



ZENO[®] Weather Station

Manual

May 2012

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<http://www.coastalenvironmental.com/service-technical-notes.shtml>

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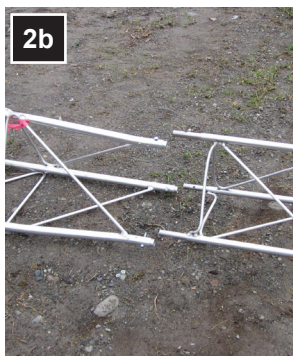
<i>Figure 6-1: ZENO® 3200.....</i>	20
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This is a generic overview of a permanent ZENO® tower installation. Your system may not include all of the components listed, or may have different components. Please refer to the installation documentation provided for each component in your system or contact Coastal for assistance.

TOWER

1. (Detailed tower assembly instructions can be found in the Tower Installation Package.) Attach two legs of the bottom tower section to the “front” anchors. Lay the tower base on its side.



2. Align the top two tower sections end to end in line with the tower base. Connect the sections together, and tighten.

Wind Sensor

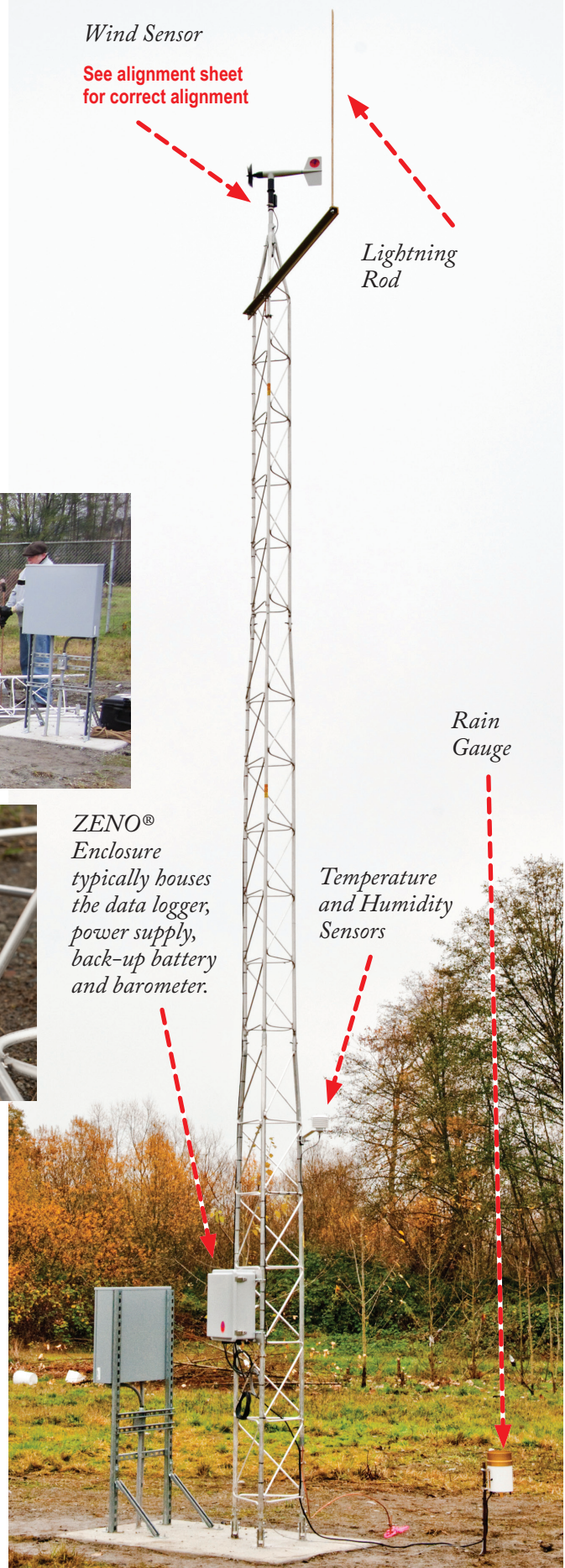
See alignment sheet
for correct alignment

*Lightning
Rod*

*Rain
Gauge*

*Temperature
and Humidity
Sensors*

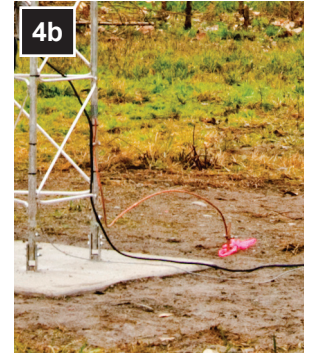
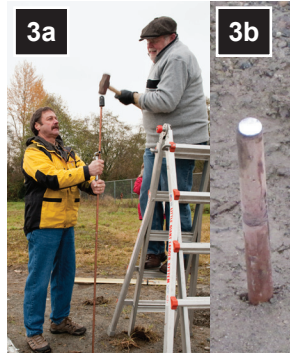
*ZENO®
Enclosure
typically houses
the data logger,
power supply,
back-up battery
and barometer.*





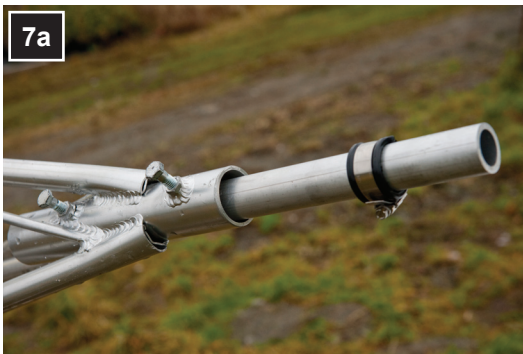
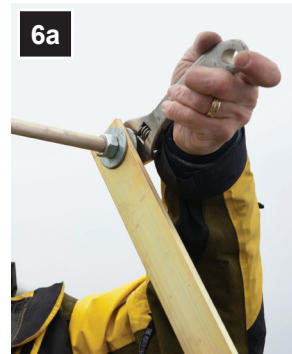
GROUNDING ROD

3. Approximately two feet from the tower base, insert the grounding rod into the earth until approx. six inches remain above ground.
4. Attach a grounding wire to the tower base with the provided clamp. Connect the other end to the grounding rod, leaving enough slack that the tower can be tipped down for maintenance. If preferred, the ground rod can be driven below the surface.



LIGHTNING ROD & MOUNT

5. Attach the lightning mount to the top of the tower, just below the first horizontal bar, using two u-bolts. Secure a short grounding wire to one of the u-bolts and then to an adjacent tower leg.
6. Install the Lightning Rod on the mount. The top of the Lightning Rod should be higher than the top of the Wind Sensor.



WIND SENSOR

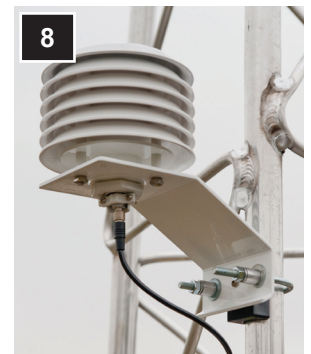
7. Mount the one-inch extension pipe to the top of the tower, then attach the Wind Sensor to the top of the extension pipe. See the Wind Sensor Alignment sheet to correctly align your Wind Sensor (when the tower is upright).

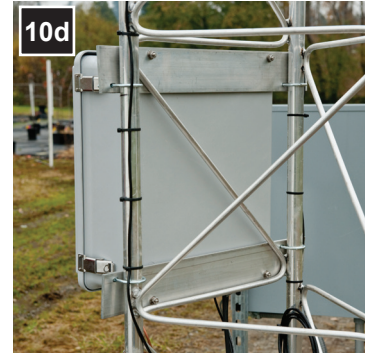
TEMPERATURE & HUMIDITY SENSORS

8. Attach the Temperature and Humidity Sensor assembly to the tower base two meters above ground.

SOLAR RADIATION SENSOR

9. The solar radiation sensor should be installed on the **SOUTH*** side of the tower, slightly above the Temperature and Humidity Sensor assembly, and in a manner so that it is never shaded by the tower or other sensors.
*(*NORTH side in the southern hemisphere)*





ZENO® ENCLOSURE

10. Bolt the two mounting plates to the top and bottom of the ZENO® enclosure.* Install the enclosure to the tower base at eye level using four u-bolts. (*Rotate the mounting plates 180 degrees to fit narrower towers.)
11. Attach one end of a small grounding wire to the base of the ZENO® enclosure and the other end to an adjacent tower leg.



RAINFALL SENSOR

12. Mount the Rain Gauge to a sturdy support, with nothing over the top. Remove the top funnel from the sensor and verify that the tipping mechanism moves freely. Remove any device used to hold the tipping mechanism in place during shipping.



OTHER SENSORS

13. Carefully insert or bury the Soil Temperature Sensor in the area of soil to be monitored and attach the cable to the enclosure.
14. Fully insert the Soil Moisture Sensor prongs into the area of soil to be monitored and attach the cable to the enclosure.
15. Attach the Solar Panel to the tower base above the ZENO® enclosure so that it is **facing toward the Sun (SOUTH*)**. ****In the southern hemisphere, align the Solar Panel to face NORTH.***

ATTACH WIRES TO TOWER

16. Run all sensor wires down the nearest tower leg to the ZENO® enclosure, Using cable ties, attach every six to eight inches. When installing cables for power, communication, rain gauge or any other connection which is separate from the tower: leave enough slack in the cable to allow the tower to be lowered properly.





RAISE THE TOWER

17. Once all sensors are attached and the wires are secured to the tower, slowly raise the tower. While one person steadies the tower, insert the final bolts in the third tower leg and secure.

FINISH WIRING

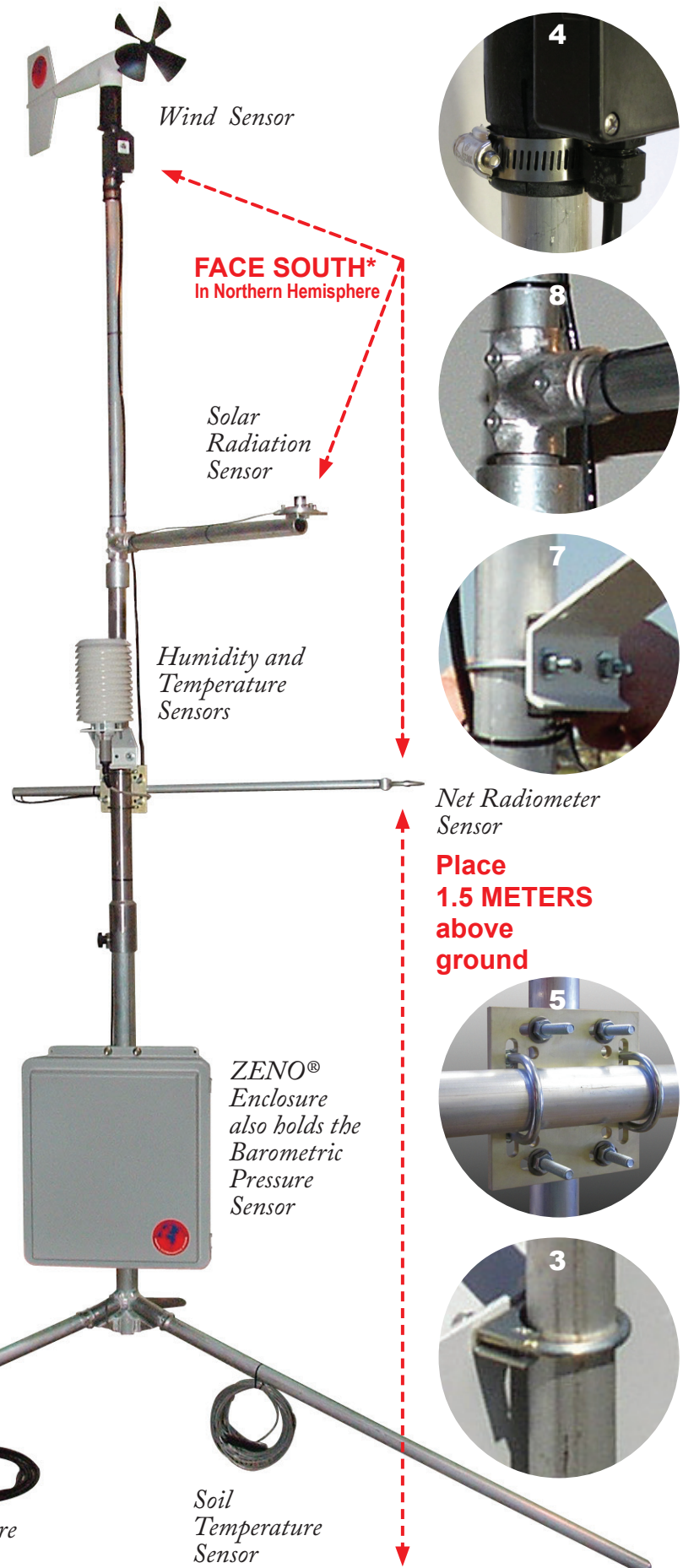
18. Run all cables through the gasket feedthroughs and attach to the ZENO® as shown in the wiring diagram. Tighten gasket feedthroughs by hand.





1. Select a level piece of ground about 4 meters in diameter.
2. Assemble the **lower tower section**: Insert the three legs into the tower base and secure with a turn clockwise, forming a tripod. Place the tripod in the center of the 4-meter diameter area.
3. Attach the **ZENO® 3200 Enclosure** to the tower base using the clamps on the rear of the enclosure as shown.
4. Mount the **Wind Sensor** on the extension pole for the top of the tower, then attach the extension pole to the top of the tower base. **The face of the small junction box on the Wind Sensor should face due South*.**
5. If you have one, mount the **Net Radiometer Sensor** on the extension pole **so that the sensor and rod point due South*, with the sensor facing upward. The sensor must be mounted 1.5 meters above the ground.**
6. If you have one, attach the **Solar Panel** below the Net Radiometer Sensor **so that it is facing toward the Sun.**
7. Attach the **Humidity and Temperature Sensors** assembly just above the Net Radiometer Sensor.
8. If you have one, attach the **Solar Radiation Sensor** on the tower extension pole several centimeters above the Humidity and Temperature Sensors assembly as shown. **The sensor must point South* and face upward.**
9. If you have one, carefully insert or bury the **Soil Temperature Sensor** in the area of soil to be monitored and attach the cable to the enclosure.
10. If you have one, fully insert the **Soil Moisture Sensor** prongs into the area of soil to be monitored and attach the cable to the enclosure.
11. If you have one, place the **Rainfall Sensor** on level ground near the tower, but with nothing over the top. Remove the top funnel from the sensor and verify that the tipping mechanism is able to move freely. Remove anything used to hold the tipping mechanism in place during shipping.
12. Run all **Cables** through the **Gasket Feedthroughs** and attach to the ZENO® as shown in the **Wiring Diagram**. Tighten gasket feedthroughs by hand.

***In the Southern Hemisphere, align these sensors to FACE NORTH.**



2. ZENO® 3200 Weather Station

This is a generic manual for most 2, 3 and 10 meter ZENO® Weather Stations.

2.1 Overview

A ZENO® weather station can serve many purposes, come with a variety of sensors and perform a number of functions depending on the customers' needs and uses.

Essentially your ZENO® weather station consists of the following components:

1. Sensors (to take measurements of the environment)
2. ZENO® electronics to process/store/forward or compute the measurements from the sensors
3. A Power Source/Supply
4. Memory/storage of data, display of data and/or one or both of the former plus sending the data somewhere else (telemetry).

Your station may also include a tower or other peripheral accessories.

The sensors may consist of basic to exotic depending on your application and need. Below is a partial listing of the most common sensors:

- Wind speed and direction
- Temperature and Relative Humidity (Dew Point can be calculated)
- Barometric pressure (as well as altimeter settings)
- Rainfall/Precipitation amount
- Solar radiation (of various types; there are many)
- Soil Moisture
- Soil Temperature
- Visibility
- Cloud Height
- Lighting/Thunder storm detection
- Freezing Rain
- Ice Accumulation
- Gamma Radiation

2.2 ZENO® Electronics

The ZENO® electronics carries out the following functions:

- controlling and providing power to all attached sensors;
- gathering data continuously for all connected sensors (18 bit analog resolution);

- carrying out self-tests to monitor the condition of the sensors and electronics for possible problems;
- processing gathered data;
- checking the data for any alarm conditions;
- prepare data for immediate retrieval by a PC computer by means of cellular telephone interface (optional);
- logging historical data for later retrieval.

The ZENO® 3200 has an extremely robust design. Each input and output, including the serial communication ports, has lightning protection. Extensive hardware and software self-checks are carried out. Surface mount technology is used to give a high degree of resistance to mechanical and thermal shocks. This is a system that can be installed in remote sites with confidence.

2.2.1 ZENO® 3200 Software

All of the features contained in the ZENO® 3200 software are easily modified. The user can change sample periods, adjust the system clock, and even test individual sensors – **one can actually obtain analog voltage outputs, or isolate the output of a single sensor using the ZENO® 3200 test menu.** The menus are password-protected to avoid accidental or unauthorized changes of the ZENO® 3200's configuration. A true real-time clock achieves multi-tasking that the ZENO® 3200 samples and communicates simultaneously.

2.3 Power Source/Supply

Typically your weather station will be supplied with either an AC mains power supply, with or without a back-up battery, or a solar power/charging system.

2.4 Memory/Data Storage/Display and/or Telemetry

The ZENO® can come with a large amount of data storage. This may be used if there is no method of communication between your weather station and you (a PC). It is not recommended to rely on storing large amounts of data over long periods of time as your only source of data storage.

A display built into the enclosure can be ordered if you wish to or have someone view the data on site. A push button activates the display, which will shut off automatically after a set period of time.

If you have telemetry communications with your ZENO®, you will likely also have Coastal's INTERCEPT® software that will contact the station or stations automatically and download the data at set periods of time.

There are several communications devices commonly used:

- Radio (VHF, UHF or Spread Spectrum)

- Telephone dial-up
- TCP/IP address
- GPRS
- CDMA
- Cell phone
- Cable (copper or fiber optic)
- Satellite
- Special forms

More details on these will be in the specific device manual that you have ordered.

3. How and Where to place a Weather Station and the Sensors:

The site should be representative of the general area and be away from obstructions such as buildings and trees where possible^{1, 2}.

3.1 Wind Speed and Direction

Wind sensors should be located over open level ground where possible. The wind sensor should be a distance of at least ten times the height of nearby buildings, trees, or other obstructions (so if a building is 10 meters high – the weather station would ideally be 100 meters away). For poles and towers you should be at least 2 times the diameter away.

There are two recommended heights, but you may have reason to select another. The two standards are 3 meters and 10 meters.

3.2 Temperature and Relative Humidity

The sensor should be housed in a naturally ventilated radiation shield. For the most accurate measurement under ALL conditions you should consider a motor aspirated shield, however they are not required for most uses. Avoid where possible large heat sources or shade. The standard height is 1.25 to 2.0 meters.

3.3 Precipitation

Tipping buckets, weighing gauges or other precipitation measurement sensors should be a minimum of 30 cm off the ground. It is not ideal to attach them via a support arm to the tower but

¹ NWS & NOAA (2010). Operations and Services Surface Observing Program (Land) NWSPD 10-13. Also NWS/NOAA website for Proper Weather Station Siting:

² WMO (1983). Guide to Meteorological Instruments and Methods of Observation. World Meteorological Organization No. 8, 5th edition, Geneva Switzerland.

if you can mount it on the side of prevailing wind it is acceptable. It should be no higher than 1 meter.

3.4 Pressure

The location of the pressure sensor is inside of the enclosure and then it is vented to the air so that it can measure the air pressure. Since the enclosure is usually mounted at a height that is convenient to access it – this is an acceptable location for the pressure sensor. If your system is being used for aviation it will be important to know exactly how high off the ground the sensor is and an offset be entered in the firmware (ZENO®) or the software (Aviation INTERCEPT®).

3.5 Solar Radiation

Solar radiation sensors should be mounted where they will always be exposed to the sun and away from any reflective or shiny surfaces (like enclosures or buildings, windows, etc.). The height is not critical for the accuracy of the measurement but typically solar radiation sensors are mounted at 3 m or less so they are easy to level and clean.

3.6 Soil Temperature

The area of soil to measure soil temperature should be at least 1 square meter and level.

Standard measurement depths:

5.0 cm, 10.0 cm, 50.0 cm, 100.0 cm

3.7 Visibility

The visibility sensor should be mounted in a location free from reflections and as representative of the area you wish to measure as possible. It measures the visibility between the two sensor heads (about 2-3 feet). It is not “outward looking” so consider this when locating your tower. It should be 2 to 3 meters from the ground, however you should also consider snow depth if you have snow in your location. It is also a sensor with windows and optics so you will want to be able to reach and clean the windows, the frequency of such depending on your location (dusty, industrial, etc.)

3.8 Cloud Height

The cloud height sensor should be mounted pointing away from the tower and any other obstructions that may be in its “line of sight” to the sky. You should also consider maximum snow depth if your location has snow.

3.9 Lightning/Thunderstorm Detection

Coastal offers several lightning/thunderstorm sensors and so you should follow the siting instructions provided with the sensor you ordered. In general you want it at least twice the width of the tower away from the tower, or on a separate pedestal some distance from the tower. It may have difficulty “seeing” some strikes that would be “behind” the tower so consider this when choosing a location and distance.

3.10 Ice Accumulation

Typically this is located at 3 meters, but you should also consider what it is you are looking for ice to accumulate on. If for example you want to know when ice will accumulate on overhead power lines – then it should be mounted as close to that height as possible as the temperature and thus ice formation can vary widely with height.

3.11 Gamma Radiation

This will usually be mounted in an enclosure, which already has a place on the tower. You will need to check the data when starting up the station to ensure you have not inadvertently placed the sensor near some source of gamma radiation. It should also be noted that other sources could be present during maintenance (a glow in the dark watch or other source).

4. Weather Station Assembly

The system is assembled using the following steps:

- Locate the tower site and assemble the tower (if ordered)
- Attach the NEMA box to the tower.
- Assemble and install sensors on the tower.
- Locate and install any ground sensors or other sensors that will not be attached to the tower.
- Connect the sensors to the ZENO®.
- Install the battery, connect to mains power or install the solar panels and charging system.
- Test the system.
- Secure the site.

Each of these steps will be described in the following sections.

4.1 Locate the Tower Site and Assemble the Tower Base

- If your weather station has a radio, the tower must be sited where there is a direct line of sight to the base station antenna. The radios for this system require line of site (i.e. no obstructing hills or buildings) for successful operation.
- Determine the location for the tower or existing tower.
- Assemble the tower.

4.2 Attaching the NEMA Box

The NEMA box will come pre-assembled with the ZENO® 3200, and if required the radio and barometer installed. The solar power panel, and some sensors may already be connected. Do not open the box yet especially if the weather is inclement and there is a possibility of getting moisture inside the box.

- Attach the NEMA box containing the ZENO® box, radio, barometer and to the tower. Use the U-bolts and the spacers provided to avoid damaging the fiberglass box. The NEMA box is mounted on the base of the tower with the bottom of the box at a convenient location above the ground.
- To ground the NEMA box/chassis, attach the metal clamp to the top of the screw in the tie down stake (this is the one that you secured the tower legs to using the manila rope). Connect one end of the copper wire to the chassis ground lock on the bottom of the NEMA box and the other end to a properly grounded ground rod.

Wind Sensors *Alignment with North*

A wind sensor must first be aligned to North in order to report directions accurately. In most cases you will want to align the wind sensor with TRUE NORTH. TRUE NORTH is different from where the compass points – you add or subtract the offset (called declination) from the compass heading. First, find the compass north (called magnetic north) and then add or subtract the declination degrees for your geographic location from your magnetic compass measurement. (You can look this up on the Internet or ask us.)

Each wind sensor has its own marking method to tell you which way to line it up. Our most common wind sensors are listed below. If you have one different than those shown, please contact us for this information.

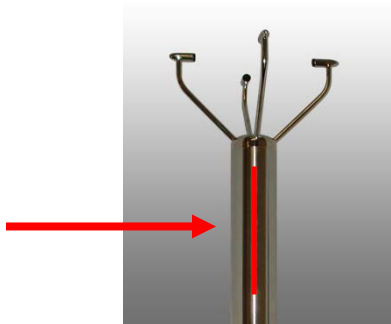
NOTE: If you have a WEATHERPAK™, it aligns itself automatically by means of a built-in electronic compass.



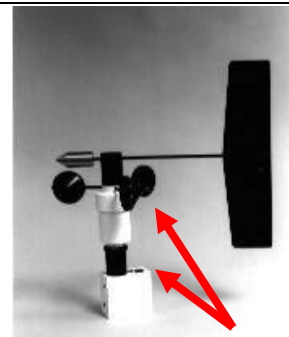
There is a RED arrow that should point North



This box on the side should face South



There is a RED line along the side that should point North



There are two alignment screws that hold the vane (tail) in a fixed position when screwed in. Once these alignment screws are in, align the vane (tail) to point South



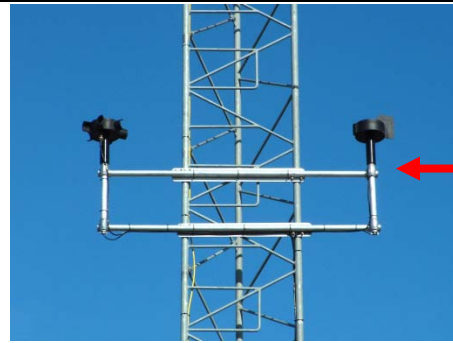
On the top plate there are letters showing both N (North) and S (South)



The box on the side should face South



The Vane/Tail should point North; the Cups should point South



On the Vane component (right in photo above) there is a slot at the bottom of the tube that holds the sensor to the cross-arm; this slot should face South

4.4 Attach the Sensors to the Tower

(Please note which sensors you ordered)

- Install the wind sensor onto the top of the tower. The wind sensor must be oriented correctly, so please check the “Wind monitors alignment guide” that will show you how each of the different wind monitors should be aligned.
- Attach the relative humidity/air temperature sensor to the tower with the U-bolt supplied.
- Attach the arm for the solar radiation sensor to the top section of the tower in its bracket. The solar radiation sensor must be oriented so that its mounting arm is aligned towards the south with the sensor facing skyward when the tower is fully assembled. Install the solar radiation sensor to the arm and route the cable down the arm to the tower, securing it with tie wraps as you go. Do not over tighten the tie wraps as the cable could be damaged.
- Attach the visibility Sensor or combined visibility/precipitation identification sensor to the tower. If possible, you want to align this sensor in a North-South orientation to minimize glare and reflection from the sun into the instrument
- If your unit has a radio, install the antenna to the tower with the antenna bracket. The antenna must be located on the side of the tower towards the base station.

4.5 Locate and Install the Ground Sensors

- Locate the tipping bucket or other type of precipitation sensor free and clear from obstructions that could block rainfall. Attach the gauge to a stake at least 30 Cm high, but less than 1 meter
- Locate the soil temperature sensor within 20ft of the tower. Drill a hole to the correct depth with the auger. Set the sensor into the hole checking to be sure it is installed to the correct depth. Fill the hole around and above the sensor with the dirt that was removed from the hole. Lightly tamp the dirt. Mark the site with a small flag or other marker to prevent damage to the sensor from shovels and equipment.
- Determine the soil moisture sensor location. Drill a hole to the correct depth with the auger. Using some of the dirt removed from the hole prepare a slurry with water and pour into the bottom of the hole to a depth of 3 inches. Set the sensor into the slurry and pour the rest of the slurry over the top of the sensor. Fill the hole around and above the sensor with dirt that was removed from the hole. Lightly tamp the dirt. Mark the site with a small flag or other marker to prevent damage to the sensor from shovels and equipment.
- Install the Ceilometer/cloud height sensor on a separate pad at least 5 feet from the main tower.

- Install the lightning/Thunderstorm sensor either on an arm extending from the tower or on a separate stand.
- Route the cables to the base of the tower and mark the route with flags as appropriate to prevent damage to the cables from shovels and equipment.

4.6 Earth Grounding the Tower

If you are using an existing tower – be sure it is grounded and has a lightning rod. If not, your tower purchased from Coastal should come with these:

- Install the lightning rod at the top of the tower so that it extends above all else
- Attach by using the clamps and copper wire to the tower top
- Install the copper ground stake
- Use the other piece of copper wire and clamps to connect the same leg of the tower the lightning rod is on to the copper ground stake.

4.7 Attaching Sensor Cables to ZENO®

Do not open the box if the weather is inclement and there is a possibility of getting moisture inside the box. Your station may have been ordered with either MIL-SPEC connect connectors or with compression fittings for each cable (dorn fittings).

- If you purchased the MIL-Spec connectors then simply connect them to the appropriate mating connector on the enclosure.
- If you have dorn fitting then:
- Undo the dorn compression fitting at the base of the NEMA box.
- Push the cable through the dorn compression fitting on the NEMA box.
- Connect the sensor cable to the ZENO® 3200 per the wiring diagram. Use the small cable ties to tidy up the cables running inside the NEMA box. Place the desiccant inside the NEMA box.
- Tighten the dorn compression fitting.
- Secure the cable to the tower with plastic clamps/tie wraps, if not already done.

4.8 Attaching the Battery

- If you are using Mains power then connect power at this time. If you have a solar power system, then attach the bracket to the solar panel and attach the bracket to the tower using the U-bolt supplied. The solar panel should be pointing south in the northern hemisphere.

- Install battery (if you have one) into the NEMA box. The negative cable should be the last connected and the first removed. To avoid shorting the ZENO® and radio, do not let any of the power cables touch the ZENO®, radio or radio cable.



Do NOT touch battery power cables to the radio, radio cable or the ZENO® 3200.

5. Routine Maintenance

The ZENO® 3200 Weather Monitoring Systems are designed for long-term, unattended operation. Your maintenance schedules will probably be dominated by the requirements of your sensors.

The following maintenance activities are recommended for accessible systems.

- Tighten all fittings.
- Check that all external cables are in good condition, and taut. If the cables have become slack, gather together more cable at the enclosure.
- Check that the cable ties have not become brittle due to UV exposure. Replace any brittle ties.
- Apply WD-40 or a similar agent to all hinges and latches on your enclosure.
- Open any NEMA boxes and check the condition of the rubber gasket. Change the desiccant before closing the box.
- Whenever you open the enclosure containing the ZENO® 3200 datalogger, you should change the desiccant.
- Preventive maintenance is important; some of the obvious reasons for it are:
 - Extend the lifetime of the parts by keeping them clean and lubricated, and
 - Prevent untimely breakdowns by routinely catching worn parts before they break.
- Scheduled preventive maintenance is best performed in mild and clear weather and with two people.

6. Connecting to the ZENO® – Overview

By connecting the ZENO® to your computer through its RS-232 or USB serial port, you can access the easy-to-use, text-based menu system. This lets you:

- download data,
- change sampling schemes,
- modify other operating characteristics.

The menu software resides entirely within the ZENO® itself however you will need a terminal program to connect. You can use HyperTerminal or the UCON software that is shipped with your Weather Station.

Getting connected

To access the ZENO® menu structure, you need:

- a computer (e.g., a PC or Macintosh) with an RS-232 serial port or USB port with adaptor, running a communication program such as UCON, or the Microsoft Windows Terminal program;
- a cable allowing the ZENO®'s terminal port to be connected to your computer

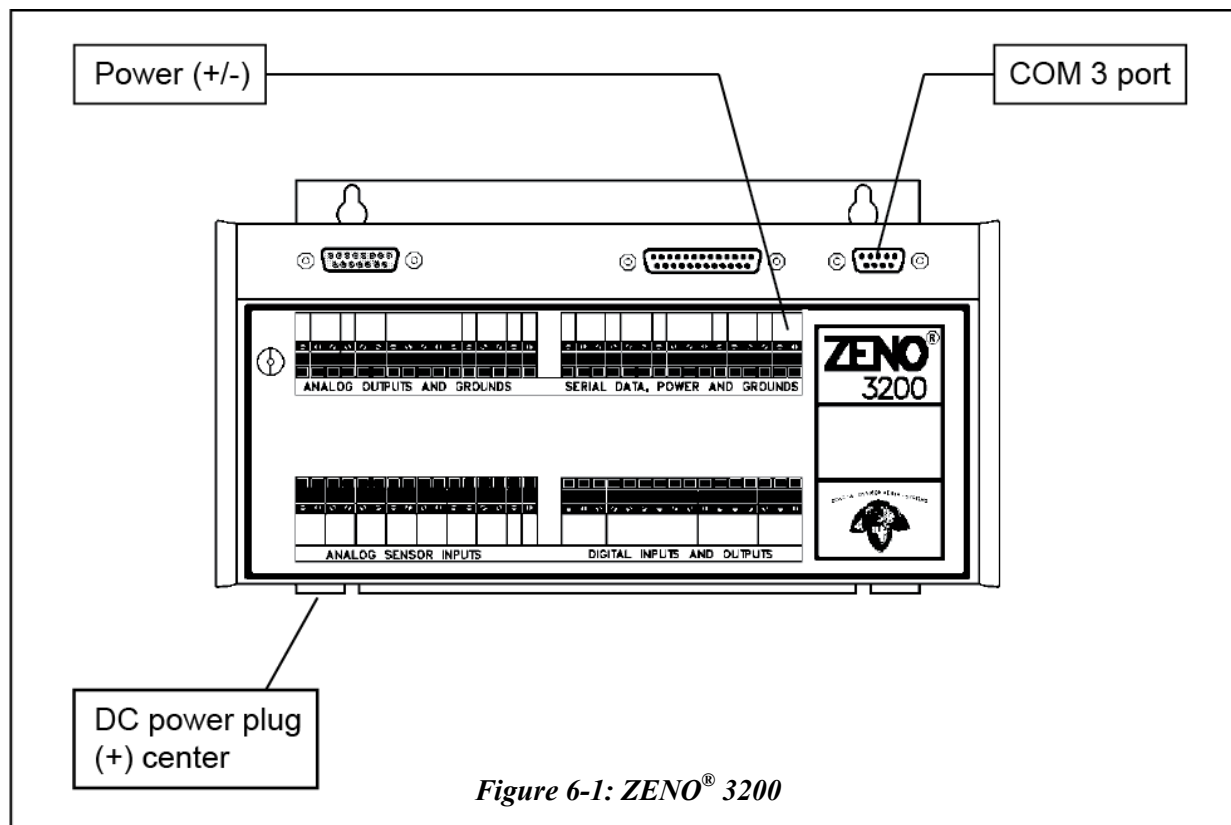


Figure 6-1: shows the position of the terminal port on your enclosure.

**If your system includes a radio transmitter,
do not power up the ZENO® until you have connected the antenna**

1) If you are running INTERCEPT® (our User Interface software) You will need to turn off the Data Collector for INTERCEPT® in order to use UCON Terminal program on the same comport. On your computer, go to **Start\Control Panel\Administrative Tools** and open **Services**. Locate **CES INTERCEPT** in the list. Right click on it and choose **Stop**. Once the service has stopped, proceed with the next step.

2) Set up a uCon window in order to communicate with the Base Station as follows:

A) Install the uCon software from the CD provided with your system. It should already be set up with the communication parameters used for your system. If not, or if you did not receive or have lost your CD you can download the software from <http://www.umonfw.com/ucon/index.html> and click on the blue uCon link in the upper left corner of the page.

B) Click on the ucon_install.exe icon (may be in C:\Documents and Settings\User\My Documents\Downloads) and follow prompts to install the software.



C) Once the uCon software has been installed, double click on the icon **Ucon.lnk** to start the software. You should see the following configuration window:

D) Change the serial settings as follows:

Bits per second: 9600

Data bits: 8

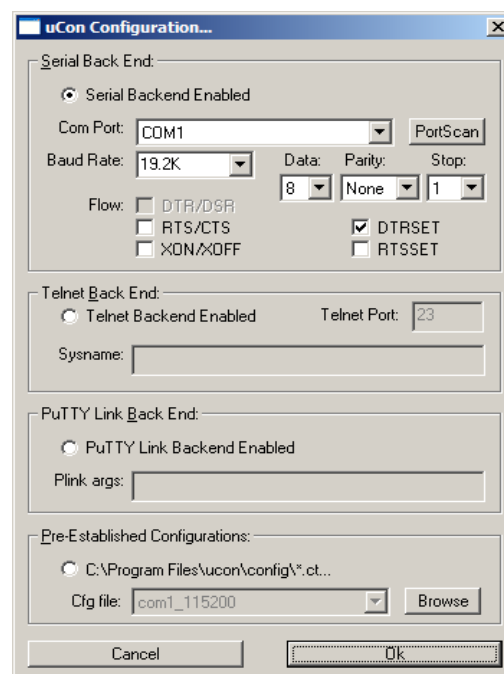
Parity: None

Stop bits: 1

Flow control: None

Click "OK". Your uCon window should now be connected to the selected com port on your computer.

3) Type **u<enter>** to access the ZENO® User Menu. Your screen should now show:



USER MENU

- | | |
|---------------------------|-----------------------|
| (C) Communications Menu | (T) Test Menu |
| (F) System Functions Menu | (Z) ZENO Program Menu |
| (S) Sample Period Menu | (Q) Quit |
| (D) Data Retrieval Menu | (H) Help |

Follow the appropriate procedure to make the required changes.

If you have any questions or require additional assistance, contact Coastal's Service Department:

206-682-6048 x157

support@coastalenvironmental.com

If you wish to make more changes with the weather station software please see the ZENO® DATALOGGER manual. It is on our website at:

<http://www.coastalenvironmental.com/service-downloads.shtml>

Procedure to Download Data Files from the ZENO® 3200

1) Set up a HyperTerminal window in order to communicate with the ZENO® 3200 as follows:

A) Locate and select the HyperTerminal program in Start/Programs/
Accessories/Communications/HyperTerminal.

B) If HyperTerminal asks you to make it your default terminal program
click "Yes".

C) In the "Connection Description" window type any name for the connection
(such as "ZENO®") and click "OK".

D) In the "Connect To" window go to "Connect using" and select an open
comport on your computer (usually COM 1). Click "OK"

E) In the COM X Properties window the select the port settings as follows:

Bits per second: 9600 (if 9600 does not work, try another rate)

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

Click "Apply" then "OK". Your HyperTerminal window should now be connected to the
selected com port on your computer. The lower left hand side of the window should show
"Connected" with a timer counting up.

2) Connect Black Crossover Cable to the maintenance port on the ZENO® 3200. Connect the
other end to a serial com port on computer, or access the ZENO® via a modem if that is the
connection used.

3) Apply power to the ZENO® 3200. On your HyperTerminal screen you should see a boot up
message similar to:

Watchdog Reset

Please wait.../

ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41 CS B97B

(C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.

System Time = 07/03/02 17:25:02

Initializing ZENO 3200 .../

ZENO® 3200 is Data Sampling. Type 'U'<enter> to access the User Interface

4) Type U<enter> to access the User Menu.

5) Type D<enter> to access the Data Retrieval Menu.

6) You will want to set up a storage location on your computer for the data. To do this, in HyperTerminal go to Transfers/Capture Text. Choose a location for the data file, then click on “Start”.

7) If you wish to see all of the data logs, type *`<enter>`. The ZENO® will output all of the logged data in memory. Depending on how much data is logged, the process may take several minutes (you also have the option of downloading a certain number of records using the “Ln” command where n is the number of records or you can choose a time period using the “A” or “B” commands).

8) Once the ZENO® 3200 is finished downloading, go to HyperTerminal Transfers/Capture text and click on “Stop”. Verify that your data is stored as a text file in the location you chose in step 6.

9) Type Q`<enter>` to exit the user menu and return to normal operation.

If you have any questions or would like any assistance, please contact our Customer Service Department:

206-682-6048 x157

support@coastalenvironmental.com

Procedure to Set the ZENO® 3200 Data Output for Polling

- 1) You will need to turn off the Data Collector for INTERCEPT® in order to use HyperTerminal on the same comport. On your computer, go to **Start\Control Panel\Administrative Tools** and open **Services**. Locate **CES INTERCEPT** in the list. Right click on it and choose **Stop**. Once the service has stopped, proceed with the next step.
- 2) Set up a HyperTerminal window in order to communicate with the Base Station as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click "Yes".
 - C) In the "Connection Description" window type any name for the connection (such as "Wthrpk") and click "OK".
 - D) In the "Connect To" window go to "Connect using" and select Com 3 on your computer. Click "OK"
 - E) In the COM X Properties window the select the port settings as follows:
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: NoneClick "Apply" then "OK". Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show "Connected" with a timer counting up.

- 3) Type **u<enter>** to access the ZENO® User Menu. Your screen should now show:

USER MENU

- | | |
|---------------------------|-----------------------|
| (C) Communications Menu | (T) Test Menu |
| (F) System Functions Menu | (Z) Zeno Program Menu |
| (S) Sample Period Menu | (Q) Quit |
| (D) Data Retrieval Menu | (H) Help |

- 4) Type **s<enter>** for the Data Retrieval Menu

SAMPLE PERIOD MENU

- | | |
|---------------------------------|----------|
| (Cn/m) Change Item n To Value m | (Q) Quit |
| (E) Save Parameters To EEPROM | (H) Help |
| (U) User Menu | |

Item 1: 600 (Sample Interval Time)
Item 2: 598 (Sample Duration Time)
Item 3: 0 (Sample Time Offset)

5) Determine how often you need the ZENO® to log data. This is the Sample Interval time. To change the Sample Interval type **c1/xxx<enter>**, where **xxx** is the new Sample Interval time in seconds.

6) Determine the amount of processing/averaging time needed for the data. In the example above, the sample time is set for 598 seconds. There should always be at least 2 seconds between the Sample Interval and Sample Duration to ensure proper transmission/logging of data. To change the Sample Duration time, type **c2/xxx<enter>**, where **xxx** is the new Sample Interval time in seconds. For power saving, you can shorten the length of the Sample Duration in relation to the Sample Interval. The time difference between the two is a “sleep” time or low power period where the ZENO® is not processing data. For example, if you require a 10 minute average, but only need to log data every 30 minutes, you could change the Sample Interval to 1800 seconds and the Sample Duration to 600 seconds. At the start of each sample period the ZENO® would process data for 10 minutes, then go to low power mode for 20 minutes. At the end of the 30 minute sample period the ZENO® would log the data and begin a new sample period.

7) Once you have made the changes desired, you must save them to the EEPROM. Type **e<enter>**. The ZENO® should show it is saving parameters. Once the save is finished, type **q<enter>** to exit the User Menu. Close HyperTerminal.

8) Go back to the **Services** window, right click on **CES INTERCEPT** and choose **START**. Log in to INTERCEPT. Update the polling time in INTERCEPT for each station to match the new Sample Duration Time of the ZENO®. This is done in Maintenance/Data Collection/Defined Stations. Select the station to modify and click on “Edit”.

9) Click on “Next” in the lower right until you are on the Data Retrieval screen. Change the data interval value to the same number in seconds as the Sample Interval time set in the ZENO®. Click on “Save” and return to the Observer screen.

Within a few minutes, INTERCEPT should dial each modem and download data from the stations. The last line of data downloaded will show in the **Observer** screen for that station.

If you have additional questions please contact our Customer Service Department:

support@coastalenvironmental.com

206-682-6048 x157

Procedure to Update the Clock in the ZENO® 3200

- 1) Set up a HyperTerminal window in order to communicate with the ZENO® as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click "Yes".
 - C) In the "Connection Description" window type any name for the connection (such as "Wthrpk") and click "OK".
 - D) In the "Connect To" window go to "Connect using" and select an open comport on your computer (usually COM 1). Click "OK"
 - E) In the COM X Properties window the select the port settings as follows:
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: NoneClick "Apply" then "OK". Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show "Connected" with a timer counting up.

2) Use an accurate reference clock set to GMT or local time for comparison.

3) Apply power to the ZENO® 3200. On your HyperTerminal screen you should see a boot up message similar to:

```
Watchdog Reset
Please wait.../
ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41 CS B97B
(C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.
System Time = 07/03/02 17:25:02
Initializing Zeno 3200 .../
```

ZENO® 3200 is Data Sampling. Type 'U'<enter> to access the User Interface

4) Type U<enter> to access the User Menu.

5) Once in the User Menu type F<enter> then S<enter>. You should now see a prompt to enter a new date and time. The format is: yy/mm/dd hh:mm:ss.

6) When the date and time have been updated it should be within 2 seconds of the reference clock.

7) Type Q<enter> to exit the User Menu and return to normal operation.

If you have any questions or need further assistance, please contact Coastal Environmental Systems' Customer Support department:

206-682-6048 x157

support@coastalenvironmental.com

Procedure to Upload a Configuration File to the ZENO® 3200

**BE SURE TO SAVE THE NEW CONFIGURATION FILE ON YOUR COMPUTER
DESKTOP OR A LOCATION WHERE IT CAN BE EASILY LOCATED.**

- 1) Set up a HyperTerminal window in order to communicate with the Zeno as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click "Yes".
 - C) In the "Connection Description" window type any name for the connection (such as "Wthrpk") and click "OK".
 - D) In the "Connect To" window go to "Connect using" and select an open comport on your computer (usually COM 1). Click "OK"
 - E) In the COM X Properties window the select the port settings as follows:
 - Bits per second: 9600 (if this setting does not work, try 1200)
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: NoneClick "Apply" then "OK". Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show "Connected" with a timer counting up.
- 2) Connect Test Cable to Com 3 on the ZENO® (DB9 connector). Connect the other end to a serial com port on computer.
- 3) Type U<enter> to access the User Menu.
- 4) Type Z<enter> to access the Zeno Menu. When prompted for a password, type zeno<enter>.
- 5) In the Zeno Menu type L<enter> to access the System Load Menu.
- 6) Next, type R<enter> to tell the ZENO® 3200 to receive a file. You should see the following:

SYSTEM LOAD MENU

- | | |
|--|-----------------------|
| (R) Receive Configuration From Host | (Z) Zeno Program Menu |
| (T) Transmit Configuration From Zeno | (H) Help |
| (V) View Configuration & Menus (ASCII) | |

Precede The R Or T Command With An 'X' For X-Modem Transfer

(e.g. Enter 'XR' To Receive A Configuration File Via X-Modem)

> r

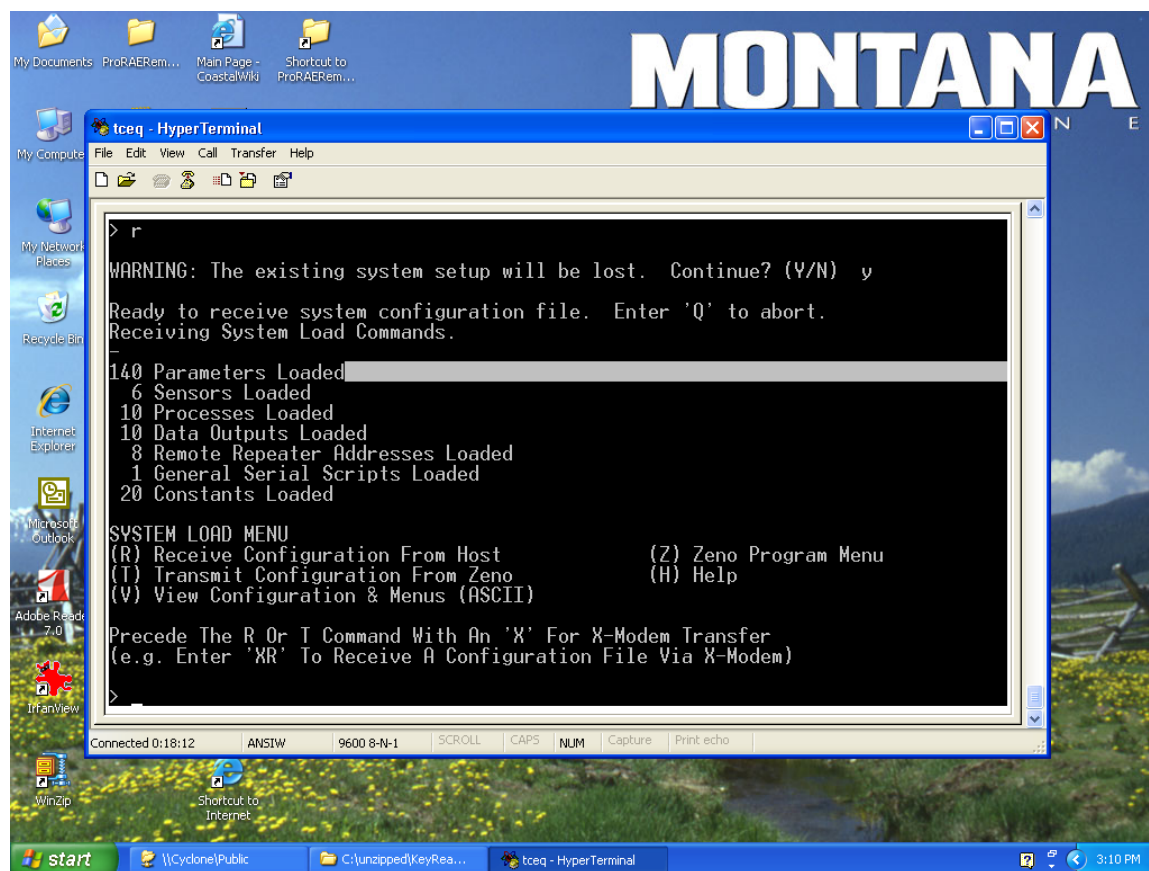
WARNING: The requested change will prevent the System from accurately reading the Data Records currently stored in Logging Memory. To proceed with this change all Log Data Records must first be deleted!

WARNING: All records in data logging memory will be deleted!
Continue? (Y/N)

Type Y<enter> to continue.

You should see: "Ready to receive system configuration file. Enter "Q" to abort."

7) In HyperTerminal select "Transfer" then choose "Send Text File".
Locate the Configuration file on your computer, select it and click "OK".
Your screen should look something like the following picture:



8) If the file loaded successfully with no warnings or errors, type Z<enter> then E<enter> to save these changes to the eeprom.

You should see something similar to this on your screen:

```
Verifying parameters can be stored in EEPROM . . .
Saving parameters to EEPROM . . .
Saving sensor lists to EEPROM . . .
Saving process lists to EEPROM . . .
Saving data output lists to EEPROM . . .
Saving repeater lists to EEPROM . . .
Saving general serial scripts to EEPROM . . .
Saving constants to EEPROM . . .
796 out of 2048 bytes used in EEPROM.
Total EEPROM Writes = 22, EEPROM Checksum = 203.
```

ZENO PROGRAM MENU

(S) Sensor Menu	(M) Memory Management Menu
(P) Process Menu	(W) Password Menu
(D) Data Output Menu	(R) Reset System
(T) Sensor Timing Loop Menu	(E) Save Parameters To EEPROM
(O) Output Message Timing Menu	(U) User Menu
(L) System Load Menu	(Q) Quit
(G) General Serial Script Menu	(H) Help

9) If the Configuration did not load successfully, repeat steps 6 – 9. If the upload was successful, type Q<enter> to exit the User Menu and start operation of the system.

If you have any questions or would like any assistance, please contact our Customer Service Department:

Phone: 206-682-6048 x157

support@coastalenvironmental.com

Procedure to Download a Configuration File from the ZENO® 3200

**BE SURE TO SAVE THE CONFIGURATION TEXT FILE ON YOUR COMPUTER
DESKTOP OR A LOCATION WHERE IT CAN BE EASILY LOCATED.**

- 1) Set up a HyperTerminal window in order to communicate with the ZENO® as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click "Yes".
 - C) In the "Connection Description" window type any name for the connection (such as "WthrpK") and click "OK".
 - D) In the "Connect To" window go to "Connect using" and select an open comport on your computer (usually COM 1). Click "OK"
 - E) In the COM X Properties window the select the port settings as follows:
 - Bits per second: 9600 (if this setting does not work, try another rate)
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: NoneClick "Apply" then "OK". Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show "Connected" with a timer counting up.

2) Connect Test Cable to Com 3 on the ZENO® (DB9 connector). Connect the other end to a serial Com port on computer.

3) Apply power to the ZENO® 3200. On your HyperTerminal screen you should see a boot up message similar to:

Watchdog Reset

Please wait.../

ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41 CS B97B

(C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.

System Time = 07/03/02 17:25:02

Initializing Zeno 3200 .../

ZENO® 3200 is Data Sampling. Type 'U'<enter> to access the User Interface

4) Type U<enter> to access the User Menu.

5) Type Z<enter> to access the Zeno Menu. When prompted for a password, type zeno<enter>.

6) In the Zeno Menu type L<enter> to access the System Load Menu.

7) Next, type T<enter> to tell the ZENO® 3200 to transmit a file. You should see the following:

SYSTEM LOAD MENU

(R) Receive Configuration From Host (Z) Zeno Program Menu
(T) Transmit Configuration From Zeno (H) Help
(V) View Configuration & Menus (ASCII)

Precede The R Or T Command With An 'X' For X-Modem Transfer
(e.g. Enter 'XR' To Receive A Configuration File Via X-Modem)

> t

Turn On Host Computer File Capture Now.
Enter Any Key To Continue.

8) In HyperTerminal select "Transfer" then choose "Capture Text File".
Choose a location for the Configuration file on your computer, select it and click "Start".
Hit any key on your keyboard to continue. Your screen should show something similar to the following:

```
* Zeno 3200 System Setup File
* Program Version And Date: ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41
CS B97B
* (C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.
* Setup File Date And Time: 07/10/09 16:15:53
PARAM1 300 0 280 2 6 4 1 0 9600 9600
PARAM2 9600 0 0 0 0 1 1 0 0 0
PARAM3 16777 0 60 18 0 0 0 0 2 2
PARAM4 2 2 0 0 0 3276800 0 -1 5 0
PARAM5 3 0 0 0 100 0 0 0 0 0
PARAM6 0 0 0 1160600400 50336144 151 196608 0 1 0
PARAM7 151 0 1280 0 10000 -1 -1 0 10 1
PARAM8 42 0 0 0 0 0 0 0 0 0
PARAM9 0 0 0 0 0 0 5 100 0 0
PARAM10 0 0 0 0 1200 -1 27
PARAM11 "NONE" "NONE" "NONE" "NONE" "NONE" "NONE" "" "ZENO" "" "NONE"
PARAM12 "" "ZENO-3200-Reset" "Real-Time-Clock-Suspect" "Logging-Memory-Initializ
ed" "Serial-Sensor-COM-Failure" "EEPROM-Suspect" "18-Bit-ADC-Suspect" "12-Bit-AD
C-Suspect" "Temperature-Clock-Adjustment" ""
PARAM13 "" "" "" "" "" "" "" "" "" ""
PARAM14 "" "" "" "" "" "" "" "" "" ""
PARAM15 "" "" ""
```

```

REPEAT1 -1 -1 -1 -1 -1 -1 -1 -1
CONSTANT1 0 0 0 0 0 0 0 0 0
CONSTANT2 0 0 0 0 0 0 0 0 0
GSI 1 STRING 5 ( 100, 100, 100, 100, 100 )
GSI 1 FLOAT 9
GSI 1 SEND "\x05PW 0 7\r\r"
GSI 1 RECEIVE 10000, "%s", S1
GSI 1 RECEIVE 0, "%s %s %f%f %s %f%f%f%f%f%f%f %s", S2, S3, F1, F2, S4,
F3, F4, F5, F6, F7, F8, F9, S5
SENSOR 1 "Vbatt" 2 0 0 0 0 0 1 0 2 0 1 0 0 0 0 0 0 0 0 0 S0.1
SENSOR 16 "VIS" 0 0 0 0 0 0 6 1 3 0 1 0 3 0 0 9600 7 2 1 1 1 S0.1
SENSOR 1 "Dummy" 0 0 0 1 0 0 10 1 0 4 0 1 0 0 0 0 0 0 0 0 0 S0.1
PROCESS 1 1 "IPWC" S2.3
PROCESS 1 1 "PWC" S2.4
PROCESS 1 1 "1HRPWC" S2.5
PROCESS 1 1 "PRECIP" S2.6
PROCESS 1 1 "CWS" S2.7
PROCESS 1 1 "CSS" S2.8
PROCESS 1 1 "VIS1M" S2.1
PROCESS 1 1 "VIS_10M" S2.2
PROCESS 1 1 "VIS_T" S2.9
PROCESS 1 2 "IPWC" P2.1
PROCESS 1 2 "15M_PWC" P2.1
PROCESS 1 2 "1HR_PWC" P3.1
PROCESS 1 2 "PRECIP" P4.1
PROCESS 1 2 "CWS" P5.1
PROCESS 1 2 "CSS" P6.1
PROCESS 1 2 "VIS_1M" P7.1
PROCESS 1 2 "VIS_10M" P8.1
PROCESS 1 2 "VIS_T" P9.1
DATA 6 1 "<0D><0A>" P1.1 0 0 1 P1.1 P1.1 P1.1
DATA 4 1 "" P1.1 0 0 1 P1.1 P1.1 P1.1
DATA 3 1 "" P1.1 0 0 1 P1.1 P1.1 P1.1
DATA 9 1 "NWS_Code" S2.S4 0 4 9 P1.1 P1.1 P1.1
DATA 9 1 "IPWC" P10.1 0 2 2 P1.1 P1.1 P1.1
DATA 9 1 "15MIN_PWC" P11.1 0 2 2 P1.1 P1.1 P1.1
DATA 9 1 "1Hr_PWC" P12.1 0 2 2 P1.1 P1.1 P1.1
DATA 9 1 "Prec_WI" P13.1 2 6 8 P1.1 P1.1 P1.1
DATA 9 1 "CWS" P14.1 2 6 8 P1.1 P1.1 P1.1
DATA 9 1 "CSS" P15.1 2 6 8 P1.1 P1.1 P1.1
DATA 9 1 "Vis_1min" P16.1 0 5 4 P1.1 P1.1 P1.1
DATA 9 1 "Vis_10min" P17.1 0 5 4 P1.1 P1.1 P1.1
DATA 9 1 "VIS_T" P18.1 1 5 7 P1.1 P1.1 P1.1
DATA 9 1 "Vbatt" S1.1 1 4 7 P1.1 P1.1 P1.1
DATA 6 1 "<0D><0A>" P1.1 0 0 1 P1.1 P1.1 P1.1
  
```



```
DATA 7 1 "VIS_STRING" S2.S1 0 70 1 P1.1 P1.1 P1.1
DATA 6 1 "<0D><0A>" P1.1 0 0 1 P1.1 P1.1 P1.1
* !!SYSTEM TRANSFER COMPLETE.
* Turn Off File Capture Now.
* Enter Any Key To Continue.
EOF
```

Go to “Transfer” then “Capture Text” and click on “Stop”. Hit any key on your keyboard to continue. The screen should show the following:

SYSTEM LOAD MENU

(R) Receive Configuration From Host	(Z) Zeno Program Menu
(T) Transmit Configuration From Zeno	(H) Help
(V) View Configuration & Menus (ASCII)	

Precede The R Or T Command With An 'X' For X-Modem Transfer
(e.g. Enter 'XR' To Receive A Configuration File Via X-Modem)

Type Z<enter> then Q<enter> to exit the user menu and return to normal operation.

If you have any questions or would like any assistance, please contact our Customer Service Department:

206-682-6048 x157

support@coastalenvironmental.com

Procedure to Download a Configuration File from the ZENO® 3200 using X-Modem

**BE SURE TO SAVE THE CONFIGURATION TEXT FILE ON YOUR COMPUTER
DESKTOP OR A LOCATION WHERE IT CAN BE EASILY LOCATED.**

- 1) Set up a HyperTerminal window in order to communicate with the ZENO® 3200 as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click "Yes".
 - C) In the "Connection Description" window type any name for the connection (such as "Wthrpk") and click "OK".
 - D) In the "Connect To" window go to "Connect using" and select TCP/IP, then enter the Address and the port ID#'s, which are found using the CPR Manager.

Click "Apply" then "OK". Your HyperTerminal window should now be connected to the Lantronix device. The lower left hand side of the window should show "Connected" with a timer counting up.

- 2) Connect Test Cable to Com 3 on the ZENO® (DB9 connector). Connect the other end to a serial Com port on computer.
- 3) Apply power to the ZENO® 3200. On your HyperTerminal screen you should see a boot up message similar to:

```
Watchdog Reset
Please wait.../
ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41 CS B97B
(C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.
System Time = 07/03/02 17:25:02
Initializing Zeno 3200 .../
```

ZENO® 3200 is Data Sampling. Type 'U'<enter> to access the User Interface

- 4) Type U<enter> to access the User Menu.
- 5) Type Z<enter> to access the Zeno Menu. When prompted for a password, type zeno<enter>.
- 6) In the Zeno Menu type L<enter> to access the System Load Menu.

7) Next, type XT<enter> to tell the ZENO® 3200 to transmit a file. You should see the following:

SYSTEM LOAD MENU

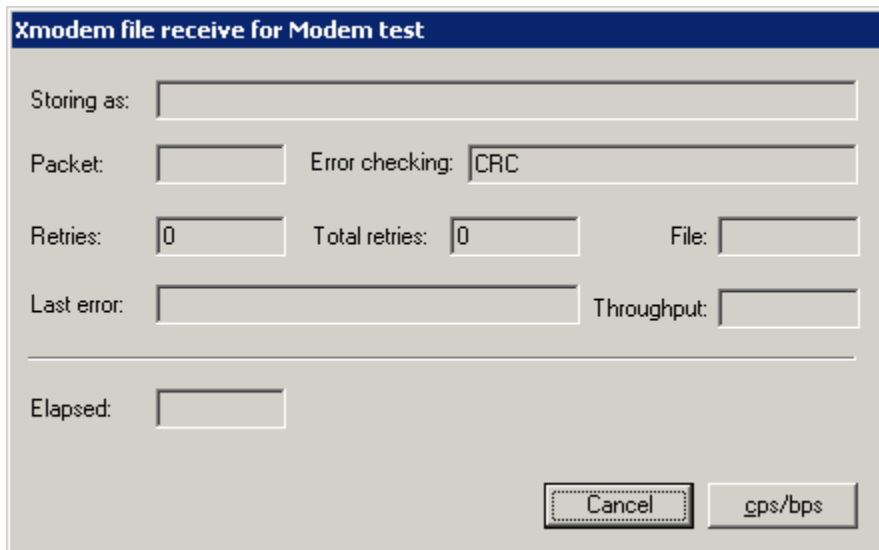
(R) Receive Configuration From Host (Z) Zeno Program Menu
(T) Transmit Configuration From Zeno (H) Help
(V) View Configuration & Menus (ASCII)

Precede The R Or T Command With An 'X' For X-Modem Transfer
(e.g. Enter 'XR' To Receive A Configuration File Via X-Modem)

>xt

Starting X-Modem File Transfer. Hit Control-X to halt.

8) In HyperTerminal select “Transfer” then choose “Receive File”.
Choose a location for the Configuration file on your computer desk top, choose X-Modem in the drop-down **Use receiving protocol** menu box and click “Receive”.
Hit any key on your keyboard to continue. Your screen should show something similar to the following:



The screenshot shows a dialog box titled "Xmodem file receive for Modem test". It contains several input fields and buttons. The "Storing as:" field is empty. The "Packet:" field is empty, and the "Error checking:" field is set to "CRC". The "Retries:" field is set to "0", and the "Total retries:" field is also set to "0". The "File:" field is empty. The "Last error:" field is empty, and the "Throughput:" field is empty. At the bottom, there is an "Elapsed:" field which is empty. There are two buttons at the bottom right: "Cancel" and "cps/bps".

When the transfer is complete you should see:

X-Modem Transfer Complete.

SYSTEM LOAD MENU

(R) Receive Configuration From Host (Z) Zeno Program Menu
(T) Transmit Configuration From Zeno (H) Help
(V) View Configuration & Menus (ASCII)

Precede The R Or T Command With An 'X' For X-Modem Transfer
(e.g. Enter 'XR' To Receive A Configuration File Via X-Modem)

Type Z<enter> then Q<enter> to exit the user menu and return to normal operation.

If you have any questions or would like any assistance, please contact our Customer Service Department:

206-682-6048 x157

support@coastalenvironmental.com

Procedure to Verify Barometer Accuracy in a ZENO® 3200 System

**IN ORDER TO PROPERLY SET THE BAROMETER READING YOU MUST HAVE
AN ACCURATE CALIBRATED LAB REFERENCE BAROMETER.**

- 1) Set up a HyperTerminal window in order to communicate with the ZENO® 3200 as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click "Yes".
 - C) In the "Connection Description" window type any name for the connection (such as "ZENO") and click "OK".
 - D) In the "Connect To" window go to "Connect using" and select an open comport on your computer (usually COM 1). Click "OK"
 - E) In the COM X Properties window the select the port settings as follows:
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: NoneClick "Apply" then "OK". Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show "Connected" with a timer counting up.
- 2) Connect Black ZENO® Communication Cable to Com3 on the ZENO® 3200 (DB9). Connect other DB9 connector of the cable to a serial Com port on the computer.
- 3) Apply power to the ZENO® 3200. On your HyperTerminal screen you should see a boot up message similar to:

Watchdog Reset
Please wait.../
ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41 CS B97B
(C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.
System Time = 07/03/02 17:25:02
Initializing Zeno 3200 .../

ZENO® 3200 is Data Sampling. Type 'U'<enter> to access the User Interface
- 4) Type U<enter> to access the User Menu.

5) Type **T<enter>** to access the Test Menu.

6) Type **S5,5<enter>** to view the output of the Pressure Sensor. You may initially see - 1,000,000.00, but you should see regular readings within a few seconds as in the following:

> s5,5

Note: Hit any key to halt output.

BP

-1000000.0000

1009.6403

1009.6403

1009.6403

1009.6403

1009.6403

1009.6403

7) Compare the readings from the pressure sensor with the readings from your reference barometer. There should be no more than 0.05 mb difference between the ZENO® 3200 barometer and the laboratory reference barometer. If the ZENO® 3200 barometer is determined to be out of tolerance, it must be sent to the manufacturer for recalibration or it must be replaced.

If you have any other questions or require assistance with your ZENO® 3200 system, please contact the Customer Service Department:

Email: support@coastalenvironmental.com

Phone: 206-682-6048 x157

Procedure to Enter Elevation Offset for Pressure in a ZENO® 3200 System

IF INTERCEPT® 1.17.33 or above IS RUNNING ON THE COMPUTER, TURN IT OFF AND STOP THE SERVICE (Start/Settings/ControlPanel/AdministrativeTools/Services. Right Click on CES INTERCEPT and choose Stop).

1) Set up a HyperTerminal window in order to communicate with the ZENO® 3200 as follows:

- A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
- B) If HyperTerminal asks you to make it your default terminal program click "Yes".
- C) In the "Connection Description" window type any name for the connection (such as "Wthrpk") and click "OK".
- D) In the "Connect To" window go to "Connect using" and select an open comport on your computer (usually COM 1). Click "OK"
- E) In the COM X Properties window the select the port settings as follows:

Bits per second: 9600

Data bits: 8

Parity: None

Stop bits: 1

Flow control: None

Click "Apply" then "OK". Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show "Connected" with a timer counting up.

2) Connect the black crossover cable to the DB9 port on the ZENO® 3200 (unless you already have a direct connection). Connect DB9 connector to serial com port on computer.

3) Apply power to the ZENO®. On your HyperTerminal screen you should see a boot up message similar to the following (if the ZENO® is already running you will not see the boot-up message):

Watchdog Reset

Please wait.../

ZENO-3200 using ZENOSOFT V2.02 Sep 10 2002 11:29:41 CS B97B

(C)opyright 1995-2002, Coastal Environmental Systems, Seattle, WA, USA.

System Time = 07/03/02 17:25:02

Initializing Zeno 3200 .../

ZENO® 3200 is Data Sampling. Type 'U'<enter> to access the User Interface

- 4) Type U<enter> to access the User Menu.
- 5) Type F<enter> to access the System Function Menu.
- 6) Item 7 should be **Barometer Elevation**.
- 7) You will want to enter the **FIELD ELEVATION** for the station in **meters**. For example; if the Field Elevation is 486 meters, the correct command would be c7/486<enter>.
- 8) Item 7 should now show 486 as in the example below.

SYSTEM FUNCTIONS MENU

(Cn/m) Change Item n To Value m	(B) BIT Names Menu
(S) System Date And Time	(I) Contact Information
(T) Calibrate Internal Temperature	(E) Save Parameters To EEPROM
(V) Program Version	(U) User Menu
(K) Constants Menu	(Q) Quit
(A) Audible Buzzer After Reboot Menu	(H) Help

Item 1: 1	(Primary Unit/Experiment ID)
Item 2: 2883	(Secondary Unit/Experiment ID)
Item 3: 1	(Data Dump Format)
Item 4: 1	(Real Time Output Format)
Item 5: 1	(Add Compass To Vane)
Item 6: -6	(Compass Offset)
Item 7: 486	(Barometer Elevation)
Item 8: M	(Bad Sensor Value Replace)
Item 9: <ESC>	(Passthrough Mode Escape Character)

- 9) Type E<enter> to save the change to the EEPROM.
You should see something similar to this on your screen:

Verifying parameters can be stored in EEPROM . . .
Saving parameters to EEPROM . . .
Saving sensor lists to EEPROM . . .
Saving process lists to EEPROM . . .
Saving data output lists to EEPROM . . .
Saving repeater lists to EEPROM . . .
Saving general serial scripts to EEPROM . . .
Saving constants to EEPROM . . .
796 out of 2048 bytes used in EEPROM.
Total EEPROM Writes = 22, EEPROM Checksum = 203.

- 10) Once the changes have been saved, type Q<enter> to exit the User Interface. The ZENO® 3200 should now run normally.

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1-206-682-6048 x157

Procedure to Enter Magnetic Deviation for Wind Direction in the System Function Menu of the ZENO® 3200

- 1) Close INTERCEPT® software.
- 2) On the computer go to Start\Control Panel\Administrative Tools\Services. Locate the CES INTERCEPT service, right click on it and click on “Stop”.
- 3) Once the service has stopped, set up a HyperTerminal window in order to communicate with the ZENO® as follows:
 - A) Locate and select the HyperTerminal program in Start/Programs/Accessories/Communications/HyperTerminal.
 - B) If HyperTerminal asks you to make it your default terminal program click “Yes”.
 - C) In the “Connection Description” window type any name for the connection (such as “Wthrpk”) and click “OK”.
 - D) In the “Connect To” window go to “Connect using” and select an open comport on your computer (usually COM 1). Click “OK”
 - E) In the COM X Properties window the select the port settings as follows:
 - Bits per second: 9600
 - Data bits: 8
 - Parity: None
 - Stop bits: 1
 - Flow control: NoneClick “Apply” then “OK”. Your HyperTerminal window should now be connected to the selected com port on your computer. The lower left hand side of the window should show “Connected” with a timer counting up.
- 4) If you do not have a connection to the ZENO® already, connect the black Com Cable between Comport 3 on the ZENO® (see pg 8 of the ZENO® 3200 User’s Manual) and a serial com port on your computer.
- 5) Type **u<enter>** to access the User Menu, then type **f<enter>** for the System Function Menu.

6) You should see settings similar to these:

SYSTEM FUNCTIONS MENU

(Cn/m) Change Item n To Value m	(I) Contact Information
(S) System Date And Time	(E) Save Parameters To EEPROM
(T) Calibrate Internal Temperature	(U) User Menu
(V) Program Version	(Q) Quit
(K) Constants Menu	(H) Help
(B) BIT Names Menu	

Item 1: 4204	(Primary Unit/Experiment ID)
Item 2: 0	(Secondary Unit/Experiment ID)
Item 3: 3	(Data Dump Format)
Item 4: 1	(Real Time Output Format)
Item 5: 0	(Add Compass To Vane)
Item 6: 0	(Compass Offset)
Item 7: 0	(Barometer Elevation)
Item 8:	(Bad Sensor Value Replace)
Item 9: <ESC>	(Passthrough Mode Escape Character)

7) If your wind sensor is aligned to magnetic North, you can enter an offset value that is the magnetic deviation for the location of the system installation. The magnetic deviation value can be determined from various Internet sites. A few can be found at this link on Coastal's website: <http://www.coastalenvironmental.com/magnetic-declination.shtml>.

8) Items 5 and 6 of the System Function Menu will need to be changed. In the System Function Menu type **c5/1<enter>**. Next, type **c6/xx<enter>**, where **xx** is the offset value determined in step 5. West declination is a positive value; East is a negative value. For example, if the magnetic deviation for your location is 11° East, the value entered in Item 6 would be -11(**c6/-11<enter>**).

9) Type **e<enter>** to save the changes to the EEPROM. Type **q<enter>** to exit the User Menu and return the Zeno to normal operation.

10) Restart the CES INTERCEPT service then start and log in to INTERCEPT®.

11) Verify that INTERCEPT® is showing the correct data.

If you have any other questions or need additional assistance, contact our Customer Service Department:

206-682-6048 x157

support@coastalenvironmental.com