

Appendix C

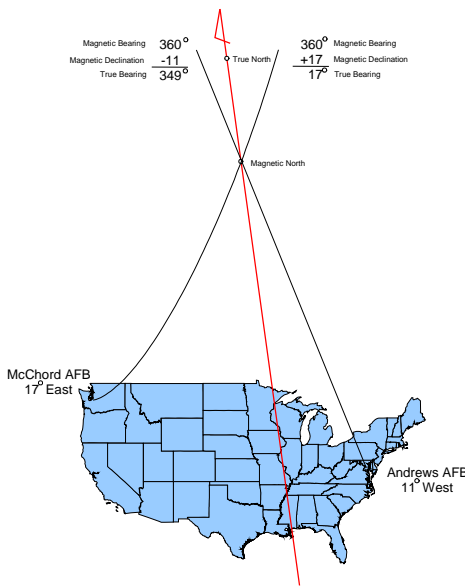
Magnetic Declination / Variation and WEATHERPAK[®] Compass Adjustment

Please Note: The compass correction for your WEATHERPAK[®] has been pre-set at the factory. The only time this procedure may become necessary is:

- If the WEATHERPAK[®] has been relocated from its original service area by a distance of 500 miles or more.
- If your WEATHERPAK[®] has been designed for potential "worldwide" deployment, then Coastal Environmental Systems has set the correction to "0". In this case, the operator must set the proper correction when the system is moved to a new location.

Note:

- A special test cable (Coastal p/n 6003101077) and a 12VDC power source are required to perform this procedure.
- Please contact Coastal Environmental Systems' Sales or Service Dept. for more information.



Magnetic declination / variation

Either term, *declination* or *variation*, is correct and is defined as the angle (at a particular location) between Magnetic North and True North. Surveyors generally prefer the term **declination** and navigators the term **variation**. The correction for a particular geographic location can be found on a chart designed for this purpose. Many Internet sites are available to help identify declination.

Aeronautical and marine charts give variation as isogonic lines, or lines of constant magnetic variation. Variation changes with the passage of time and the charts usually provide the rate of change in the map key. In some areas (such as the Arctic, for example), charts will note that compass measurements are unreliable. For the highest accuracy, it is important to use an up-to-date source.

When a compass needle points East of True North it is due to easterly variation. This is the case for most of the western United States. The correction from Magnetic to True direction for an easterly variation is a positive correction. For example, in Seattle WA, the variation is approximately 17° and a compass reading of 0° "Magnetic" corresponds to a true direction of (+) 17° "True". Alternatively, a western variation results in a negative correction.

Links to useful web sites such as the NOAA Declination Computer can be found on Coastal's web site:

<http://www.coastalenvironmental.com/magnetic-declination.shtml>

It is good practice to doublecheck your calculation or compare it with known information, such as a chart or the table below.

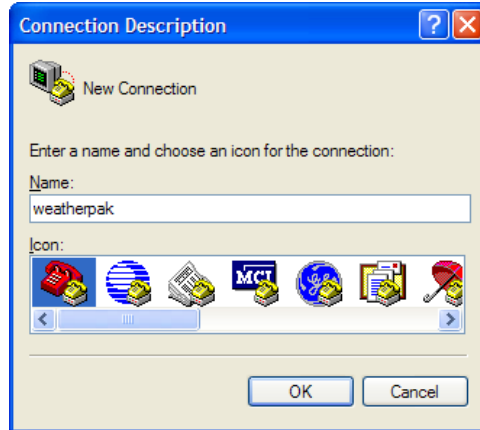
Table of Magnetic Variation (2010)

City	Magnetic Variation
Chicago	3° W (-3)
Denver	9° E (+10)
Miami	6° W (-6)
Salt Lake City	12° E (+13)
Seattle	17° E (+17)
St. Louis	1° (-1)
Washington D.C.	11° W (-11)

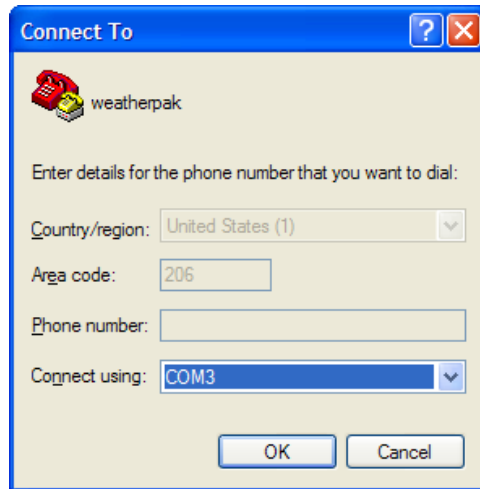
Procedure for Changing the WEATHERPAK® Compass Configuration

Establishing Communication Using Windows® HyperTerminal

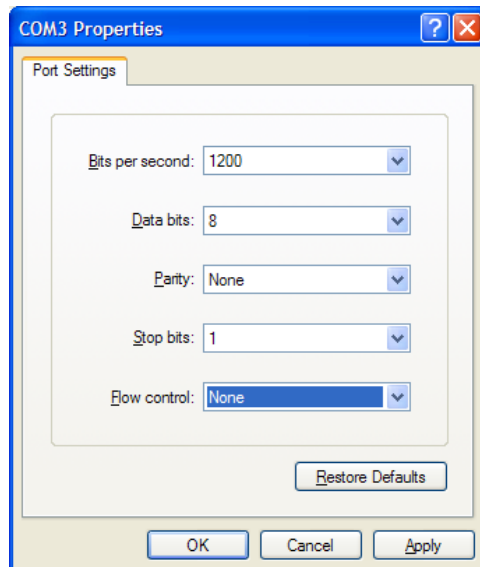
- Locate the HyperTerminal program in Windows® by selecting **Start, Programs, Accessories, Communications**, and then **HyperTerminal**.
- If HyperTerminal asks, make it your default terminal program by selecting [Yes].
- Name the connection in the **Connection Description** window (we suggest: "weatherpak"). Click [OK].



- In the **Connect To** window select an open COM port in the **Connect using** box. Then click [OK]



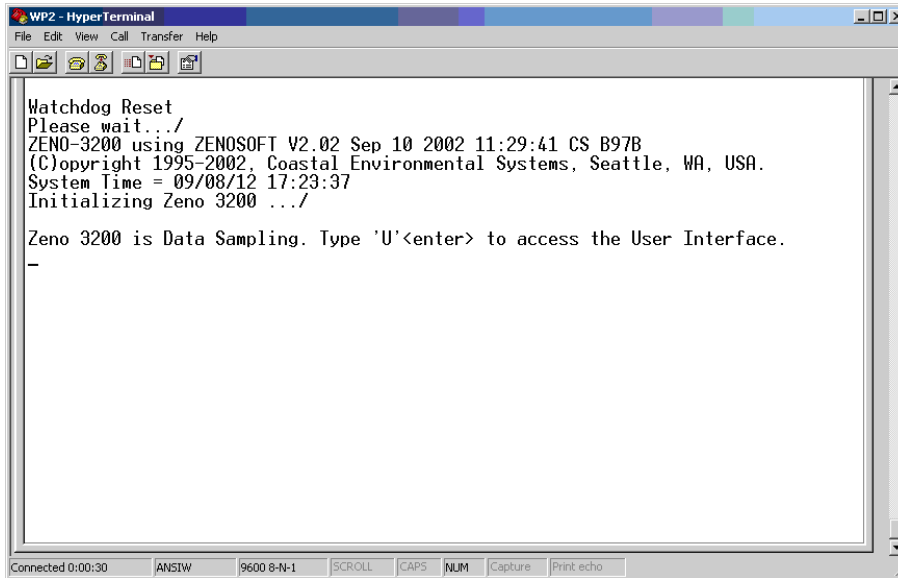
- Enter the port settings in the **COM Properties** window:



- Click **[Apply]**, and then **[OK]**. The HyperTerminal window should now be connected to the selected COM port. The message **“Connected”** should be visible in the lower left of the window with a timer.

Changing the WEATHERPAK® Compass Configuration

- Connect the PC to the WEATHERPAK® using a direct hardwired connection (e.g. the WEATHERPAK® test cable with the 12VDC power attached, or the direct download cable attached to a MIL-SPEC connector on the tower junction box). When the WEATHERPAK® completes its boot-up routine the following should appear in the HyperTerminal window.



- Type **[U]** then **[Enter]**. The “User Menu” will appear...

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 |

- Select **[F]** then **[Enter]**. The “System Functions Menu” will appear...

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: 1343 | (Primary Unit/Experiment ID) |
| Item 2: 0 | (Secondary Unit/Experiment ID) |
| Item 3: 1 | (Data Dump Format) |
| Item 4: 0 | (Real Time Output Format) |
| Item 5: 1 | (Add Compass To Vane) |
| Item 6: 0 | (Compass Offset) |
| Item 7: 0 | (Barometer Elevation) |
| Item 8: | (Bad Sensor Value Replace) |
| Item 9: <ESC> | (Pass-through Mode Escape Character) |

- Compass Offset is **Item 6**. Type **[C6/-20]** then **[Enter]**. The menu will update reflecting the changes.

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: 1343 | (Primary Unit/Experiment ID) |
| Item 2: 0 | (Secondary Unit/Experiment ID) |
| Item 3: 1 | (Data Dump Format) |
| Item 4: 0 | (Real Time Output Format) |
| Item 5: 1 | (Add Compass To Vane) |
| Item 6: -20 | (Compass Offset) |
| Item 7: 0 | (Barometer Elevation) |
| Item 8: | (Bad Sensor Value Replace) |
| Item 9: <ESC> | (Pass-through Mode Escape Character) |

Please Note: -20 is an example. Your compass offset will vary based on service location.

Important! If the correction is determined to be "East", the number is positive (i.e. 20). If the correction is "West", the number is negative (i.e. -20).

- Save the new the configuration by typing **[E]** then **[Enter]**. The WEATHERPAK® will respond...

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 . . .
 994 out of 2048 bytes used in EEPROM.
 Total EEPROM Writes = 101, EEPROM Checksum = 191.

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: 1343 | (Primary Unit/Experiment ID) |
| Item 2: 0 | (Secondary Unit/Experiment ID) |
| Item 3: 1 | (Data Dump Format) |
| Item 4: 0 | (Real Time Output Format) |
| Item 5: 1 | (Add Compass To Vane) |
| Item 6: -20 | (Compass Offset) |
| Item 7: 0 | (Barometer Elevation) |
| Item 8: | (Bad Sensor Value Replace) |
| Item 9: <ESC> | (Pass-through Mode Escape Character) |

- Type **[Q]**, then **[Enter]** to resume normal operation.