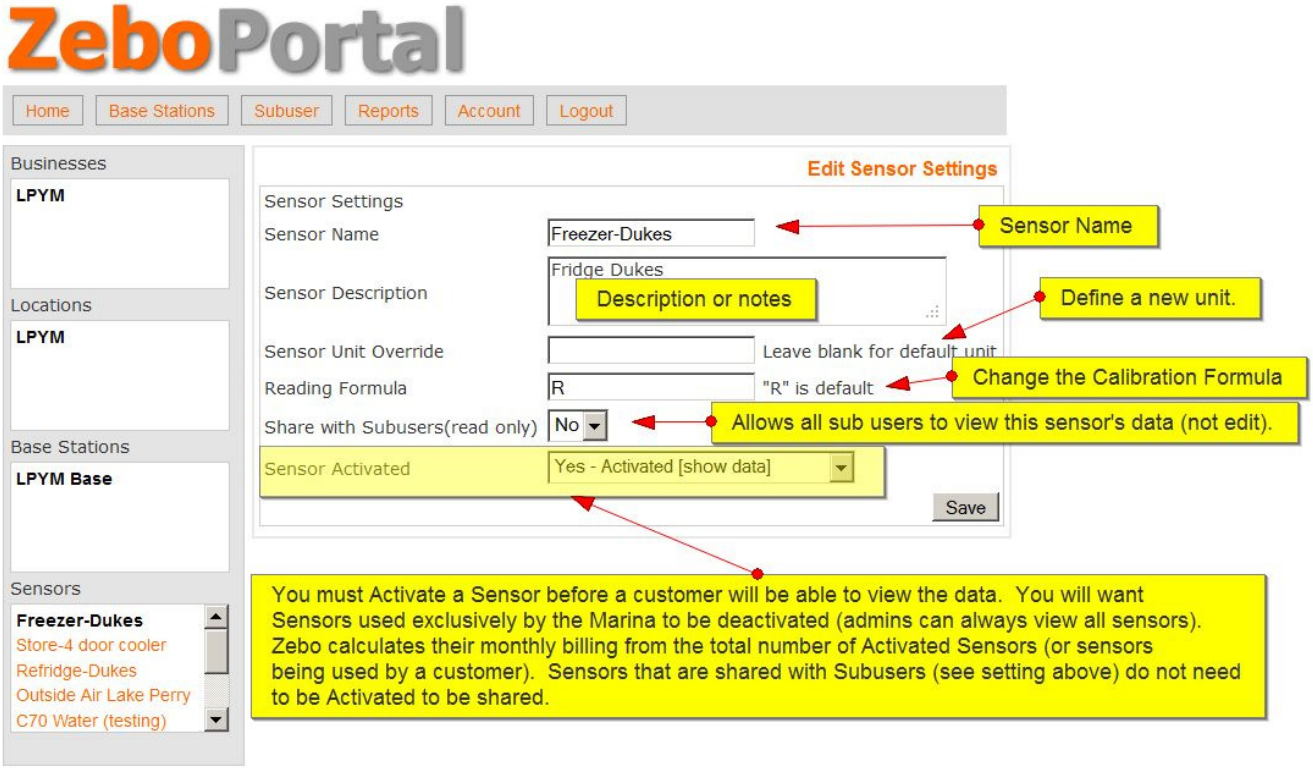


NOTE! The RSSI (Received Signal Strength Indicator) shows the signal strength of a Sensor's transmission to the Base Station. Above 75 is considered good with a highest reading around 110 possible. If you get levels in the 60's or below, range will be an issue and you will likely have to relocate the Sensor or Base Station.

If you click on the 'Sensor Settings' link, you edit the settings for the Sensor.

1. You can change the Sensor's name that displays on the site or update it's description with notes or additional details.
2. You can add an override reading unit. e.g. if you modify a water sensor and use it as a roof hatch tilt switch, you can change the unit to 1(Open) 0 (Close).
3. You can change the calibration formula. R is the standard formula and no changes are made to the readings when they come in. If you wanted to adjust a temperature reading up 5 degrees, you would enter 'R+5' in this field.
4. As an added feature, you may want to share a sensor's readings with all sub users (customers) such as Outside Air Temperature, Water Temperature or more. This setting will allow all to see the data but not change any settings.
5. Sensor Activation is how Zebo calculates and controls it's monthly billing. You must Activate a sensor before a sub user/customer is allowed to view the data. Sensors that are used only be the marina will need to be Deactivated so you will not be billed for these sensors. Shared sensors do not need to be activated.

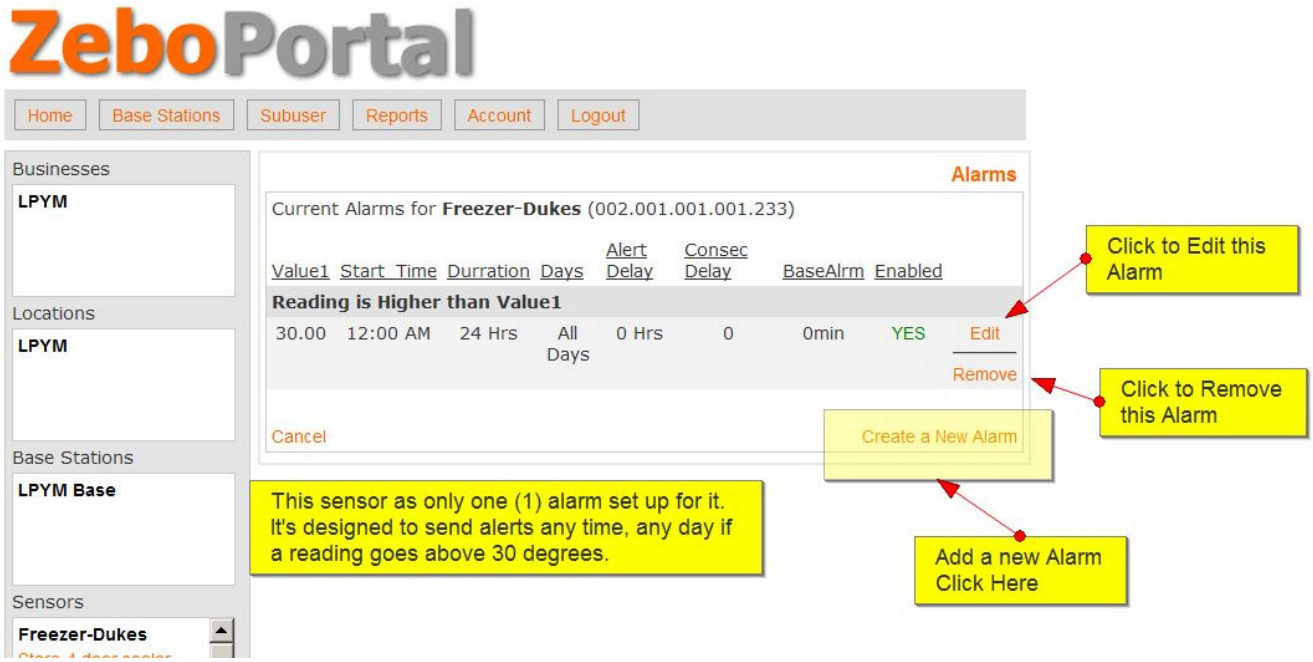
Sensor Settings Page



If you click on 'Edit Alarms', you will be able to view the alarms set for this Sensor as well as edit or add additional alarms.

1. View the alarms and basic alarm settings currently assigned to the sensor.

Alarm Screen



If you click on 'Create a New Alarm', you will be guided through adding a new alarm to the sensor.

The first alarm screen prompts for the following input:

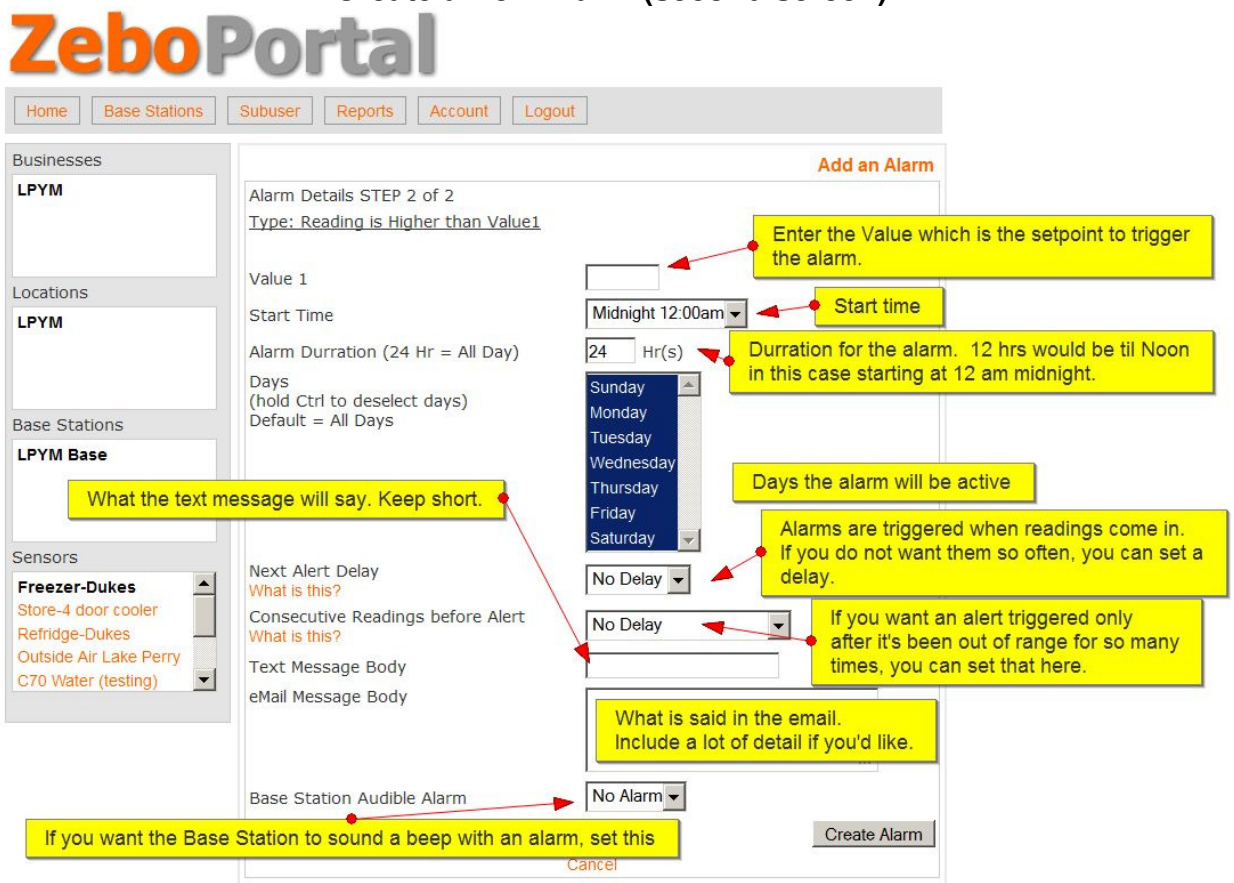
Alarm Type: This menu provides a list of predefined types of typical alarms. Chose the one that best matches your needs.

Create a New Alarm (first screen)

The second alarm screen prompts for the following information:

Value: enter the trip point value at which you want your alarm to occur. For example, if the alarm type is “Reading Higher than a Value,” and the sensor is measuring temperature, a value entry of 90 will generate an alarm if the measured temperature exceeds 90 degrees.
Alarm Start Time: choose the hour of day you wish the alarm to be active
Alarm end Time: choose the hour of day you wish the alarm to be deactivated
Alarm on Days: if the alarm is only to be active on certain days, select those days here. Default all are selected. Hold the Ctrl key down while clicking days to change them.
Recurring Alarm Delay: In order to minimize repeated alarm messages, choose a time value here for delay between recurring alarm messages. For example, if you have a 20 minute temperature sensor and it is beyond the value set above, you will receive an alarm every 20 minutes. Setting this to 1 hr will skip alerts only giving you one once an hour.
Consecutive Alarm Delay: How many readings beyond your value set above do you want to receive before creating an alarm? Set this to two consecutive readings if you'd like to wait for two readings to come in (beyond value above) before an alarm.
Text Message: A custom message that will be included in text message alerts.
Email Message: A custom message that will be included in email alerts.
Base Station Audible Alarm: If you wish for the base station's alarm to go off when an alarm is created, you can have it sound for 1 to 5 minutes.

Create a New Alarm (second screen)

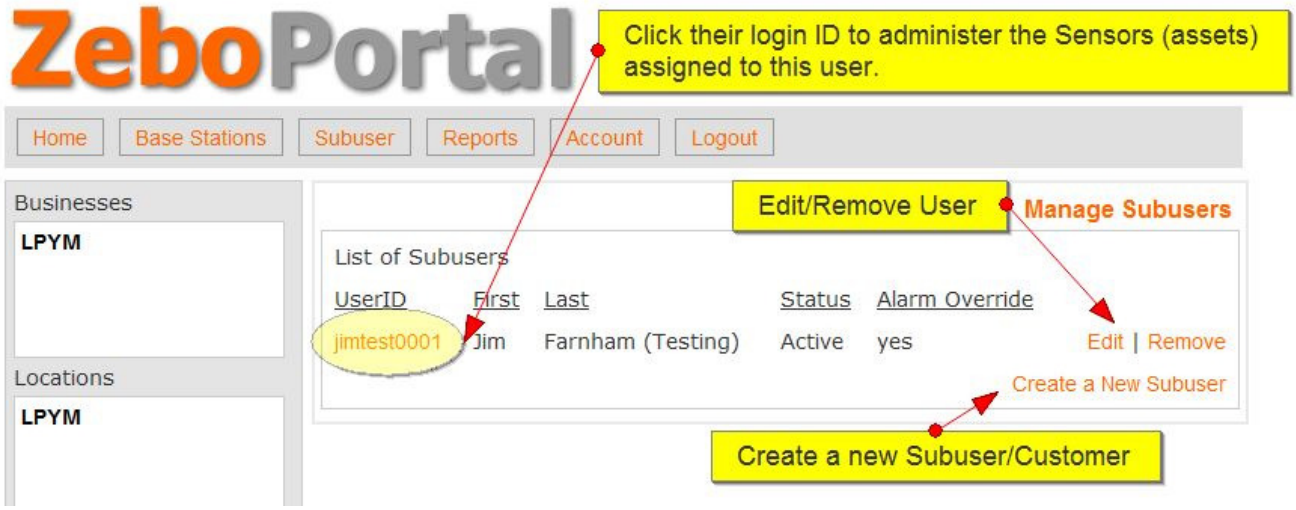


Create a Sub User or Customer Account

To give your customers an account to log into so they can view their Sensors and adjust the settings, first click on 'Sub users' in the top menu bar of your Main Admin Account.

Here you will be able to view all the sub users you have created. You will be able to edit their information at any time as well as reset their password if needed.

Main Sub User Page



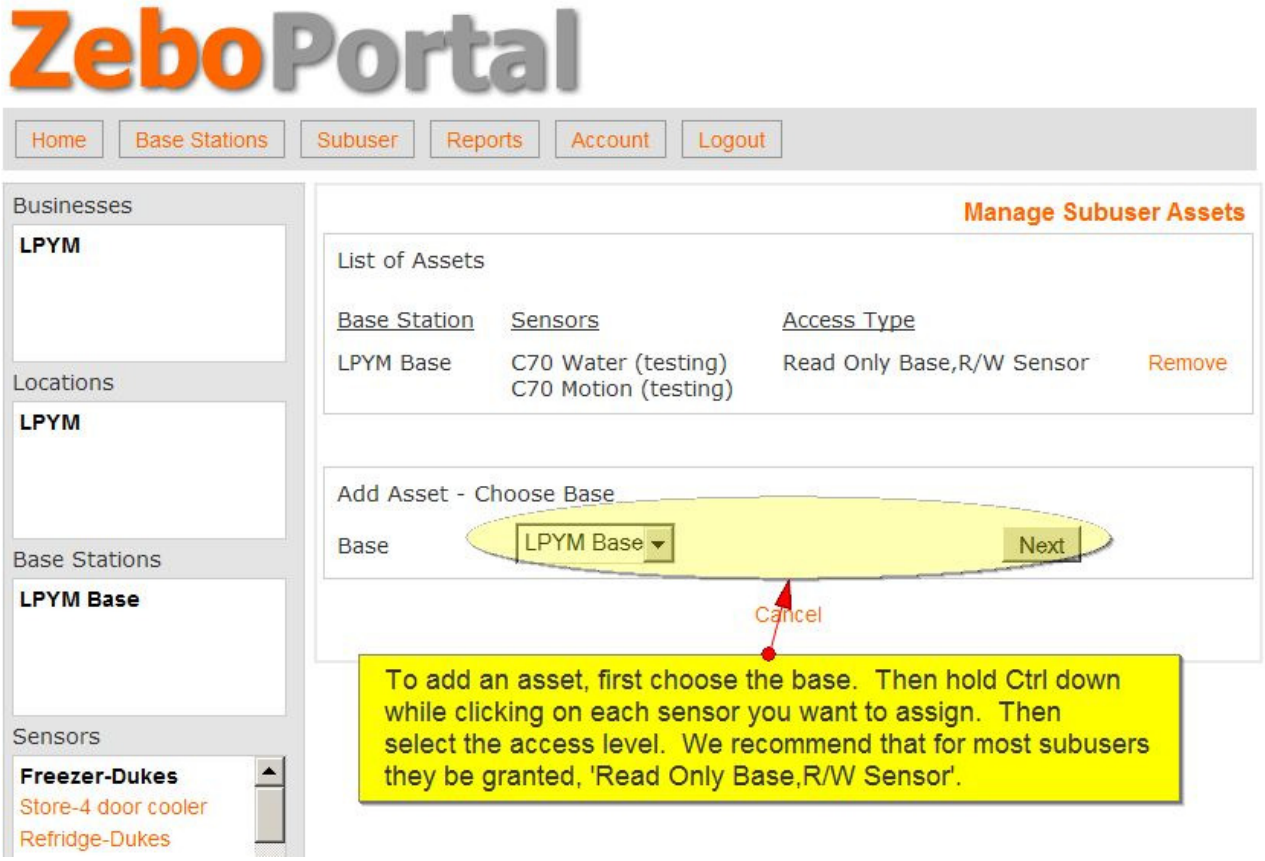
To create a new Sub user/Customer account, click 'Create a New Sub user'. There will be three (3) steps.

1. Assign a unique user ID.
2. Fill in their name (include slip number in name for easy admin later), initial password and select 'Allow Quick Alarm Override'.
3. Assign their Sensors (assets) to them.

NOTE! The Quick Alarm Override will allow your customers to log in to their accounts before using their boat and override the alarms for a set amount of time (24 hours for instance). They do not have to worry about canceling the override, because it automatically goes back to normal (alarms on) after the time limit is up. This helps prevent false alarms from normal, allowed access to people's boats.

Assigning assets or Sensors to a Sub user/Customer account can be done after creating a new Sub user for the first time or by clicking on the Sub user's ID from the main Sub user page.

Assign Assets/Sensors to a Sub user



NOTE: There are three (3) levels of access that may be granted for an asset assigned to a sub user.

1. Read/Write All – Allows them to change settings for their sensors AND the Base Station. (*recommended for sub users that are admins of the account*)
2. Read Only Base, Read/Write Sensors – Allows them to read base station information (such as location) but not change Base settings. They still can change all settings as well as create alarms for their sensors. (*recommended for most customers/slip holders at a marina)*
3. Read Only All – They can not change any settings but can view data from both Sensors and Bases. (recommended for third party contractors or customers that you do not want changing any settings)

Learning and Unlearning Sensors from the Base Station

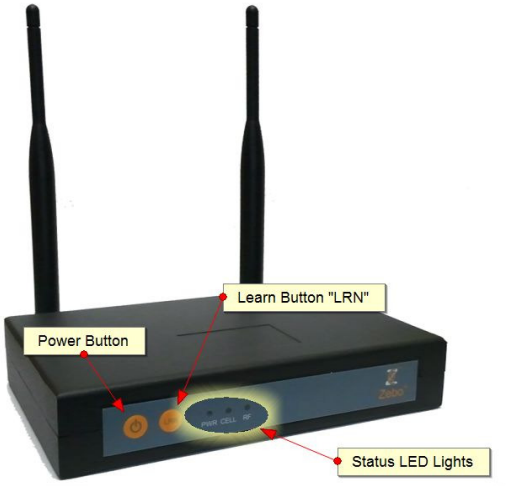
Your sensors will be delivered for the most part learned to the base. The Base Station must be powered on and receiving a steady cellular signal before sensors can be learned or unlearned. Learning a sensor to a base station sets the sensor up to only communicate with your base station and is a mandatory step in getting your product ready. If you base station is installed in a location that is not easy to get to, Zebo can provide a **Base Station Key**, which is a sensor-sized device that can do the Base's learning and unlearning for it. See the Key Manual provided with your Base Key.

LEARN

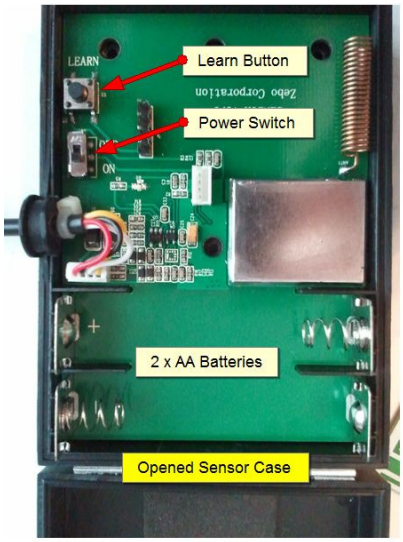
1. Power on the Base Station and wait for the Cell Status light to stop blinking and remain off meaning it has attached to a cellular network. Only the green power light should be on.
2. Press the 'Learn (LRN)' button on the front of the base station. The RF status light will begin to blink.
3. Within 30 seconds, hold your sensor near the base station and power it on. The base station RF status light will blink rapidly indicating it successfully received the sensor. You need to hold the sensor within a foot of the base station while learning.
4. The sensor will now display a solid status light, meaning it is properly learned to the base station. Power the sensor off. It begins it's normal operating mode when next turned ON.
5. If you do not see a solid status light on the sensor, it is not properly learned. Power your sensor off and repeat steps 2-4.

UNLEARN

1. Hold the sensor near the base station and power it off.
2. Press the 'Learn (LRN)' button on the front of the base station. The RF status light will begin to blink.
3. Press the 'Learn' button on the sensor and hold it down while you power the sensor on. Continue to press the 'Learn' button until the base station RF light rapidly blinks, indicating that it successfully received the sensor.
4. The sensor will now display a blinking status light, meaning it is properly unlearned from the base station. You may now power the sensor off and learn it to another base station if you'd like.



Base Station



Sensor

About the Sensors and How They Operate

The sensors have two modes: A. Learning Mode and B. Normal Operation.

Learning Mode
In learning mode, the status LED blinks signaling that it is trying to learn to Base Station. When it learns, the status LED will shine solid for 30 seconds before entering Normal Operation Mode.

Normal Operation Mode
When first turned on, all sensors will send their first battery level reading immediately. This is useful when commissioning sensors for the first time to test whether they are communicating or not. You should be able to view this reading on the web application.

After that, depending on sensor type, they will do one of the following:

1. Temperature, Humidity – they will take and send a measurement reading immediately after the battery level reading. They they will go into their normal routine waking up at their designed interval (hourly is most common) and send a reading.
2. PIR Motion, Water – they enter a sleep mode and wait until movement or water is sensed, at which point they wake and send an alert. They do not send any signals right after the first battery level reading unless a trigger is sensed.

All sensors continue to send a daily (24 hour interval) battery level reading. This indicates the state of the battery as well as help determine if the sensor is operating properly and in range.

Special Notes specific Sensors

Water – The water sensor is designed to send an alert reading (High Level) or a '1' to the web site when water is sensed. It will continue to send a '1' every 20 minutes while water is being detected. It will send a (Low Level) or a '0' when the sensor no longer senses water. Alarms should be set for when a High Level (1) reading has come in to trigger on when water is sensed.

PIR Motion – After being powered ON, there is a 30 second stabilization delay as the sensor become accustomed to it's surrounding. It then actively starts watching for motion. When it senses motion, it will send a (High Level) or a '1' to the web site. It then goes into an hour long wait period before rearming the motion sensor. This reduces the number of transmissions that might occur when a boat is being used normally while in the marina. Alarms should be set for when a High Level (1) reading has come in to trigger on when motion is sensed.

About the Base Stations and How They Operate

The Base Stations maintain a cellular internet connection at all times and listen for transmissions from the Sensors. When a transmission is received, it immediately posts that information directly to the web application. It has a receiving buffer that allows it to capture signals from many sensors very quickly, reducing the number of missed messages when sensors send at the same time.

The Base Station also monitors it's own power supply and will send a post if the power supply is lost or restored. If power is lost, the Base Station has it's own backup battery and can run for some time without power.

If the data connection is lost for what ever reason, the Base will automatically reset and try to reacquire the signal. If successful, it will send the last post and try to catch up thru it's small receiving buffer. If the signal is lost for longer lengths of time, the receive buffer will fill up and readings will be missed.

There are three status lights on the front of the Base Station.

1. PWR – (green LED) Indicates that the Base Station is turned on.
2. CELL – (amber LED) *Blinking* indicates it's trying to lock-on to a cell tower. *Solid* indicates posting data. *Off* indicates cell tower locked-on and ready to go.
3. RF – (amber LED) *Blinking Steady* indicates Base is in learning mode waiting for a sensor. *Small random blinks* indicates data being received from the Sensors.

There are two buttons on the front of the Base Station.

1. Diamond Button – Allows the user to turn off the Audible Beep before it's timeout if an alarm is triggered.
2. LRN Button – Puts the Base Station into learn mode waiting for a sensor. (RF LED will blink steadily when pressed).