User's Guide for

Climatronics

HazView

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Record of Changes

Date	Revision	Description of Change
February 13, 2004	1.0	Initial release (software version 1.1).

Table of Contents

List of Figures

1. HazView Overview

1.1 System Overview

A simplified block diagram of a typical HazView installation is shown in Figure 1.1-1. HazView runs on any handheld device running Microsoft Pocket PC 2002 with an RS-232 interface. HazView interfaces to a Climatronics TACMET II Portable Weather Station specially configured for HazMat and Homeland Security real-time weather data requirements. HazView periodically receives either NOAA CAMEO/ALOHA formatted weather data or raw meteorological data from the weather station sensor over the RS-232 serial link. After processing, HazView displays either the CAMEO/ALOHA data (in Base mode) or the raw weather station data (in Remote mode).

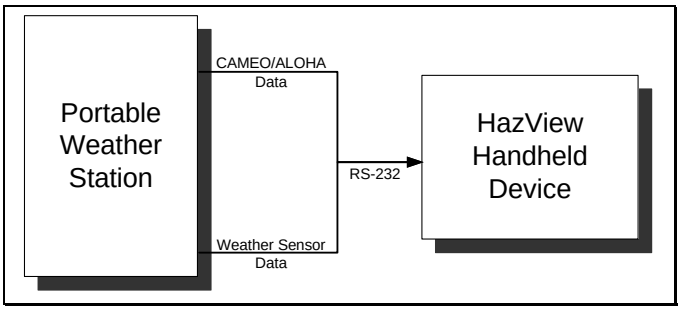

Figure 1.1-1 HazView Block Diagram

1.2 Application Overview

The main application window for HazView (in Remote mode) is shown in Figure 1.2-1.

Figure 1.2-1 Main Application Window

The HazView application follows standard Windows CE conventions for layout and control. Application functions are accessed primarily through the menu bar. Tapping on a menu item either performs a function or reveals a submenu, from which an item may be selected. ***Note that since HazView makes exclusive use of the RS-232 communications port, any other application (e.g. ActiveSync) which would normally use the port must be shut-down or disabled prior to activating HazView***. An error message like that shown in Figure 1.2-2 may indicate that another application is currently using the communications port and must be disabled. Exit HazView via File > Exit (do **not** 'X' out), disable all other communication port applications, and restart HazView.

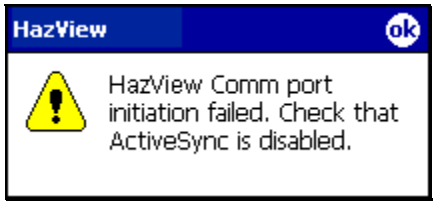

Figure 1.2-2 Communication Initialization Error Message

1.3 Application Data Processing

Processing in the HazView application is driven by two periodic, but independent, data update rates- the sensor update data rate and the averaging data rate. The processing and activities that occur during these two intervals are described below.

1.3.1 Sensor Update Interval

The sensor update rate is fixed at one input per second when HazView is running in remote mode, and one input every thirty seconds when running in Base mode. When data is received on the serial interface, the data is stored internally and if either the Base or Remote view is currently active, all values are refreshed with the new current values. Additionally, if the Current Input Data screen is being viewed (see Section 1.5.2.3) or if the Data Stream dialog is displayed (see Section 1.5.3.2) in Remote mode, the current input data stream (and the individual sensor components in the case of the Data Stream dialog) is refreshed to the latest values received.

1.3.2 Data Averaging Interval

The data averaging interval is fixed at one minute. At the data averaging interval, the maximum wind speed reading obtained during the last average interval and the wind direction extents are determined. The data averaging operations only start after at least a full interval has passed since the start of the HazView application. Additionally, the data averaging operations take place on even minute boundaries of the system clock. For example, if the application is started at 8:01:32, the data averaging will take place at 8:03:00, 8:03:00, 8:05:00 and so on.

1.4 Application Views

Two basic views are available in the application client area – the Base (ALOHA/CAMEO) view or the Remote view. Selecting either view is performed using the view menu or using the associated toolbar button.

1.4.1 Base View

The Base view is selected using the View menu or by clicking on the Base view icon on the toolbar. A sample Base view is shown in Figure 1.4-1.

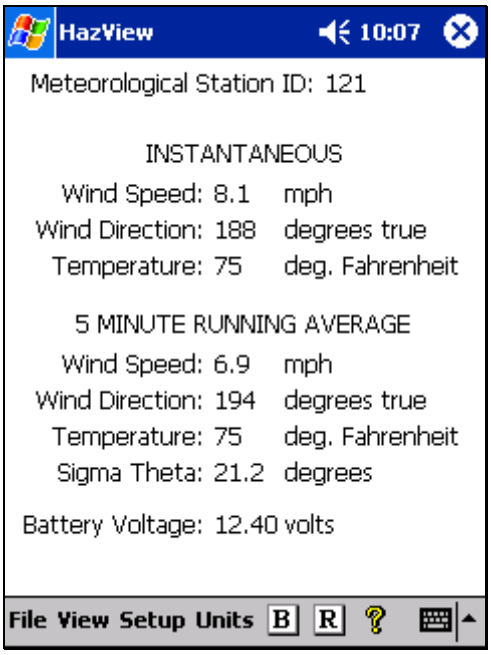

Figure 1.4-1 Base View

1.4.1.1 Base View Elements

In the Base view the exact CAMEO/ALOHA data received from the sensor is displayed. No additional processing is performed on the data. Display areas are provided for the instantaneous wind speed, direction and temperature, the five minute average wind speed, direction and temperature, the standard deviation (sigma theta) of the wind direction and the battery voltage. Note that he units of measure associated with each of these display areas are fixed and cannot be varied using the Units menu.

1.4.2 Remote View

The Remote view is selected using the View menu or by clicking on the Remote view icon on the toolbar. A sample Remote view is shown in Figure 1.4-2.

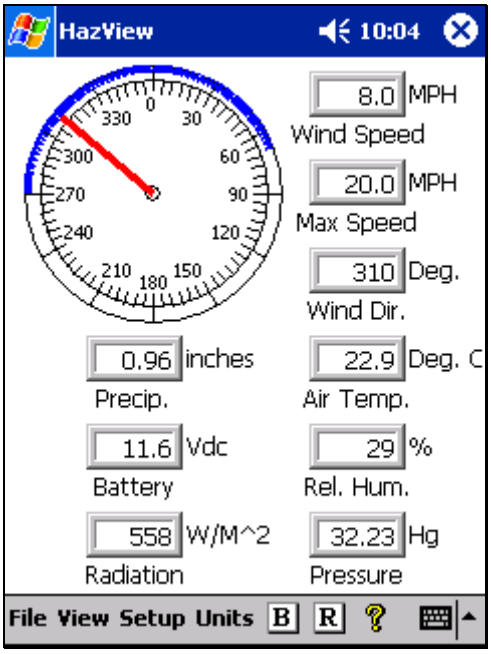

Figure 1.4-2 Remote View

1.4.2.1 Remote View Elements

In the Remote view, digital display areas are provided for the instantaneous wind speed, maximum wind speed, wind direction, air temperature, relative humidity, pressure, precipitation, battery voltage and radiation depending on the sensors selected. The units of measure associated with each of these digital display areas can be varied using the Units menu. Note that the maximum speed display is unique in that there cannot be an instantaneous maximum wind speed. The maximum speed can only be calculated over the interval of interest. On the instantaneous display therefore, the maximum speed indicator shows the maximum speed over the last average interval, not any instantaneous value. As such, the maximum speed indicator on the instantaneous display will show asterisks until the first average interval has passed and a maximum value can be computed.

The Remote view also includes an easy to read analog display of the wind direction. The blue band on the analog dial indicates the variability of the wind direction over the last interval of interest. Like the maximum wind speed, the blue band will appear on the Remote view display only after the average interval has passed and the wind variability can be calculated.

1.5 Application Menus

Much of the operation of the HazView application is accomplished through the application menu. Selecting a menu item causes a submenu to be presented. Selecting a submenu item in turn causes an action to be performed, an interface element such as a dialog box to be displayed, or another submenu to be displayed. The following sections describe the functions performed by each menu and submenu item.

1.5.1 File

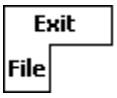

Figure 1.5-1 File Menu

1.5.1.1 Exit

Toolbar: No

Exits the application. ***It is highly recommended that this exit selection is used to close the application as this will relinquish the serial port for use by other applications (such as ActiveSync).*** Failure to disable other applications which use the serial port **prior** to activating HazView will cause a communication initialization error (see Section 1.2).

1.5.2 View

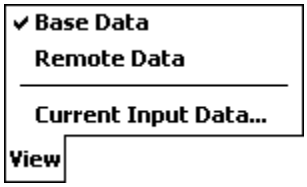

Figure 1.5-2 View Menu

1.5.2.1 Base Data

Toolbar: B

The current data view is modified to display the ALOHA/CAMEO data (Base mode).

1.5.2.2 Remote Data

Toolbar: R

The current data view is modified to display raw meteorological data (Remote mode).

1.5.2.3 Current Input Data …

Toolbar: No

The Current Input Data selection allows the user to view in real time the raw, unprocessed, meteorological sensor data (in Remote mode) or ALOHA/CAMEO data (in Base Mode) received over the serial link. A sample Last Received Input Data screen in shown in Figure 1.5-3.

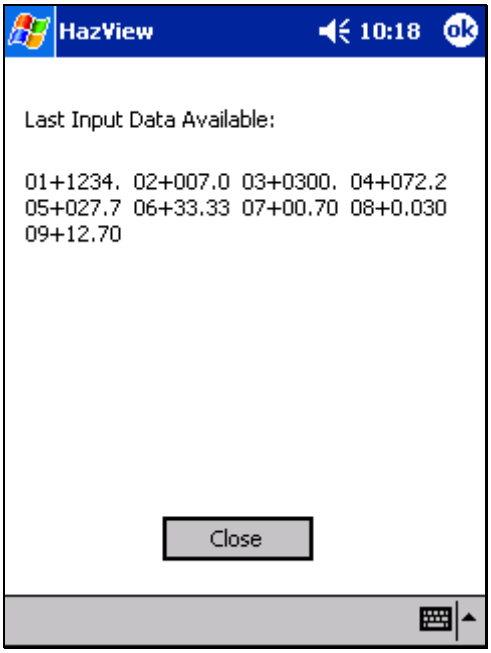

Figure 1.5-3 Last Received Input Data Display

1.5.3 Setup

Figure 1.5-4 Setup Menu (Remote Mode)

1.5.3.1 System Configuration …

Toolbar: No

Presents the HazView System Configuration dialog box (sample shown in Figure 1.5-5) that allows the user to select the sensors present in the particular system configuration, and the input units associated with each of those sensors. Note that this dialog is not available in Base mode.

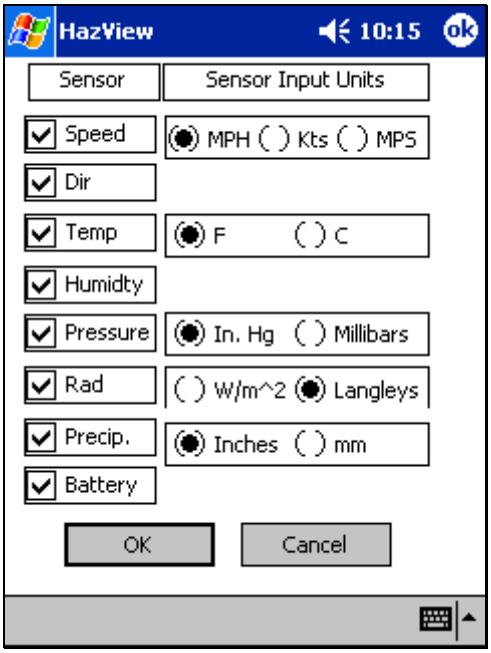

Figure 1.5-5 System Configuration Dialog (Remote Mode)

The check boxes next to each sensor enable the user to specify if a particular sensor is present in the application or not. For certain sensor types, the user must specify the units associated with the input data. Note that this unit specification is independent of the output units displayed on the Remote mode display. The units specified on the System Configuration Menu must match the units associated with the input data, while the units chosen for the output display are entirely up to the user.

1.5.3.2 Data Stream …

Toolbar: No

Presents the HazView System Data Stream dialog box (sample shown in Figure 1.5-6) that allows the user to match the HazView application to the incoming sensor data stream. Note that this menu is not available in Base mode.

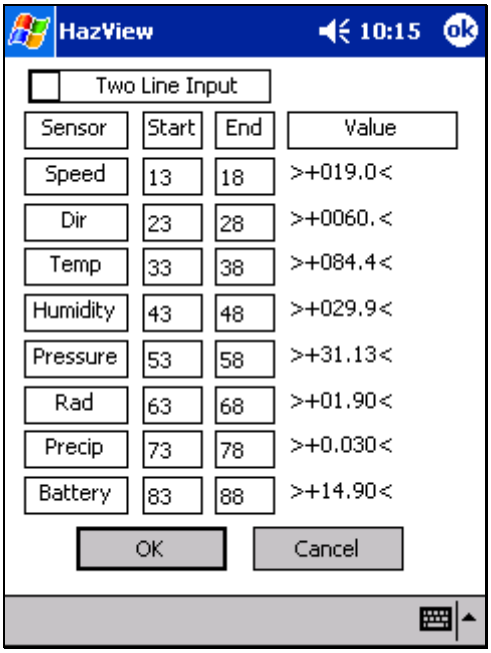

Figure 1.5-6 System Data Stream Dialog (Remote Mode)

The format of the input sensor data stream is dependent on the particular user's application. The user uses the Data Stream dialog to match each meteorological sensor to the correct field in the input data stream. For each sensor present, the user then uses the Start and End edit fields to select the starting and ending characters in the data stream which correspond to the sensor data. The Sensor Data boxes update in real time to indicate the actual characters that will be used to specify the sensor data. The "Two Line Input" checkbox is used to indicate that the serial input stream is formatted in two lines. That is, the input stream for one complete message consists of 80 characters of data, a carriage return-line feed pair, additional data characters, and a final carriage return-line feed pair.

1.5.3.3 Serial Interface Settings …

Toolbar: No

Presents the Sensor Serial Interface Settings dialog box (shown in Figure 1.5-7) that allows the user to specify the serial interface parameters. Note that this dialog is not available in Base mode.

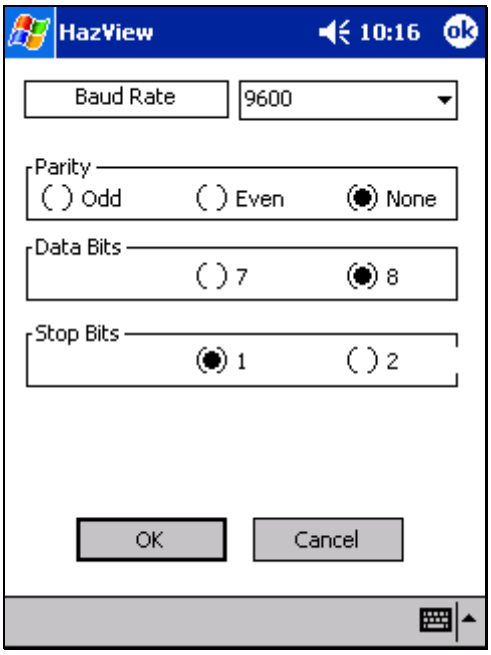

Figure 1.5-7 Sensor Serial Interface Settings Dialog (Remote Mode)

The Baud rate pulldown and Parity, Data Bits and Stop Bits radio boxes are used to match the HazView serial port settings to the incoming sensor data stream parameters.

1.5.3.4 Background Color …

Toolbar: No

Presents Color Selection dialog box (shown in Figure 1.5-8) that allows the user to specify the background color to be used for the main view.

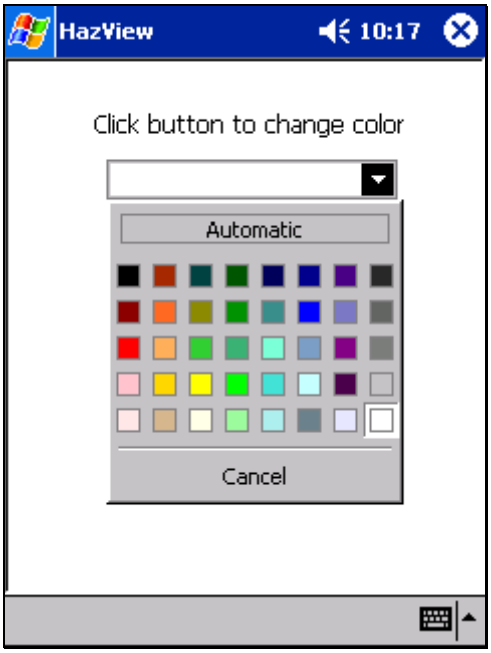

Figure 1.5-8 Background Color Selection Dialog

The user can click on any of the Basic Colors buttons presented to select the color to be used for the background. To initiate the change, the user exits the dialog (with the 'X'). A prompt is displayed (Figure 1.5-9) reminding the user that the application must be restarted in order for the background change to be completed.

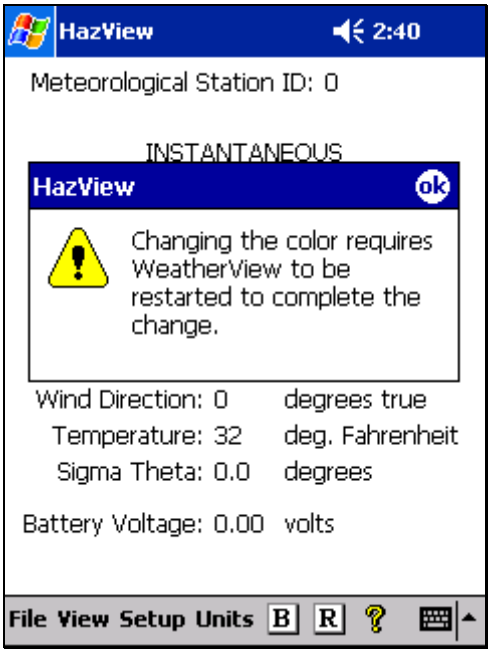

Figure 1.5-9 Background Color Selection Warning

1.5.4 Units

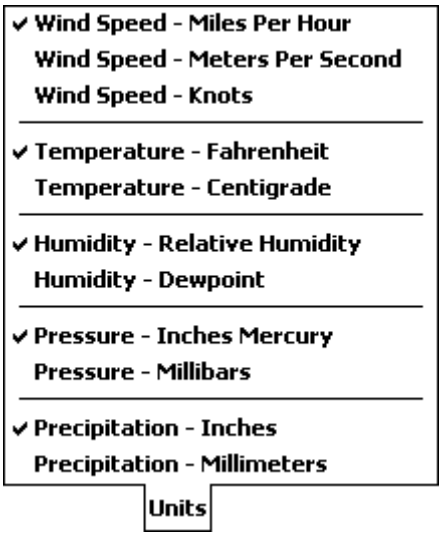

Figure 1.5-10 Units Menu (Remote Mode)

The Units Menu allows the user to modify the displayed units of measure for all weather data. A check mark next to a unit indicates the current selected display units for that sensor type. Note that the Units menu is only accessible in Remote mode.

1.5.4.1 Wind Speed – Miles Per Hour

Toolbar: None

Sets the units of measure for all wind speed indications to miles per hour.

1.5.4.2 Wind Speed – Meters Per Second

Toolbar: None

Sets the units of measure for all wind speed indications to meters per second.

1.5.4.3 Wind Speed – Knots

Toolbar: None

Sets the units of measure for all wind speed indications to knots.

1.5.4.4 Temperature – Fahrenheit

Toolbar: None

Sets the units of measure for the air temperature indication to degrees Fahrenheit.

1.5.4.5 Temperature – Centigrade

Toolbar: None

Sets the units of measure for the air temperature indication to degrees centigrade.

1.5.4.6 Humidity – Relative Humidity

Toolbar: None

Sets the humidity indication to show relative humidity in percent.

1.5.4.7 Humidity – Dewpoint

Toolbar: None

Sets the humidity indication to show the dewpoint in degrees Fahrenheit or centigrade depending on the temperature units selected.

1.5.4.8 Pressure – Inches Mercury

Toolbar: None

Sets the units of measure for the pressure indication to inches of mercury.

1.5.4.9 Pressure – Millibars

Toolbar: None

Sets the units of measure for the pressure indication to millibars.

1.5.4.10 Precipitation – Inches

Toolbar: None

Sets the units of measure for the precipitation indication to inches.

1.5.4.11 Precipitation – Millimeters

Toolbar: None

Sets the units of measure for the precipitation indication to millimeters.

1.5.5 Help

1.5.5.1 HazView Help…

Tapping on the HazView application title provides access to the standard application help facilities as shown in Figure 1.5-11.

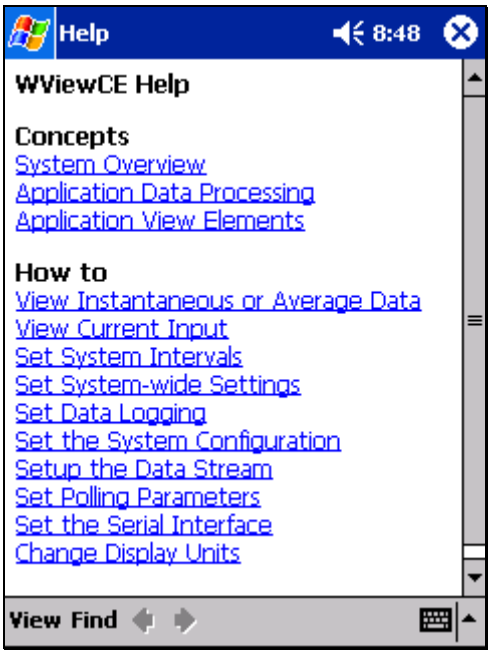

Figure 1.5-11 HazView Help

1.5.5.2 About HazView …

Toolbar: 

Displays a dialog box (shown in Figure 1.5-12) containing information about the HazView application such as the current version number.

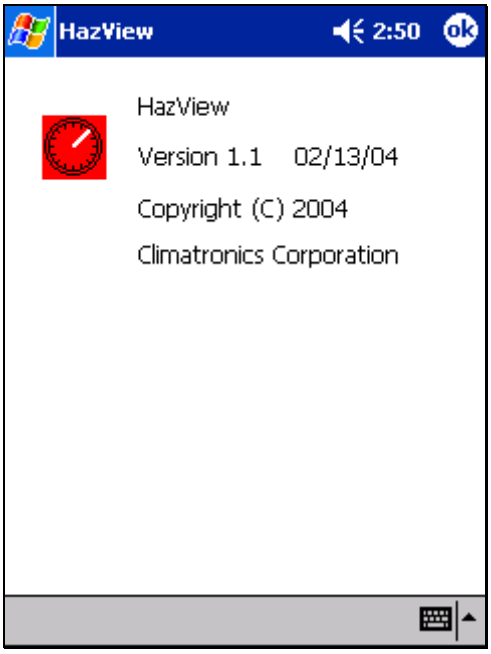

Figure 1.5-12 About HazView Dialog