AIRMAR®
TECHNOLOGY CORPORATION

WeatherCaster™

Software Guide

For WeatherStation® Instrument, GPS Receiver, Compass
with GPS Receiver, Heading Sensor, and Smart™ Sensor

Record the version number found on the Airmar
Sensor Support CD for future reference.

Version No._____Date of Purchase_____

17-460-01 rev. 03   05/27/08

Table of Contents

Introduction

The WeatherCaster™ software allows you to communicate with your sensor(s) through a personal computer when your installation includes a Converter or a Combiner. Weather and navigation information is conveniently displayed on your PC in both analog and digital formats.WeatherCaster software is designed to work with the Microsoft® Windows® XP operating system.

Data Displayed

The information displayed on the WeatherCaster screens will depend upon the sensor(s) that is installed. Your WeatherCaster may display some or all of the information below.

- Wind chill temperature
- Heat Index temperature
- Air temperature
- Apparent wind direction
- True wind direction
- Pitch and roll angle
- Heading
- Barometric pressure
- GPS satellites
- Dewpoint
- Relative humidity
- Water speed
- True wind speed relative to speed through water

Installing WeatherCaster Software

CAUTION: The screen resolution must be set at 1024 x 768 pixels for the WeatherCaster software to operate properly.

Installing the Application

1. Power your PC.
2. Insert the Airmar Sensor Support CD into the CD-ROM drive on your PC. The Sensor Support CD Browser window will appear (see Figure 1). Click the Install Software button.

Figure 1. Sensor Support CD Browser window

3. A second Sensor Support CD Browser window will appear (see Figure 2). Click the Install Application button.

Figure 2. Sensor Support CD Browser install window

4. The WeatherCaster Installation Wizard window will appear (see Figure 3). Click Next to continue.
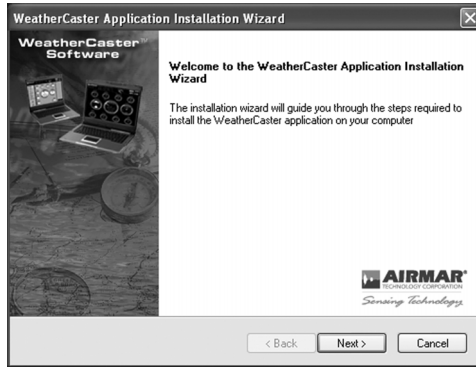

Figure 3. WeatherCaster Installation Wizard window

5. The WeatherCaster License Agreement window will appear (see Figure 4). Click the "I accept the terms of the license agreement" button to accept the agreement, then click Next to continue.

Figure 4. WeatherCaster License Agreement window

6. The Choose Destination Location window will appear (see Figure 5). Follow the screen prompts. Click Next to continue.
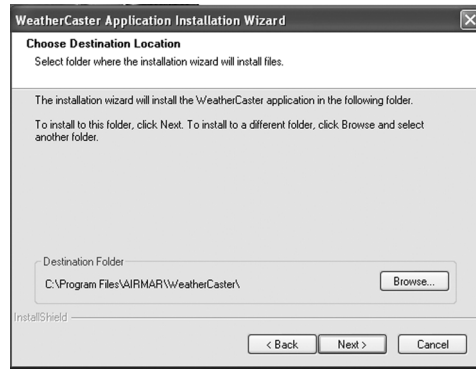

Figure 5. Choose Destination Location window

7. The Ready to Install window will appear (see Figure 6). Click Install. The Setup Status window will be displayed while the WeatherCaster software is being installed.
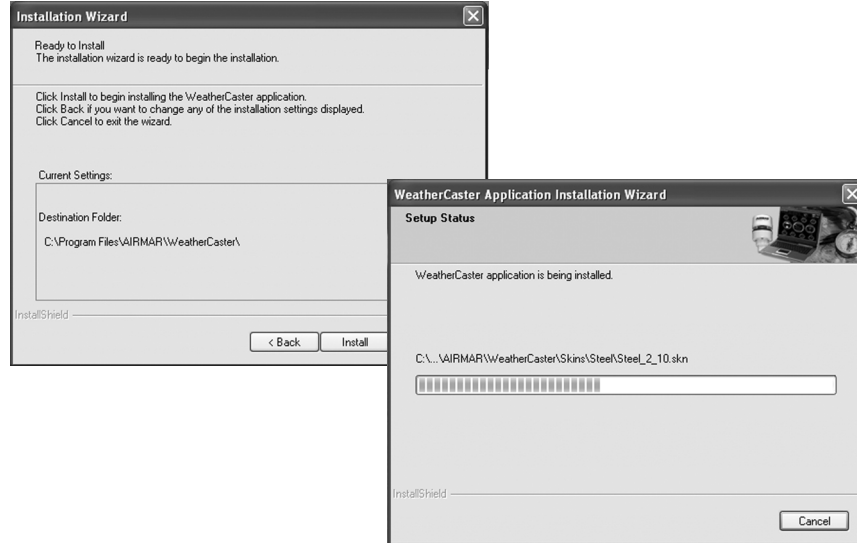
Figure 6. Ready to Install and Setup Status windows

8. The Installation Complete window will appear when the WeatherCaster software has been successfully installed (see Figure 7). Click Finish. The Sensor Support CD Browser window will appear (see Figure 2).

Figure 7. Installation Complete window

Note: If you are replacing an older version of the WeatherCaster software with a new one, you can begin using it now. **Do not install the device drivers again**.

Installing the Drivers

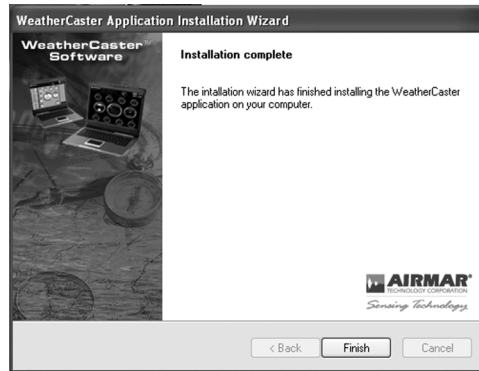**IMPORTANT**: Be sure the Airmar Sensor Support CD is inserted into the CD-ROM drive on your PC *before* the Combiner or Converter hardware is connected.

CAUTION: The driver installation is in TWO parts. Both drivers must be installed for the sensor to communicate with the WeatherCaster software.

CAUTION: If you are replacing an older version of the WeatherCaster software with a new one, you can begin using it now. **Do not install the device drivers again**.

The first driver is the USB Controller Driver. It is needed to convert the USB data packets to a serial data stream. The second driver, the USB Communications Port Driver, makes the USB connection appear as a communications port in the Windows Device Manager.

Copying the Device Drivers to the PC

1. The Sensor Support CD Browser window will appear (see Figure 2). Click the Install Drivers button to begin the process of copying the Airmar device drivers to your PC.
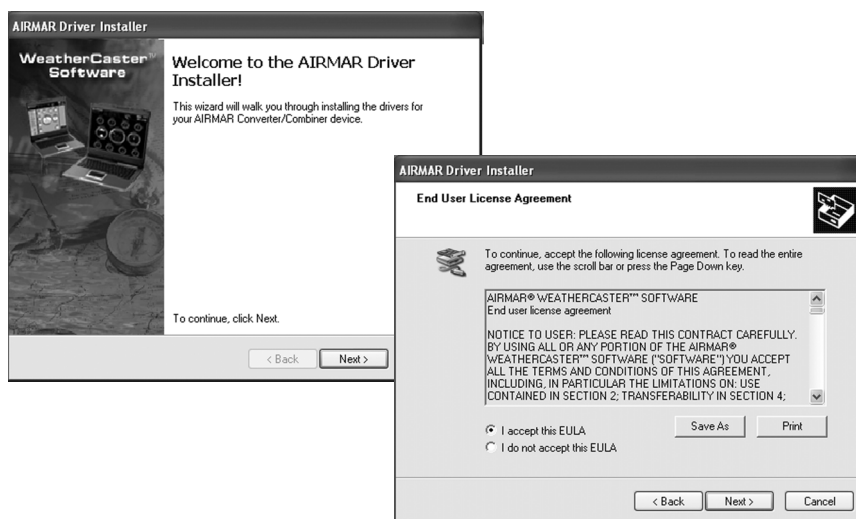2. The Driver Installer window will appear (see Figure 8). Click Next to continue.

Figure 8. Driver Installer and End User License Agreement windows

3. The End User License Agreement window will follow (see Figure 8). Click the "I accept this EULA" button to accept the agreement. Click Next to continue.

4. The Please Wait window followed by the Software Installation caution window will appear (see Figure 9). The drivers are not Microsoft Windows® certified. However, they have been tested for stable and reliable operation. Click Continue Anyway to proceed with the installation.

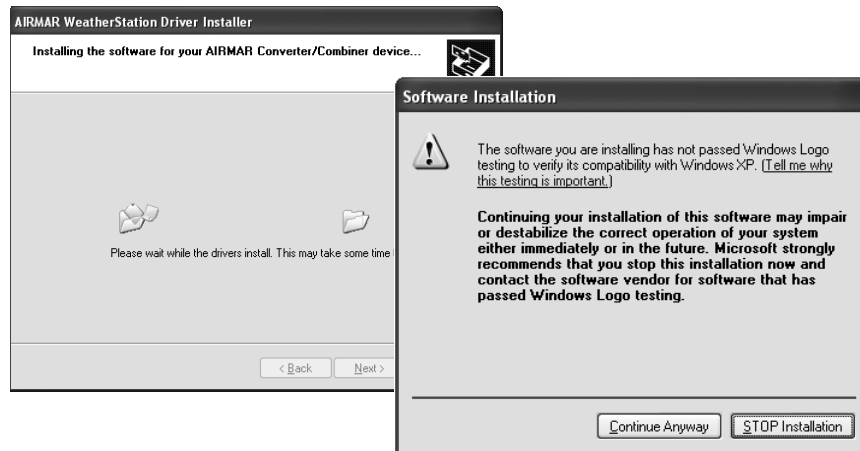Figure 9. Please Wait and Software Installation caution windows

5. The Please Wait and the Software Installation caution windows will appear again (see Figure 9). Click Continue Anyway to proceed with the installation.

6. Please wait while the copying takes place. When it is complete, the Congratulations window will appear (see Figure 10). Click Finish.

Figure 10. Congratulations window

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Installing the USB Controller Driver

1. Power the Converter or Combiner.

2. Plug the USB cable into an open USB port on your PC.

3. The Found New Hardware Wizard window will appear (see Figure 11).
   Click "NO, not this time" to allow the driver installation. Click Next to continue.

Figure 11. Found New Hardware Wizard window

4. Another Found New Hardware Wizard window will appear (see Figure 12).
   Click "Install the software automatically". Click Next to continue.

Figure 12. Found New Hardware Wizard window continued

5. The Please Wait window followed by the Hardware Installation caution window will appear (see Figure 13). The USB Controller Driver is not Microsoft Windows® certified. However, it has been tested for stable and reliable operation. Click Continue Anyway to proceed with the installation.
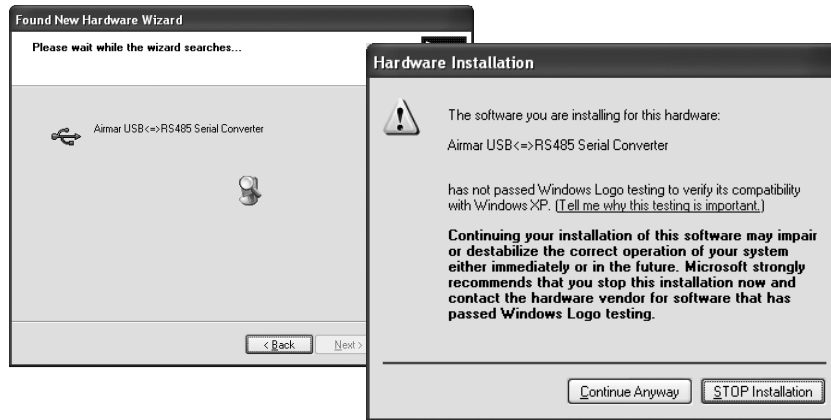

Figure 13. Please Wait window and Hardware Installation Caution window

6. Another Found New Hardware Wizard window will appear (see Figure 14). Click Finish to install the USB Controller Driver. Then wait for the Found New Hardware Wizard window to appear again so that the second driver can be installed.

Figure 14. Completing the Found New Hardware Wizard window

IMPORTANT: The new hardware wizard must run TWICE for a complete installation.

Installing the USB Communications Port Driver

1. When the Found New Hardware Wizard window appears again, it will guide you through the USB Communications Port Driver installation, repeating steps 3 and 4 on page 11. When the installation is complete, some computers will display the "Your new hardware is installed and ready to use." icon in the bottom right of the taskbar (see Figure 15).

Figure 15. "Your new hardware is installed and ready to use" icon

2. Close the browser window. Eject the Airmar Sensor Support CD and store it in a safe place.

NOTE: A new communications port will be assigned:

- If a different Converter/Combiner is connected
- If an existing Converter/Combiner is connected to a different communications port

  The New Hardware Wizard will need to run twice again. The Found New Hardware Wizard window will appear. Follow the prompts until both the USB Controller Driver and the USB Communications Port Driver are installed. When completed, some computers will display the "Your new hardware is installed and ready to use." icon in the bottom right of the taskbar (see Figure 15).

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Setting Up WeatherCaster Software

After the WeatherCaster software is successfully installed, click the WeatherCaster icon on your PC's desktop or Start>Program>Airmar>WeatherCaster (see Figure 16).

Figure 16. WeatherCaster icon

When the WeatherCaster software opens, you will see a Setup screen with gauges and dials (see Figure 17). The gauges display the data being sent from the sensor in both analog and digital format. The dials along the left side are settings that can be changed by the user. *This screen is for setting up the display only.*

NOTE: Your screen may look different, depending upon the sensor(s) that is installed.
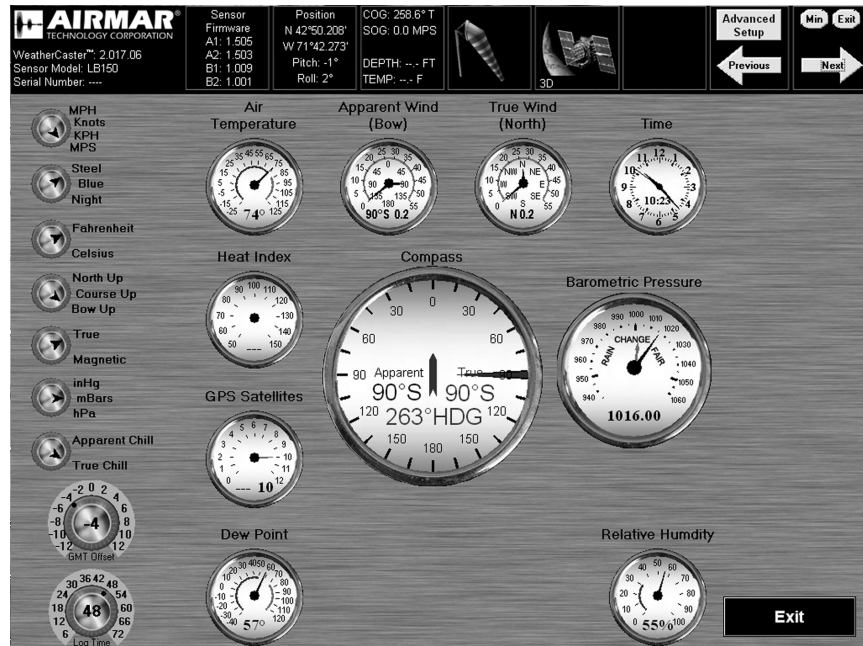

Figure 17. Setup Screen

Setting Dials

Wind Speed Setting Dial

This dial allows you to display wind speed in the following units of measure.

MPH
Knots
KPH
MPS

- MPH—Miles Per Hour
- Knots—1 Knot = 1.15 Miles Per Hour
- KPH—Kilometers Per Hour
- MPS—Meters Per Second

To change the setting, click the text to the right of the dial.

Background Color Dial

This dial allows you to choose the screen background.

Steel
Blue
Night

- Steel
- Blue
- Night

To change the setting, click the text to the right of the dial.

Temperature Setting Dial

This dial allows you to display all of the temperature readings in the following units of measure.

Fahrenheit
Celsius

- Fahrenheit
- Celsius

To change the setting, click the text to the right of the dial.

Compass Orientation Dial

This dial allows you to orient the compass display one of three ways.

North Up
Course Up
Bow Up

- North Up—The traditional orientation in which north is displayed at the top of the compass. This orientation will provide true wind readings relative to North.
- Course Up—The orientation in which the direction of travel is displayed at the top of the compass. This orientation will provide true wind readings relative to the course of the vessel/vehicle.
- Bow Up—The top of the compass will display the direction that the bow/vehicle is pointing. This orientation will provide wind readings relative to the bow/front of the vehicle. The compass will display $0 - 180º$ on the port side from bow to stern. And it will display $0 - 180º$ on the starboard side from bow to stern. This setting is useful when the vessel/vehicle is underway, as it helps determine how the wind will affect the direction and speed.

To change the setting, click the text to the right of the dial.

True

Magnetic

True or Magnetic North Dial

This dial allows you to set the compass using either true or magnetic north.

- True North—The direction to the geographic North Pole
- Magnetic North—The direction to the magnetic North Pole

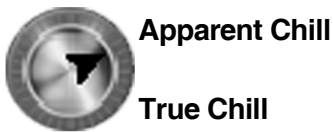To change the setting, click the text to the right of the dial.

inHg

mBars

hPa

Barometric Pressure Setting Dial

This dial allows you to display the barometric pressure in the following units of measure.

- inHg—Inches of Mercury
- mBars—Millibars
- hPa—HectoPascal

To change the setting, click the text to the right of the dial.

Apparent Chill

True Chill

Wind Chill Setting Dial

This dial allows the sensor to calculate the wind chill temperature based on either apparent or true wind data:

- Apparent wind
- True wind

To change the setting, click the text to the right of the dial.

GMT Offset Dial

The Greenwich Mean Time (GMT) Offset Dial allows you to change the time clock, so it displays the time in your current location. After identifying your current Time Zone, change the setting by clicking on the number that corresponds to your Time Zone.

Log Time Interval Dial

The sensor saves data for a set period of time, 72 hours. This dial allows you to choose the length of time that data will be displayed. The log time can be adjusted in six-hour intervals from 6 – 72 hours. To change the setting, click the number that corresponds to the length of time that you would like data to be displayed.

Exit Button

To exit WeatherCaster, click Exit.

Advanced Setup Button

To change settings in the sensor firmware, click Advanced Setup.

Previous Arrow

To return to the previous display screen, click the Previous arrow. (The Weather-Caster software has three screens.)

Minimize and Exit Buttons

To minimizes the screen, click Min.
Close the WeatherCaster application by clicking Exit.

Next Arrow

To move to the next display screen, click the Next arrow. (The WeatherCaster software has three screens.)

Using WeatherCaster Software

WARNING: Navigation Aid Only—The WeatherCaster software is a means to display weather and navigation data. It is an aid to navigation only and should never be solely relied upon. It is not a replacement for traditional navigation aids and techniques. Only official government charts contain all the information needed for safe navigation. And as always, the end-user is responsible for their prudent use.

The WeatherCaster software has three display screens. To move between screens, click the Next or the Previous arrow in the top right corner of the screen.

• Setup Screen—This screen contains gauges with dials along the left side. The dials have settings that can be changed by the user (see Figure 17).

• Analog Gauge Screen—This screen displays the data being sent from the sensor(s) on gauges in both analog and digital formats (see Figure 18).

• Large Compass and Digital Readout Screen—This screen displays a large compass on the left and data being sent from the sensor(s) in digital format on the right (see Figure 19 on page 23).

Analog Gauge Screen

Gauges display the data being sent from the sensor(s) (see Figure 18). Each gauge displays data in both analog and digital formats.
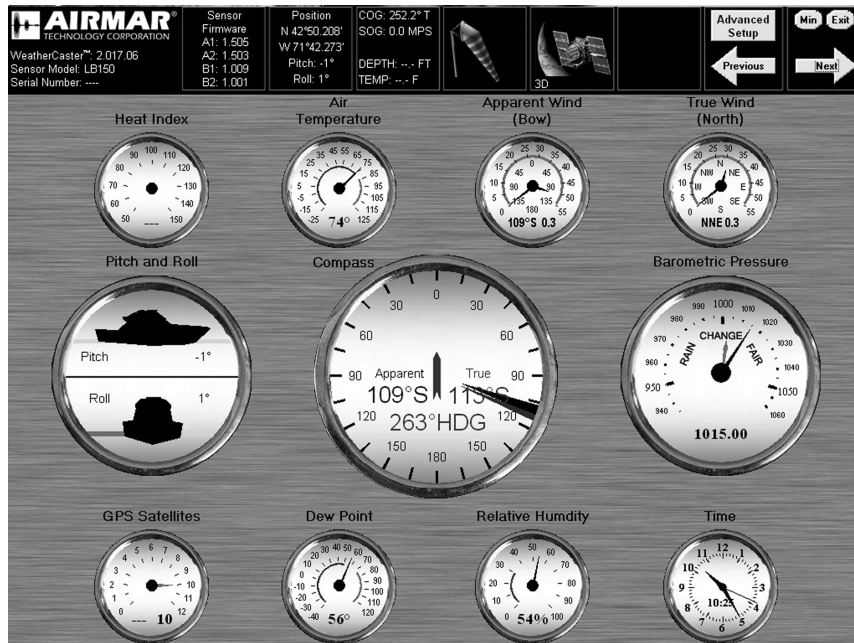

Figure 18. Analog Gauge Screen

High and Low Readings

Some gauges display a colored arc. A blue arc shows the lowest reading within a 24 hour period. A red arc show the highest reading within a 24 hour period. White space between a blue and a red arc shows the range of the readings within a 24 hour period. Blue and red arcs may appear on all gauges except the Pitch and Roll gauge, the Compass, the Barometric Pressure gauge, and the Time clock.

Displaying Historical Data

You can view historical data for each gauge except the Pitch and Roll gauge, the Compass, and the Time clock. When you right click on a gauge, a graph will appear. The graph displays the unit of measure on the left and time at the bottom. A red line will indicate the history.

Gauges

Wind Chill Gauge

Wind Chill

This gauge uses a needle to indicate the wind chill temperature with a digital readout at the bottom. Note that Wind Chill information only appears when the air temperature is less than 10ºC (50ºF) and the wind speed is greater than 2.6Kn (3MPH). If there is an active humidity sensor, the Wind Chill gauge will be replace by the Heat Index gauge when the air temperature is at least 26.7ºC (80ºF) and the relative humidity is greater than 40%.
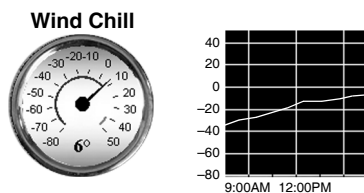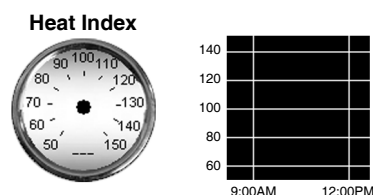
To view historical wind chill data, right click the gauge. A graph will appear as shown. To return to the Wind Chill gauge, right click the graph.

Heat Index Gauge

PB100, LB100, and LB150 only

Heat Index

This gauge uses a needle to indicate the heat index temperature with a digital readout at the bottom. Note that Heat Index data appears only when the air temperature is at least 26.7ºC (80ºF) and the relative humidity is greater than 40%.
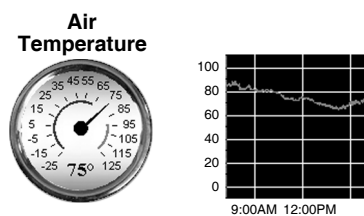
To view historical heat index data, right click the gauge. A graph will appear as shown. To return to the Heat Index gauge, right click the graph.

Air Temperature Gauge
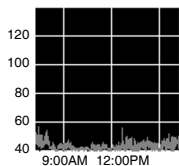
Air Temperature

This gauge uses a needle to indicate the air temperature. There is also a digital readout at the bottom.

To view historical air temperature data, right click the gauge. A graph will appear as shown. To return to the Air Temperature gauge, right click the graph.
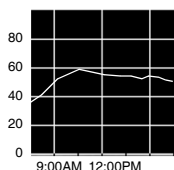
**Apparent Wind
(Bow)**

Apparent Wind Gauge

This gauge uses needles to indicate the apparent wind speed and direction relative to the bow/front of the vehicle. The long needle points to the wind speed, and the short needle points to the wind direction. There is also a digital readout at the bottom.

To view historical apparent wind speed data, right click the gauge. A graph will appear as shown. To return to the Apparent Wind gauge, right click the graph.

**True Wind
(North)**

True Wind Gauge

This gauge uses needles to indicate the true wind speed and direction relative to north. The long needle points to the wind speed, and the short needle points to the wind direction. There is also a digital readout at the bottom.

To view historical, true wind speed data, right click the gauge. A graph will appear as shown. To return to the True Wind gauge, right click the graph.

Pitch and Roll
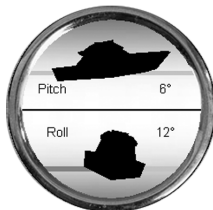
Pitch and Roll Gauge

This gauge uses boat icons to indicate the pitch and roll of the vessel. The average angle of pitch and the average angle of roll is displayed digitally in degrees.

NOTE: For pitch and roll values to be completely accurate, the sensor would need to be installed at the vessel's center of gravity—at the waterline. However this is not recommended, because it would interfere with GPS and weather readings. Note that the higher the sensor is above the waterline, the greater the error in the pitch and roll readouts.

Compass

Compass

The Compass displays the true wind direction, the apparent wind direction, and the heading. No historical data is collected.

•Apparent wind direction is indicated by a black/white needle and a black/white digital readout on the left of the gauge. The port and starboard indicators (P and S) always appear regardless of the compass orientation.

•True wind direction is indicated by a red/green needle and a red digital readout on the right of the gauge.

• Heading is displayed as a blue arrow in the center of the gauge and indicates the direction that the vessel/vehicle is moving. The heading is also digitally displayed in the lower center in blue.

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• Port and starboard Indicators appear when the Compass is orientated in the Bow Up mode. A letter "P" representing Port or an "S" representing Starboard will be displayed to the right of both the true wind direction and the apparent wind direction digits. The letters reference where the wind is coming from relative to the bow of the vessel.

Barometric Pressure

This gauge uses a black/white needle to indicate the current barometric pressure. A red needle is the reference marker. By aligning the red needle with the black/white needle, it is possible to see changes in barometric pressure over time. A digital readout of the current barometric pressure is found at the bottom of the gauge.
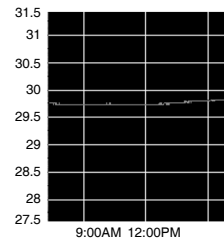
Left click and hold the mouse over the red reference needle to align it with the black/white needle. To view historical barometric readings, right click the gauge. A graph will appear as shown. The red line indicates the barometric pressure over a period of time. The green dot indicates when the reference needle was set. To return to the Barometric Pressure gauge, right click the graph.

GPS Satellite Gauge

This gauge uses a long needle to indicate the number of satellites in view. The short needle indicates how many satellites are being used in the calculation to determine current position. There is also a digital readout at the bottom. The numeral on the left indicates the number of satellites in view. The numeral on the right indicates the number of satellites used to calculate a fix.
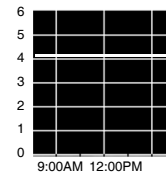
NOTE: Four or more satellites are required for a 3D fix.

To view historical GPS data, right click the gauge. A graph will appear as shown. To return to the GPS Satellite gauge, right click the graph.

Dewpoint Gauge
PB100, LB100, and LB150 only

This gauge uses a needle to indicate the dewpoint temperature. There is also a digital readout at the bottom.

To view historical dew point data, right click the gauge. A graph will appear as shown. To return to the Dewpoint gauge, right click the graph.

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Relative Humidity

Relative Humidity Gauge
PB100, LB100, and LB150 only

This gauge uses a needle to indicate the relative humidity as a percentage. There is also a digital readout at the bottom.
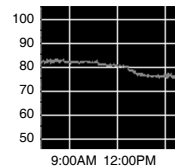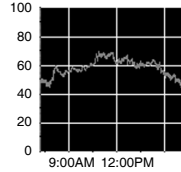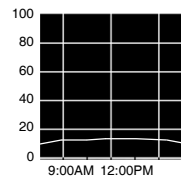
To view historical humidity data, right click the gauge. A graph will appear as shown. To return to the Relative Humidity gauge, right click the graph.
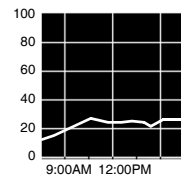
Water Speed

Water Speed Gauge
This gauge will appear only if you have installed a sensor measuring speed through the water, and it is connected through an optional Combiner. The gauge uses a needle to indicate speed through the water. There is also a digital readout at the bottom.

To view historical water speed data, right click the gauge. A graph will appear as shown. To return to the Water Speed gauge, right click the graph.

True Wind (Water)

True Wind Speed Relative to Speed Through Water Gauge
This gauge will appear only if you have installed a sensor measuring speed through the water, and the sensor is connected through an optional Combiner. True wind speed relative to speed through water cannot be calculated using GPS readings.

The gauge uses needles to indicate true wind speed and direction relative to north, based on speed through water. The long needle points to the wind speed, and the short needle points to the wind direction. There is also a digital readout at the bottom.

To view historical data, right click the gauge. A graph will appear as shown. To return to the True Wind Relative to Water gauge, right click the graph.

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The Large Compass and Digital Readout Screen

To view the Large Compass and Digital Readout Screen, click the Next arrow at the top right of the display. This screen shows a large compass on the left and readings in digital format on the right (see Figure 19). This screen does *not* display historical data.

Figure 19. Large Compass and Digital Readout Screen

Compass

The Compass displays the true wind direction, the apparent wind direction, and the heading (see Figure 19).

- Apparent wind direction is indicated by a black needle and a black digital readout on the left of the gauge. The port and starboard indicators (P and S) always appear regardless of the compass orientation.

- True wind direction is indicated by a red needle and a red digital readout on the right of the gauge.

- Heading is displayed as a blue arrow in the center of the gauge and indicates the direction that the vessel/vehicle is moving. The heading is also digitally displayed in the lower center in blue.

- Port and starboard Indicators appear when the Compass is orientated in the Bow Up mode. A letter "P" representing Port or an "S" representing Starboard will be displayed to the right of both the true wind direction and the apparent wind direction digits. The letters reference where the wind is coming from relative to the bow of the vessel.

Digital Readings

The right side of the screen displays the following readings (see Figure 19):

- Apparent wind speed and direction relative to the bow
- True wind speed and direction relative to north
- Air temperature
- Wind chill temperature or heat index temperature— The heat index temperature will appear only if a humidity sensor is present and the air temperature is at least 26.7ºC (80ºF) and the relative humidity is greater than 40%. (*PB100, LB100, and LB150 only*)
- Barometric pressure
- Time—Displayed in a 12 and a 24 hour format
- Relative humidity (*PB100, LB100, and LB150 only*)
- Dewpoint (*PB100, LB100, and LB150 only*)
- Water speed—It will appear only if you have installed a sensor measuring speed through the water, and it is connected through an optional Combiner.
- True wind relative to water— It will appear only if you have installed a sensor measuring speed through the water, and it is connected to a Combiner.

Data Boxes

There are seven data boxes at the top of each screen (see Figure 20).
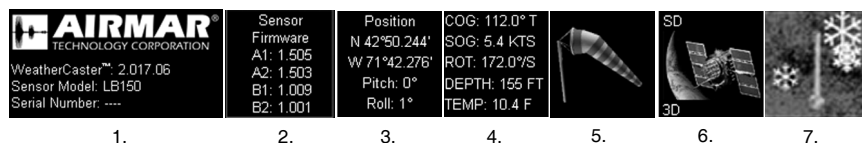

| 1. | 2. | 3. | 4. | 5. | 6. | 7. |

Figure 20. Data boxes

1. This box displays the WeatherCaster software version number as well as the model number and serial number/name of the sensor that is currently being monitored.

2. This box displays the firmware version that is installed within the sensor itself.

3. This box displays the vessel/vehicle's current position on the globe in latitude and longitude as determined using GPS. The average angle of pitch and the average angle of roll is displayed digitally in degrees.

4. This box displays the vessel/vehicle's speed over ground (SOG) and course over ground (COG) which is calculated using GPS. If you have an Airmar Smart Sensor connected through an optional Combiner, it will also display water depth and water temperature.

5. This box displays the wind-speed icon that relates to the actual wind speed. The icon will change as the wind speed increases or decreases. A wind sock indicates a wind speed of 0 to 20 knots, while a flag indicates higher wind (see Figure 21).

| 15–20 knots | Small Craft Warning | Gale Warning | Tropical Storm Warning | Hurricane Warning |

Figure 21. Wind-speed icons
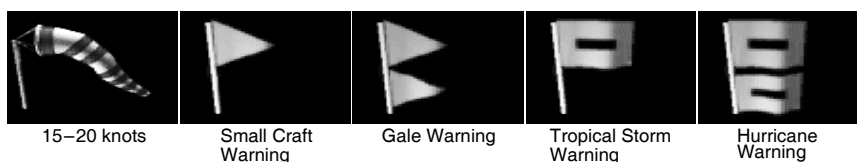
6. This icon indicates if the GPS inside the sensor has a satellite fix. When the icon is flashing, there is no GPS fix. A stable icon (no flashing) indicates a fix.

   • 2D indicates a 2D fix.
   • 3D indicates a 3D fix.
   • SD indicates the unit has a satellite differential fix, either WAAS or EGNOS.

7. This icon will appear only when the air temperature is below 0ºC (32ºF).

Advanced Setup— Firmware Settings

The firmware resides within the sensor itself and is separate from the WeatherCaster software. To access these firmware settings, click the Advanced Setup button found at the top right of each WeatherCaster screen.

There are tabs at the top of the Advanced Setup window (see Figure 22). Click a tab to access the relevant window. At any time, return to the WeatherCaster display screen by clicking Close.

Figure 22. Advanced Setup window
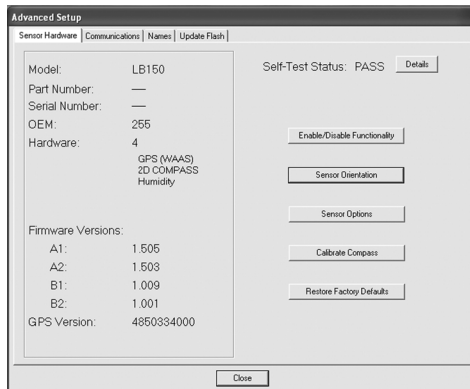
Sensor Hardware Tab

Information about your sensor and its software is displayed in the box on the left (see Figure 22).

Self-test Status

Your sensor performs a self-test each time the unit is powered ON. Click Details to check the results of a self-test. A Self-test Results window will appear (see Figure 23). Click OK to continue.
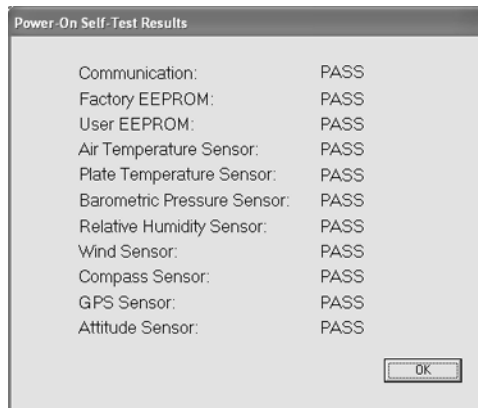

Figure 23. Self-test Results window

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Enable/Disable Functionality

You can enable or disable each of the NMEA 0183 sentences sent by the sensor and specify the number of seconds between the transmission of each sentence. Click the Enable/Disable Functionality button to access the window (see Figure 22).

NMEA 0183 Display Settings tab

Select the NMEA 0183 Display Settings tab to modify settings when *not* using the WeatherCaster software (see Figure 24). These settings will be in effect whenever the sensor is powered ON.
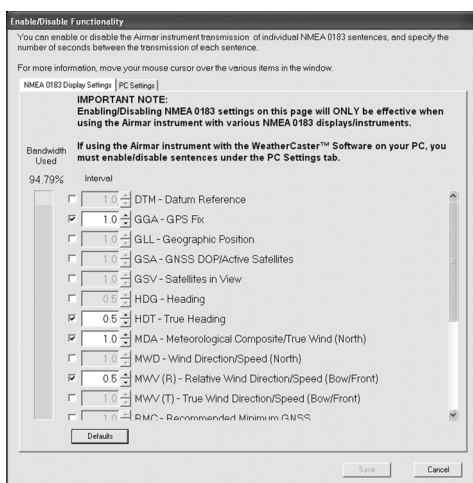
Figure 24. NMEA 0183 Display Settings window

NOTE: The Bandwidth Used cannot exceed 100%. Reduce one or more intervals until the color is yellow.

- Green   Adequate bandwidth
- Yellow   Approaching maximum bandwidth (may lose some data)
- Red   Maximum bandwidth exceeded

Click Defaults to return to the factory settings. Click Save to accept the changes. Note that the Save button is enabled only after changes have been made.

PC Settings

In the Enable/Disable Functionality window, click the PC Settings tab to modify the settings when you are using the sensor with the WeatherCaster software running (see Figure 25). The settings will remain in effect even after the sensor is powered OFF and ON again when the WeatherCaster software is running.
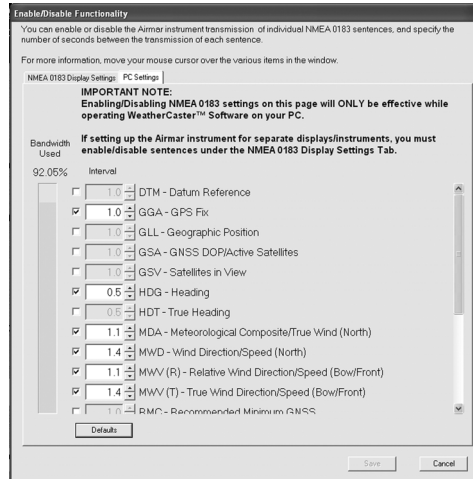

Figure 25. PC Settings window

Sensor Orientation

Depending upon the mounting location of the sensor, the azimuth, pitch, and/or roll settings may need to be changed. Click the Sensor Orientation button to access the window (see Figure 22). To change a setting, click Change and follow the screen instructions (see Figure 26). To return all settings to zero, click Zero. For help in setting the azimuth, pitch, and roll, click Run Assistant. To save changes, click Save.

Figure 26. Sensor Orientation window
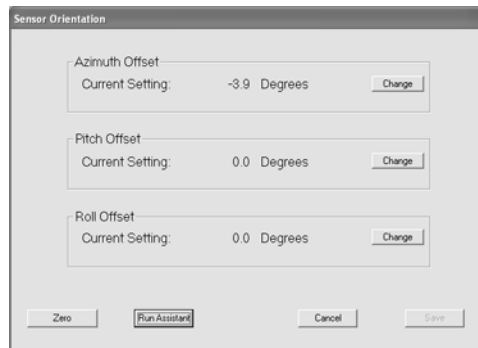
Azimuth Offset

If the sensor is *not* installed pointing forward and parallel to the keel (centerline), enter the offset angle in the text box (see Figure 27). (To calculate the azimuth offset angle, compare the sensor's compass reading to an independent compass reading.) To return the setting to zero, click Zero. Click OK to accept the change.

Figure 27. Azimuth Offset window

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Pitch Offset

If the sensor is *not* installed perpendicular to the waterline, enter the pitch offset angle in the text box (see Figure 28). (To measure the pitch offset angle, place an angle finder against the side of the sensor and facing forward.) To return the setting to zero, click Zero. Click OK to accept the change.
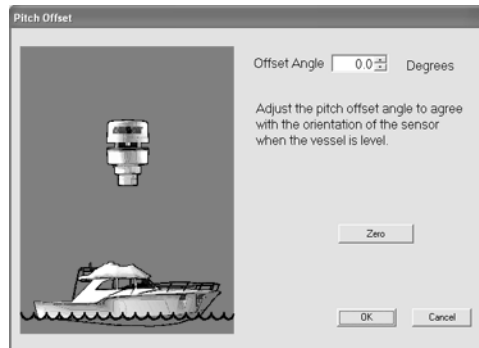
Figure 28. Pitch Offset window

Roll Offset

If the sensor is *not* installed vertically relative to the port-starboard axis, enter the roll offset angle in the text box (see Figure 29). (To measure the roll offset angle, place an angle finder against either the port or starboard side of the sensor.) To return the setting to zero, click Zero. Click OK to accept the change.
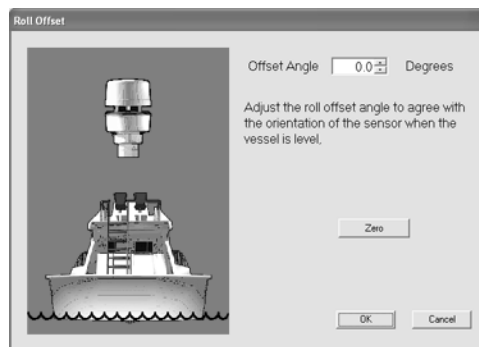
Figure 29. Roll Offset window

Run Assistant

For help in setting the azimuth, pitch, and roll offset angles, click Run Assistant in the Sensor Orientation window (see Figure 26).

The Azimuth Orientation window will open (see Figure 30). If the sensor is *not* installed with the alignment tabs or the word "forward" pointing forward and parallel to the keel (centerline), enter the offset angle in the text box. (To calculate the azimuth offset angle, compare the sensor's compass reading to an independent compass reading.) To return the setting to zero, click Zero. Click Next to accept the change and continue.
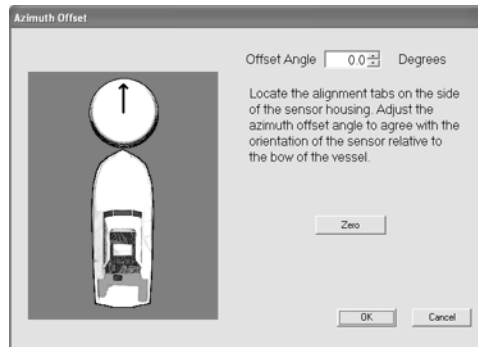

Figure 30. Azimuth Offset window

The Pitch and Roll Offset window will open (see Figure 31). Follow the screen instructions and the sensor will compensate for the pitch and roll. To return the setting to zero, click Zero. Click Next to accept the change and continue.

Figure 31. Pitch and Roll Offset window
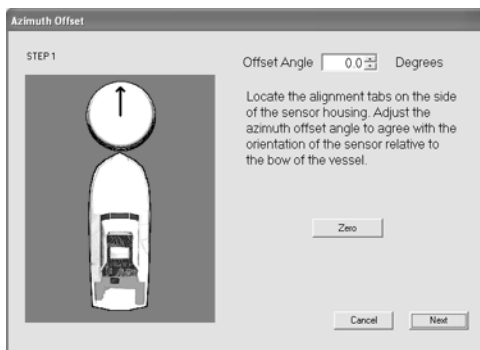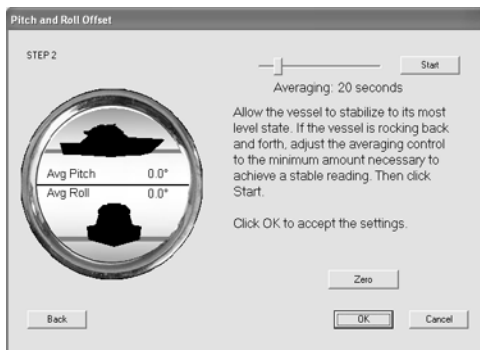
Sensor Options

It is possible to make choices that will affect how the sensor makes some calculations. In the Advanced Set-up window, click the Sensor Options button. When the window opens, click the tab at the top to access the Altitude, GPS, True Wind, and Damping options windows (see Figure 22).

Altitude

A fixed altitude setting can be used to calculate a more accurate GPS position when it is operating in the 2D mode and a more accurate barometric pressure reading (see Figure 32). In the Fixed Altitude field, enter an altitude relative to sea level from 0 to 10000.00 to the nearest 0.01 meter.
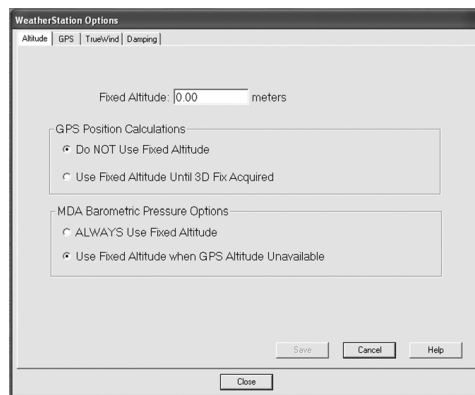
Figure 32. Altitude options window

GPS Position Calculations—To calculate a more accurate 2D fix, an altitude offset can be programed into the sensor (see Figure 32). Enter an altitude in the Fixed Altitude field. Select "Use Fixed Altitude until 3D fix acquired."

MDA Barometric Pressure Options—You can enable correcting for altitude when the altitude is not available due to the GPS not having a 3D fix (see Figure 32). Enter an altitude in the Fixed Altitude field. Select "Use Fixed Altitude when GPS altitude unavailable."

For more information, click Help. To accept the change(s), click Save.

GPS

GPS Options—It is possible to restrict the operation of the GPS to only allow 3D fixes. By selecting "Use 3D fix only", the sensor will not report a fix until it has achieved a 3D fix (see Figure 33). To re-enable the automatic selection of 2D versus 3D fix calculations, click the "Automatically select 2D/3D fixes" button.
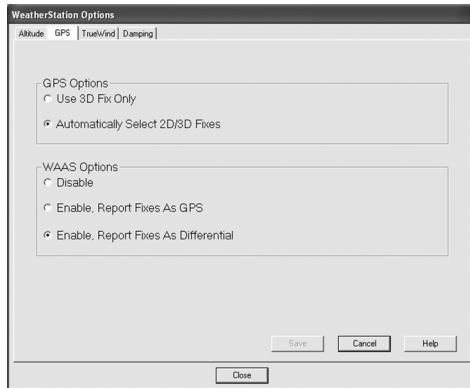
Figure 33. GPS options window

WAAS Options—If the internal GPS receiver is WAAS enabled, the WAAS options will be available (see Figure 33). WAAS enabled GPS receivers utilize the Wide Area Augmentation System to provide more accurate positioning data. Click Disable, Enable—report fixes as GPS, or Enable—report fixes as differential.

For more information, click Help. To accept the change(s), click Save.

True Wind

Course-Over-Ground (COG) is used to calculate the True Wind direction and speed. To disable the use of COG and substitute the internal compass heading in the calculation, *un-click* the check box (see Figure 34). For more information, click Help. To accept the change, click Save.
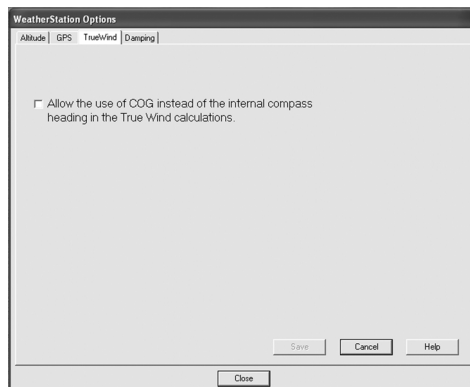
Figure 34. True Wind Options options window

Damping

Damping is used to control electronic noise for more accurate pitch and roll and compass. readings. To change a damping coefficient, enter the number in the appropriate text box (see Figure 35). For more information, click Help. To accept the change, click Save.
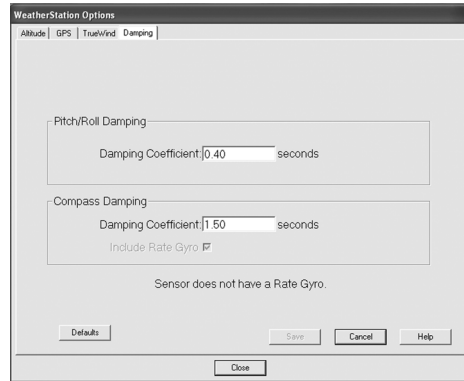
Figure 35. Damping options window

Restore Factory Defaults

In the Advanced Setup window, all settings can be returned to the factory defaults. Click Restore Factory Defaults (see Figure 36). Before the default settings are restored, the Confirm Reset window will appear. Click OK to accept the default settings.
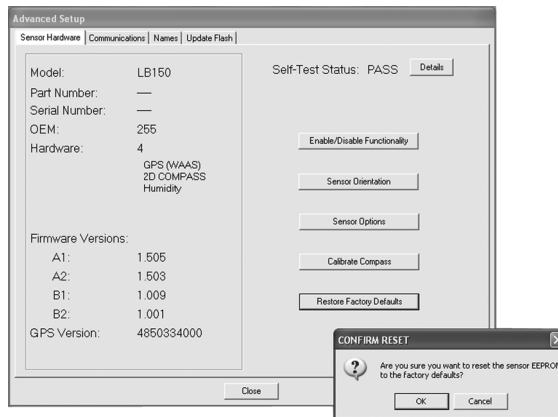
Figure 36. Advanced Setup and Confirm Reset windows

Communications Tab

The WeatherCaster software is set-up to auto-detect a PC communications port. You can set-up or modify communication to a sensor. In the Advanced Set-up window (see Figure 22), click the Communications tab to access the Communications window (see Figure 37). In the Setup NMEA 0183 Communications Port area, choose either the Auto Detect or Manually Select button.
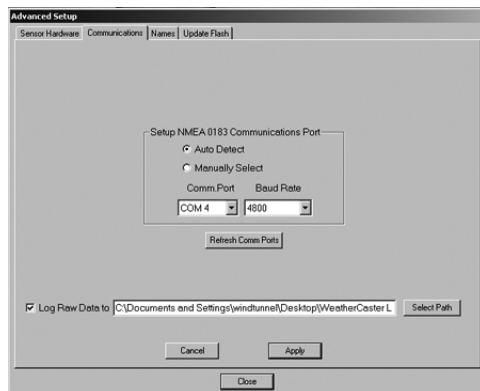
Figure 37. Communications window

Auto Detect

If Auto Detect is chosen, all available ports and baud rates, starting with the selected port and baud rate, will be checked for a sensor response.

1. Click the Auto Detect button.

2. Click the Refresh Comm. Ports button.

3. Click Apply.

NOTE: The WeatherCaster software may not auto-detect the sensor if more than one NMEA device is connected to the computer. You may need to manually select the communications port.

Manually Select

If Manually Select is chosen, only the selected port and baud rate will be checked for a sensor response.

1. Click the Manually Select button.

2. Click the Refresh Comm. Ports button.

3. Select the Communications Port and the Baud Rate using the drop-down menus.
   - Converter: 4800
   - Combiner: 38400
   - Combiner purchased before Sept. 9, 2006: 57600

4. Click Apply. When the sensor is detected, the WeatherCaster screen will appear automatically.

No Sensor Detected

If no sensor is found using the previously selected communication settings, the Communications Interface Setup window will appear with the message, "No sensor detected with current communication settings." Then the No Sensor Detected window will ask for a decision (see Figure 38).

Choose Abort, Retry, or Ignore.

- If Abort is selected, none of the previously modified setting will be saved, and the Communications window will be redisplayed.

- If Retry is selected, another attempt to establish communication will be made.

- If Ignore is selected, the modified settings will be saved even though no communication has been established. On start-up, the WeatherCaster screen will appear.
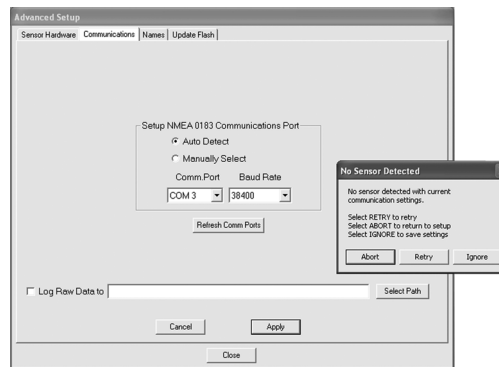
Figure 38. Communications and No Sensor Detected windows

Raw Data Logging

Raw data logging can also be enabled using the Communications window (see Figure 38). When raw data logging is enabled, all data received from the attached sensor is logged to a data file. The name of the file will be mmm_dd_yyyy_sn_0183.LOG.

- mmm is the month the data was received

- dd is the day the data was received

- yyyy is the year the data was received

- sn is either the serial number of the sensor (if known) or the port assigned to the sensor.

A new raw data log file will be created for each new serial number/port and for each new day. The data within the log file will be in readable format.

Click the check box in front of "Log Raw Data to" and select the desired path of the log files. Then click Apply. To disable raw data logging, uncheck the box to the left of "Log Raw Data to" and then click Apply.

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Names Tab

When a sensor is detected by the WeatherCaster software, it is identified by its serial number. However, a sensor can be given a name. This is useful to easily identify the origin of data, if more than one sensor will be operating at the same time. The name or serial number (if no name is assigned) will be displayed in the upper left corner of the WeatherCaster screen (see Figure 39).

Figure 39. Sensor designation

To add, change, or delete names, open the Advanced Setup window and click the Names tab (see Figure 22). Follow the screen prompts (see Figure 40). To accept the changes, click Apply.
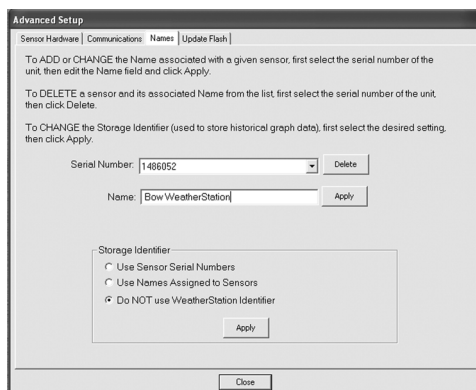
Figure 40. Names window

NOTE: The user is allowed to modify sensor names from any instance of the WeatherCaster software. The new name for the currently connected sensor will be automatically displayed. However, if other WeatherCaster instances are currently running, the new sensor names associated with those instances will not be automatically viewable. The other sensor name changes will become effective upon starting a new instance of WeatherCaster for that sensor.

Storage Identifier

It is possible to identify the origin of historical data that is stored and displayed by the WeatherCaster software. In the Storage Identifier area of the Names window, you can choose to store data by sensor serial number, by sensor name, or with no identifier (see Figure 40). Click the appropriate button and click Apply to accept the choice.

NOTE: If multiple instances of the WeatherCaster software are running, the sensor in use must be identified by a serial number or a name.

Deleting a Sensor & Its Stored Historical Information

CAUTION: It is recommended that only sensors that are no longer in service be deleted.

The Names screen also allows the user to delete all stored information for any sensor (see Figure 40). Select the desired serial number from the Serial Number field and click the Delete button. That sensor and all the data associated with it will be deleted. However, if another instance of the WeatherCaster software is currently connected to the sensor being deleted and the sensor is still running, the WeatherCaster software controlling it will reinitialize that sensor's information and begin collecting historical data.

Update Flash Tab
Updating Sensor Firmware

Periodically, Airmar will release updated versions of the sensor firmware that resides within the sensor itself. (This software is separate from the WeatherCaster software.) The latest version of the sensor firmware with updates and enhancements will be available for download through an email to you, from Airmar's website www.airmar.com, or a CD can be mailed by Airmar's technical support personnel.

CAUTION: **Turn OFF or disconnect all other NMEA devices from any Airmar Combiner.** Be sure the sensor is the only active device connected to the Combiner.

CAUTION: Be sure the most recent version of the WeatherCaster software is installed.

CAUTION: Be sure the drivers for any Converter or Combiner are installed.

CAUTION: Be sure there are no applications running on the computer.

CAUTION: Do not interrupt the power while programming is in process. Avoid using a laptop that is being powered by its battery or a computer with a screen saver that causes hibernation.

CAUTION: Do not exit the sensor while programing is in process.

NOTE: If you have both a Converter and a Combiner, the flash update will be faster using the Converter.

1. Download the sensor firmware file.

2. Launch the WeatherCaster software.

3. Click the Advanced Setup button in the upper right corner of the WeatherCaster display screen.

4. When the Advanced Setup window opens, click the Update Flash tab (see Figure 22).

5. Click Select File (see Figure 41). In the Open dialog box, browse to the sensor flash file to be used. The file name will end in ".ax". Click Open.
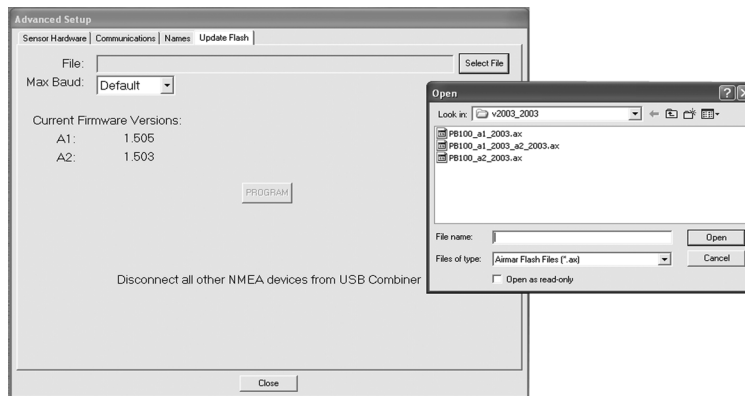

Figure 41. Advanced Setup window with Update Flash tab
and Open window

6. When the Setup dialog indicates "READY to PROGRAM", click the PROGRAM button to perform the flash update. When the flash update has been completed, there will be two status messages. The window will say "PROGRAMING COMPLETE" followed by "EEPROM FORMATTING COMPLETE."

Wait several seconds for the WeatherCaster software to establish communication with the sensor. When you are finished updating the flash memory in all sensors, click OK to go to a WeatherCaster display screen.

Note: If you are unable to update the flash, select a Baud Rate from the drop-down menu and try again.

Running Multiple Copies of WeatherCaster Software

It is possible to run multiple copies of the WeatherCaster software simultaneously (i.e. multiple instances). You would do this if you want to use more than one sensor at the same time.

To start the first instance, double click the WeatherCaster icon on your PC's desktop or Start>Program>Airmar>WeatherCaster. When the WeatherCaster screen is displayed, an additional instance of the WeatherCaster software may be started by double clicking the WeatherCaster icon again. (If necessary, use the Min button to minimize the current WeatherCaster screen first.) When the

additional instance of the WeatherCaster software is started, a prompt will appear to verify (see Figure 42). Click Yes.
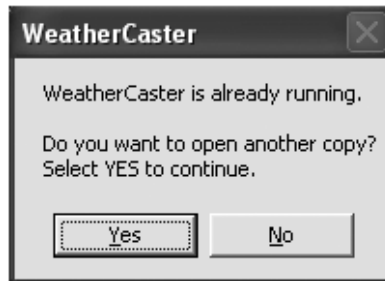

Figure 42. WeatherCaster confirmation window

If it is the first time this additional WeatherCaster instance has been started, the comm. port and baud rate *must* be setup (see "Communications" above).

Although it is possible to run multiple instances of the WeatherCaster software simultaneously, only one instance will be visible at a time. To view a different instance, minimize the current WeatherCaster screen by clicking the Min button. Then select the desired WeatherCaster instance from the Windows Taskbar (see Figure 43).

Figure 43. WeatherCaster name/serial number in Windows taskbar

NOTE: It is possible to determine which sensor is being monitored by checking the serial number/name in the upper left corner of the WeatherCaster screen.

If you close one of the WeatherCaster instances, the next time you double click on the WeatherCaster icon, the first available instance will be started. For example, if there are three instances of the WeatherCaster software running simultaneously and instance B is closed, it may be restarted by simply double clicking the WeatherCaster icon. However, if both instances A and B are closed, the next time the WeatherCaster icon is double clicked instance A will be started. It is important to note that each instance will try to connect to the same communications port that it used previously. This should provide the connection to the same sensor as before. However, due to the flexible nature of the system, verify that the desired sensor is being monitored by checking in the upper left corner of the WeatherCaster screen.

Updates & Troubleshooting

WeatherCaster Software Updates

Periodically, Airmar will release updated versions of the WeatherCaster software and sensor firmware. Updates can be downloaded from Airmar's web site www.airmar.com or contact Airmar's technical support personnel for a CD.

The current version of your firmware is displayed in the second Data Box at the top of the WeatherCaster software screen (see Figure 39). A1 refers to the application firmware within the sensor. If your sensor has two microprocessors, A2 refers to the second firmware application. B1 and B2 refer to the bootloader firmware. When performing a flash update, only the application firmware will be uploaded. The bootloader version will not change. To install an updated version of the sensor firmware, follow the instructions "Update Flash" in the "Advanced Set-up" window.

PC Problems

No Data On Communications Port

If the sensor is connected to a specific communications port but no data is observed, there are two possible causes. If you updated flash, it may have been incomplete. Repeat "Update Flash" in the "Advanced Set-up" window.

It may be necessary to reboot the communications port. This is especially effective if many different devices have been connected and disconnected from the PC, thus assigning many different communications ports. Follow the steps below.

1. From the start menu, select Control Panel, or right click My Computer.

2. Select the system option.

3. Select the hardware tab.

4. Select Device Manager.

5. Select Ports.

6. Right click on the Airmar port and select Disable.

7. Wait 10 seconds, then right click on the Airmar port and select Enable.

8. Close all open windows and try to run the WeatherCaster software again.

Setting the Display Resolution to 1024 X 768 Pixels

When using the WeatherCaster software on a computer with a display resolution of more than 1024 x 768 pixels (e.g. 800x600), the window will be truncated on the right side and bottom edges. The exit buttons will therefore be hidden from view. If this happens, you can exit the WeatherCaster software by pressing the key combination <alt>-F4 (i.e. while pressing and holding the Alt key, press and release the F4 key). If the display resolution is less than 1024 X 768 pixels (e.g. 1280 x 1024), The WeatherCaster software will not fill the entire PC screen.

1. From the Start menu, select Control Panel.
2. Select Display Properties.
3. Select the Settings tab (see Figure 44).

Figure 44. Display Properties window

4. Slide the Screen Resolution indicator until 1024 X 768 is selected.
5. Click Apply, then click Yes.

Computer Screen Distortion—DPI Setting
If the computer display's DPI setting is 120, the WeatherCaster screen will be distorted. The computer display's DPI setting *must* be 96.

1. Right click the desktop and select Properties. the Display Properties dialog box will appear.
2. Click the Settings tab.
3. Click the Advanced button.
4. In the Plug and Play window, select the General tab.
5. Under DPI setting, choose Normal size (96 DPI) from the drop-down menu.
6. Click OK.
7. If you are prompted to restart the computer, click Yes.
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WeatherCaster Software Problems

Identify the WeatherCaster Version

The WeatherCaster version number is located on the top left corner of each WeatherCaster screen (see Figure 39). The latest version of the WeatherCaster software is available for download at www.airmar.com.

Auto-Detecting Communications Ports

If you installed more than one instance of the drivers for the Converter or the Combiner, the WeatherCaster software may not automatically detect the appropriate communications port. If upon launching the WeatherCaster software the Communication Interface Setup window appears with the "No sensor detected on Port _____ when using baud rate _____," you will need to manually select the communications port and the baud rate.

Manually Selecting the Communications Port and Baud Rate

1. *Be sure* the USB cable is connected to the computer.
2. Follow the instructions in the Advanced Setup section, "Communications", "Manually Select."

Troubleshooting Sensor Data Using Windows HyperTerminal

IMPORTANT: Before starting HyperTerminal, note the number of the communications port that the sensor is connected to. The Comm. Port number is found on the Auto-Detecting Sensor Data window when the WeatherCaster software begins.

IMPORTANT: You must close the WeatherCaster software to use HyperTerminal with the sensor.

1. From the Start menu, select All Programs>Accessories>Communications> HyperTerminal.
2. Enter an area code if prompted.
3. Select File>New Connection.
4. Name the connection, then click OK.
5. Select the particular comm. port that the sensor is connected to, then click OK.

6. Set the bits-per-second to 4800 if connected to a Converter or 38400 if connected to a Combiner (see Figure 45). Using the drop-down menus, change the Data bits to eight, Parity to None, Stop bits to one, and Flow control to None, as shown below. Click OK.

Figure 45. COM 1 Properties window

7. You will see the data sentences from the sensor scrolling on the screen, similar to the example below (see Figure 46). To identify the sentence commands, refer to the Technical Manual on the Airmar Sensor Support CD. The data can be saved by going to the File drop-down menu and selecting Save As.

```
$PAMTT,Weather Station model PB100
$PAMTT,Copyright (C) 2005 AIRMAR Technology, Inc.  ,
$PAMTT,POST,0,0,0,0,0,0,0,0,0,0,*44
$PAMTT,QV,44-800-1,2,0,051204022,1.001,1.003,1.000,:
$WIMWV,191.0,R,1.8,N,A*23
$WIMWV,200.6,R,1.9,N,A*2F
$GPRMC,,V,,,,,,,,,,N*53
$WIMDA,29.854,I,1.011,B,7.7,C,,,61.6,,0.7,C,,,,,,,
$WIMWD,,,,,,,,*40
$WIMWV,,T,,,V*7C
$WIMWV,209.1,R,2.3,N,A*28
$WIMWV,212.5,R,2.5,N,A*20
$GPRMC,,V,,,,,,,,,,N*53
$WIMDA,29.854,I,1.011,B,7.7,C,,,51.4,,-1.6,C,,,,,,
$WIMWD,,,,,,,,*40
$WIMWV,,T,,,V*7C
$WIMWV,214.3,R,2.6,N,A*23
$WIMWV,215.8,R,2.8,N,A*27
$GPRMC,,V,,,,,,,,,,N*53
$WIMDA,29.854,I,1.011,B,7.7,C,,,43.9,,-3.8,C,,,,,,
$WIMWD,,,,,,,,*40
```

Figure 46. Data sentences

Appendix—Technical Information

Baud Rate

The WeatherCaster software needs to be set as follows:

- If you have a NMEA 0183 Converter, set the baud rate to 4800.

- If you have a Combiner, set the baud rate to 38400.

Acronyms and Abbreviations

CD	Compact Disk
COG	Course Over Ground
Comm. Port	Communications Port
DOP	Dilution Of Precision
EGNOS	European Geostationary Navigation Overlay Service
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
PC	Personal Computer
SD	Satellite Differential
SOG	Speed Over Ground
USB	Universal Serial Bus
WAAS	Wide Area Augmentation System
2D	Two Dimensional GPS Fix
3D	Three dimensional GPS Fix

Glossary

Firmware	The software within the sensor hardware
WeatherCaster	The PC application program

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Notes

Notes

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