

# UIP8000 Model 2072

User Interface Program for the Ventostat® 8000 Series



## Operating Manual

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The UIP8000 (Model 2072) is a User Interface Program designed to work with most Ventostat® 8000 Series ventilation controllers.

The program is used to retrieve sensor information such as the serial number, PPM levels, and settings.

The program offers a Windows® interface which enables the user to make quick, easy adjustments to the output, elevation, relay setpoint, hysteresis and more. Performing a zero or span calibration can be done in just a few minutes using the calibration screen.

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## 1. General Information about the UIP8000 Program

The UIP8000 (Model 2072) program works with the Ventostat 8000 series CO<sub>2</sub> ventilation controllers. For simplicity, this document refers to any of these units as a "sensor." The document sometimes refers to the UIP8000 program as "the program" or as "the UIP." The acronym "UIP" stands for User Interface Program.

The UIP8000 program allows you to review and change parameters that affect the operation of your sensor. It can also be used, along with appropriate calibration gases, to calibrate the sensor.

Some sensor models have a display and pushbuttons to allow you to review and change the parameters that affect sensor operation. The UIP8000 program is intended to provide the same capability for all 8000 series sensors regardless of whether or not they have the display and push buttons.

## 2. Required Hardware and Software

- IBM PC with a 486 or Pentium Processor
- Windows 3.1, Windows 95, Windows 98, Windows NT 3.5 or Windows NT 4.0
- One serial communications port
- 6MB of free disk space

## 3. Installing UIP8000 Software

### 3.1 In Windows 95, 98 or NT:

- Shut down other programs that may be running.

-Insert the UIP8000 installation diskette #1 into your PC's diskette drive.

-On the task bar at the bottom of your screen, click on the START button.

-In the pop-up menu, click RUN.

-In the "Run" popup specify "A:\Setup.exe" as the program to run and click the OK button.

-This runs the UIP installation program. Follow subsequent instructions on your screen.

### 3.2 In Windows 3.1:

- Shut down other programs that may be running.

-Insert the UIP installation diskette #1 into your PC's diskette drive.

-On Program Manager's Command Bar, click FILE

-In the pull-down menu, click RUN.

-In the "Run" popup specify "A:\Setup.exe" as the command line then click the OK button. This runs the UIP installation program. Follow subsequent instructions on your screen.

### 3.3 Other Considerations for Installation

When the installation program is through, most operating systems display a window containing a program icon for the installed program. For some computers this window obscures the message telling that the installation was successful. You may have to reposition this window in order to view the message and to click an OK button on the message to allow the installation program to terminate.

If you previously installed UIP8000 on your system and you are reinstalling it or installing a new version of UIP8000 then delete or rename all files in your C:\UIP8000 folder before running A:\Setup.exe.

#### 4. A Quick Tutorial

To become familiar with the UIP8000 program, complete the instructions in this tutorial. If you are familiar with the 8000 series sensors and experienced with PC applications then this may be all you need to feel comfortable using the program. If you have questions or encounter problems, refer to the other sections of the manual as directed.

#### 4.1 Connecting to the Sensor

4.1.1 Connect the supplied serial cable to the communication port on your sensor and to a serial port on your computer. (For details see 6. *Connecting to the Sensor*)

4.1.2 Start up the UIP8000 program  
(For details see 5. *Using the UIP8000 Program*)

4.1.3 Click the CONNECT button, the program displays a pop-up box asking you to select a Com Port. Most PC's use COM1. Indicate which Com port you have connected to the sensor.

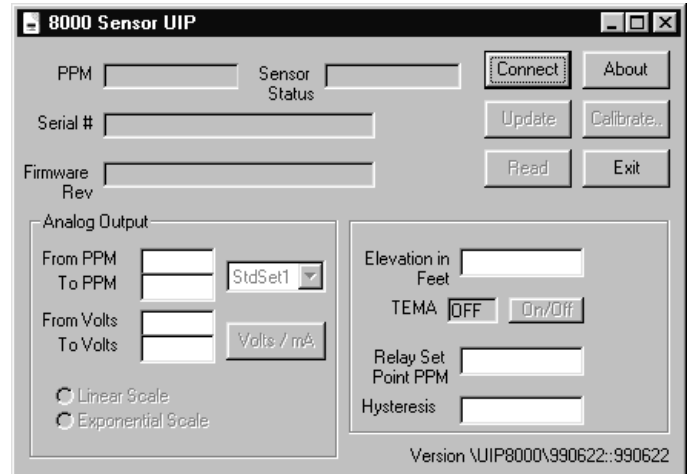
4.1.4 After connecting to the sensor the UIP8000 program automatically reads data from the sensor and displays the sensor's operating parameters on the main UIP screen.

#### 4.2 Exploring the Main Screen

4.2.1 Practice by changing some of the Analog Output fields on the screen by clicking on them and typing in new values. Don't worry, this doesn't store the changes into the sensor. Right now the changes are only on the PC screen. Try clicking on the Volts/mA button and then the TEMA On/Off button. These also change sensor parameter values displayed on the screen. You can also type in new values for Elevation, Relay Set Point, and Hysteresis.

4.2.2 Click the down arrow to the right of the standard settings box in the Analog Output window. (It probably contains a value of "NonStd" or "StdSet\_".) Select a different standard setting such as StdSet6 from the drop-down list by clicking on that item. Notice that the program automatically enters a standard set of values for some of the sensor parameters displayed on the screen (For details see 8. *Standard Settings*).

4.2.3 Now click on the READ button. The program discards any changes you made to values on the screen. It reads data from the sensor and displays the same values for the operating parameters that you saw when you first connected to the sensor. (For Details See 5.3 *Menus and Features of the Main Screen*).



Notice that the UPDATE button appears dim and is not enabled. This indicates you have not changed anything on the UIP8000 screen since data was read from the sensor. Now click the TEMA ON/OFF button. First, notice that the TEMA setting on the screen has toggled between ON and OFF. Second, notice that the UPDATE button is now enabled. Go ahead and click the TEMA ON/OFF button a second time to put your TEMA setting back to its original value. The UPDATE button remains enabled.

4.2.4 Now click the UPDATE button. This writes all the sensor parameters from the screen back to the sensor. The parameters on the screen happen to be the same as the original values in the sensor. But if you had changed some of the other parameters on the screen the new values would have been written into the sensor. Depending on what model sensor you have, after clicking the UPDATE button you may notice the sensor reset itself and enter Initial Warm-up mode before returning to normal mode.

## 5. Using the UIP8000 Program

### 5.1 Start Up

Double-click on the UIP8000 program icon.

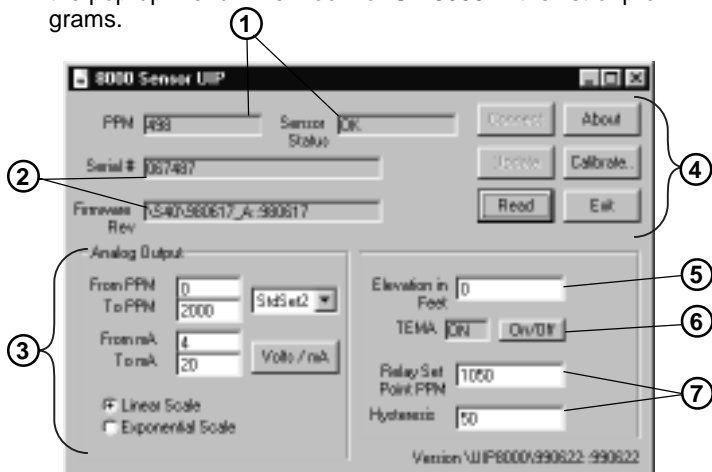
Or ...



Use Windows Explorer or File Manager to locate the UIP8000.EXE file and double click on it. The default location for UIP8000.EXE is in the sub-volume C:\UIP8000.

Or

If you are using Windows® 95 or a similar operating system, click on the START button. Then click on PROGRAMS from the pop-up menu. Then look for UIP8000 in the list of programs.



### 5.2 The Main UIP Screen

When you first start up the UIP8000 program it displays the main UIP screen. Initially, most of the data fields are blank. After you connect to the sensor, the program automatically reads data from the sensor and displays it on the screen.

### 5.3 Menus and Features of the Main Screen

#### 1. PPM and Sensor Status

After connecting to the sensor, the PPM and Sensor Status are updated every couple of seconds. Sensor status is one of the following: "OK", "Warm-up", "Calibrating", or "Service."

#### 2. Serial # and Firmware Rev

The sensor's serial number is set when the sensor is manufactured. The Firmware Revision identifies the program version running in the sensor's embedded micro controller. This information will be useful

#### 3. Analog Output Parameters

These parameters determine how the sensor's analog output signal responds to measured CO<sub>2</sub> PPM. More detailed information is provided in "Analog Output Parameters," below.

Notice the box containing "StdSet2." This is called the **Standard Settings** box. The button to the right with the down arrow displays a drop-down list of possible choices for standard settings. Choosing one of the standard settings automatically selects and displays standard values for From/To PPM, From/To Volts or mA, Linear Scale, Relay Set Point and Hysteresis (See 8. *Standard Settings*).

### 4. Command Buttons

**CONNECT BUTTON:** When the UIP8000 program starts up only the CONNECT, ABOUT and EXIT buttons are enabled. Clicking the CONNECT button causes the program to ask which serial Com port you want to use. Then it attempts to communicate with the sensor and displays the sensor's operating parameters.

**READ BUTTON:** This button reads data from the sensor's non-volatile memory and displays the sensor's operating parameters on the Main UIP Screen. The READ command is performed automatically after the program connects with the sensor, so you don't have to click the READ button immediately after clicking CONNECT. If you change values on the Main UIP Screen and then decide you don't want to update those values into the sensor, then you can click the READ button to discard your changes and refresh your screen with the values that are currently stored in the sensor.

**UPDATE BUTTON:** This button writes the current values from the screen into the sensor's memory. Immediately after connecting with or reading from the sensor, the UPDATE button is dim and not enabled. This indicates that the values on the screen have not been modified since they were read from the sensor. When you change any of the values on the screen the UPDATE button becomes enabled. The UPDATE command button takes the values on the Main UIP Screen and writes them into the sensor's non-volatile memory. After the sensor is updated it resets itself and goes briefly into Initial Warmup mode before returning to normal mode.

When you click the UPDATE button, the program checks the values on the screen to make sure they are reasonable values. If a value is too high or too low the program displays a message with the appropriate range for that value.

To be compatible with the button interface on some sensor models, the program may round off some of the values you enter before updating them into the sensor. The round off factors are actually determined by the sensor and may vary from one model to the next, but a common set of round off factors is:

- To/From PPM is rounded to the nearest 25 PPM,
- To/From Volts is rounded to the nearest 0.5 volts,
- To/From mA is rounded to the nearest 1 mA,
- Elevation is rounded to the nearest 500 feet,
- Relay Set Point is rounded to the nearest 50 PPM,
- Hysteresis is rounded to the nearest 5 PPM.

So if you click the UPDATE button and notice that the program changes some of the values you have entered on the screen, it's just rounded them off before updating the sensor.

**CALIBRATE BUTTON:** This button displays the UIP Calibration screen. The CALIBRATE button is disabled before you connect to the sensor.

**EXIT BUTTON:** This button closes the UIP8000 program.

**ABOUT BUTTON:** This button displays information about the UIP8000 program.

#### 5. Elevation

Set this field to the approximate elevation (rounded to the nearest 500 feet) of the location where the sensor is used. The sensor uses this to adjust its CO<sub>2</sub> PPM calculation for air pressure differences due to elevation.

## 6. TEMA On/Off

TEMA is one of the self calibration feature incorporated into the 8000 series product that extends the recommended calibration interval to 5 years or more. TEMA stands for “time extended measurement algorithm”. TEMA should be on for most applications where the sensor is permanently mounted and operated on a continuous basis to monitor and control CO<sub>2</sub> levels. The TEMA programming takes advantage of the fact that when a building is unoccupied, say in the evening, inside levels will drop to typical outside levels that tend to be very low and constant over time. Looking at this low point of CO<sub>2</sub> concentrations over a number of days, the sensor actually checks and adjusts it’s calibration on an on-going basis. For TEMA to be effective, a space must be unoccupied for at least 4-5 hours over the course of a week.

If a zone is occupied 24 hours a day, 7 days a week then TEMA should be turned off. TEMA should also be turned off if the sensor is powered up and operated on a periodic basis. When TEMA is turned off the recommended calibration interval of the sensor is reduced from 5 years to every 2 to 3 years.

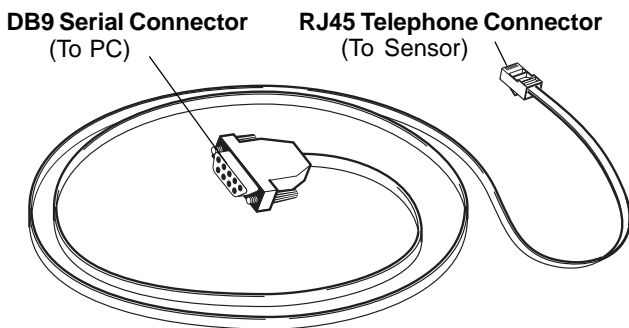
## 7. Relay Set Point and Hysteresis

Most sensors contain a relay that can be used to control ventilation equipment. The relay is activated when the CO<sub>2</sub> PPM exceeds the **Relay Set Point**. When the CO<sub>2</sub> PPM sinks below the Relay Set Point, the relay remains activated until the CO<sub>2</sub> reaches a level where

$$\text{CO}_2 \text{ PPM} < (\text{Relay Set Point}) - (\text{Hysteresis}).$$

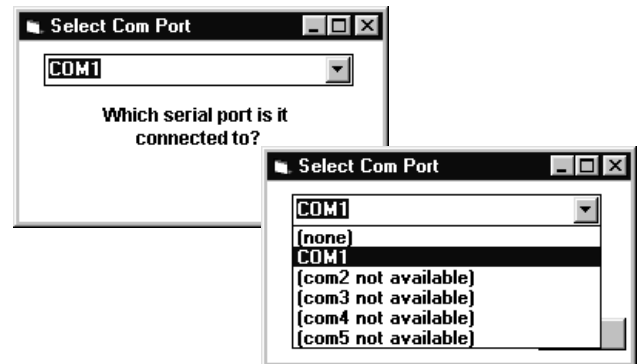
## 6. Connecting to the Sensor

A special serial cable is used to connect your PC to the sensor. The cable has a 9-pin “D” type connector, called a “DB9” connector on one end. This end of the cable plugs into your PC’s serial port. The other end of the cable is an RJ45 “telephone-type” plug, and it plugs into the RJ45 jack on the sensor. On some sensors you may have to remove a cover plate to plug the cable in.



When the UIP8000 program is launched, the command buttons are disabled except for the CONNECT button, the ABOUT button and the EXIT button. Clicking the CONNECT button displays a window asking which Com Port is connected to the sensor.

For most computers, the proper choice is COM1. If the cable from the sensor is plugged into a different Com Port then select that port from the pull-down list. When you click the OK button the UIP8000 program opens the selected Com Port and attempts to communicate with the sensor. If communication is successful the main UIP screen displays the data it has read from the sensor (see 5.2 *The Main UIP Screen*).



### 6.1 Successful Connection

If set up was performed properly, the sensor parameters will display in the Main screen and the Command buttons will become active (except for Update and Connect).

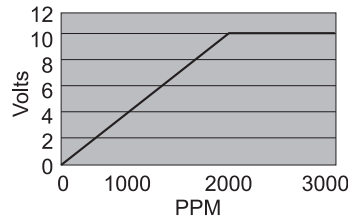
One feature of the program is the ability to disconnect the sensor and reconnect to another without closing the program. If the RJ45 Connector is unplugged from the sensor, the message “not connected” will appear in the PPM window (on the main screen). The RJ45 Connector can then be inserted to a different sensor for operation. If the same message (“not connected”) appears and the serial cable is connected, troubleshooting must be performed to isolate the problem (See 10. *Troubleshooting Communication Errors*).

### 6.2 Connection Error

If set up was not performed properly, an error message will appear after selecting the COM Port. The user will not be able to connect to the sensor or perform any of the software functions until the problem is solved (See 10. *Troubleshooting Communication Errors*).

## 7. Analog Output Parameters

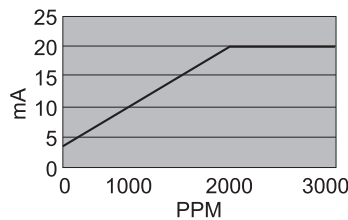
The 8000 Series sensors provide an analog output signal that can be connected to a ventilation control system or other equipment. Some models provide both voltage and current output. Others provide only a voltage output. See your sensor's specification sheet for details.



### 7.1 Linear Scale

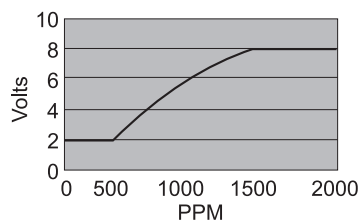
The Analog Output parameters on the Main UIP Screen determine how the sensor's analog output tracks the CO<sub>2</sub> PPM concentration measured by the sensor. For most applications you will use a **Linear Scale** where analog output tracks voltage (or current) in a straight line.

Clicking the Volts/mA button toggles the display between voltage (as above) and current (as below.) Remember that not all sensor models support current output. Check your sensor's specification sheet before trying to program it for current output.



### 7.2 Exponential Scale

Exponential scale makes the analog output track the CO<sub>2</sub> PPM along a curve where changes at lower PPM have a greater effect on the analog output than changes at higher PPM.



## 8. Standard Settings

Standard Settings provide a shortcut method for setting commonly used values for some of the sensor's operating parameters.

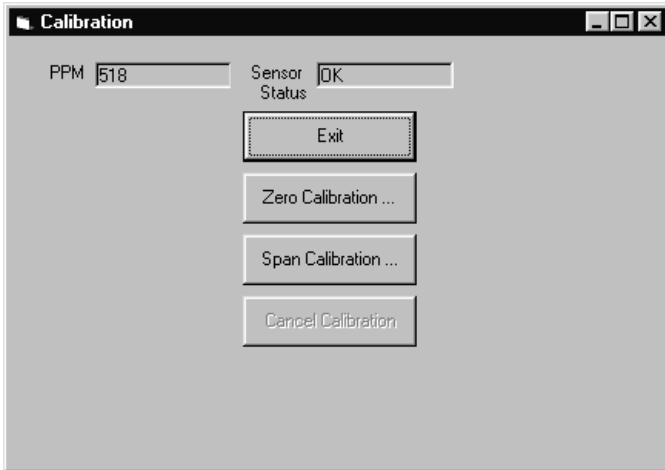
Clicking on the down-arrow button at the right of the Standard Settings field displays a pull-down list allowing you to choose one of nine different standard settings for the sensor's operating parameters. When you choose one of these standard settings the UIP program automatically selects values for the Analog Output parameters as well as Relay Set Point and Hysteresis, and displays these values on the Main UIP Screen.

The values associated with each of the nine standard settings can be found in your sensor's specification sheet. They are sometimes called "Presets." These Presets are programmed into the sensor when it is manufactured. Presets may vary from one model of the sensor to another. If you don't have your sensor's specification sheet handy, you can select each of the standard settings and see what values are displayed on the screen.

If you manually edit any of the Analog Output fields or the Relay Set Point or Hysteresis field, then the Standard Settings field displays "NonStd."

## 9. Calibration

9.1 To display the UIP Calibration screen, click the CALIBRATE button on the Main UIP Screen. If the CALIBRATE button is disabled, then first use the CONNECT button to establish communication with the sensor and then the CALIBRATE button will be enabled.

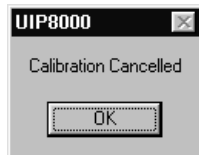


The UIP Calibration screen displays CO<sub>2</sub> PPM and Sensor Status. It also has four command buttons.

9.2 The **EXIT button** closes the UIP Calibration screen and returns you to the Main UIP Screen. After you have started a calibration the EXIT button is disabled until the calibration completes or until it is canceled.

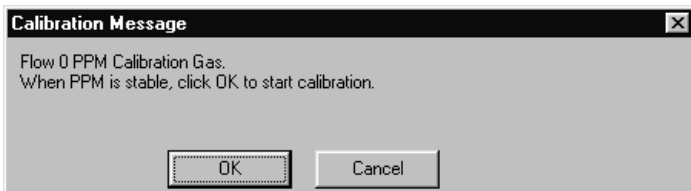
9.3 The **ZERO CALIBRATION** and **SPAN CALIBRATION buttons** lead you through steps to perform those calibrations.

9.4 The **CANCEL CALIBRATION button** becomes enabled when the UIP program tells the sensor to start calibrating. It takes the sensor three to five minutes to calibrate itself. During this time, if you click the CANCEL CALIBRATION button the UIP program resets the sensor, canceling its re-calibration and leaving it with the same calibration as before you started.



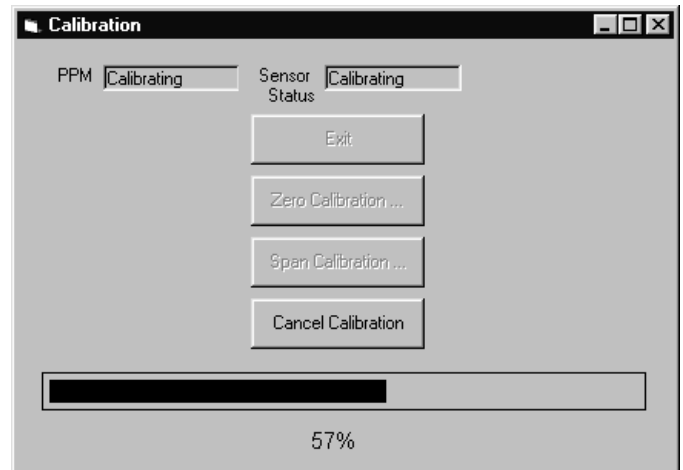
### 9.1 Zero Calibration

9.1 When you click the ZERO CALIBRATION button the UIP program prompts you with a pop-up message box to start flowing your zero PPM calibration gas. After the gas is flowing the CO<sub>2</sub> PPM displayed on the UIP Calibration screen should start to decrease. If the CO<sub>2</sub> PPM goes all the way to zero, you may want to wait a minute or two longer before clicking the OK button to continue. If the CO<sub>2</sub> PPM doesn't go all the way to zero but reaches a stable, low value go ahead and click the OK button.



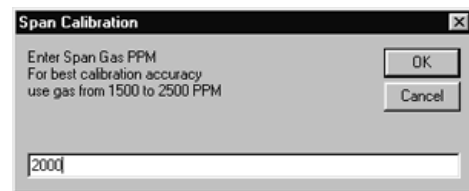
When you click the OK button the UIP program tells the sensor to start calibrating and displays its progress in a progress bar.

While calibration is in progress the EXIT button is disabled and the CANCEL CALIBRATION button is enabled. When the calibration is complete the program displays a pop-up message telling you that it is complete.



### 9.2 Span Calibration

When you click the SPAN CALIBRATION button the UIP program asks you what CO<sub>2</sub> PPM gas you will use for the span calibration. For best calibration accuracy use gas from 1500 to 2500 PPM.



After entering your span gas PPM click the OK button. The UIP program then displays a pop-up telling you to flow the span gas to the sensor and wait for the PPM reading to become stable. From this point the span calibration process follows the same steps as the zero calibration (above.)

## 10. Troubleshooting Communication Errors

### 10.1 Which Com Port?

For most PC's the answer is COM1. Some PC's have more than one serial port connector on the back. If this is so, they are usually labeled COM1 and COM2. If the connectors are not labeled you may simply connect to one of the ports, run the UIP program and select COM1. If this doesn't work, continue trying each of the COM selections.

If none of the selections work, the serial port may be disconnected. Try connecting to the other serial port on your computer and repeat the previous sequence.

### 10.2 Equipment Failure

If you cannot connect trying the above steps, you may have hardware problems. The following steps will guide you through possible equipment failure and alternatives you can try. Double check the following items for proper setup:

- Is your sensor powered up, and functioning normally, aside from not communicating with the UIP?
- Is the cable snugly connected to the sensor on one end and to your PC on the other?
- Maybe you have a bad cable. Can you get a different cable and see if that solves the problem?
- Maybe there is a problem with the sensor. Can you get a different sensor and see if that solves the problem?
- Maybe it is a problem with the PC. Can you install the UIP software on a different PC and see if it works there?

If it turns out to be a problem with the PC, here are some of the things that may be causing it:

- DB9 Serial port, not physically connected to serial port hardware inside the PC.
- Serial port hardware inside the PC not properly configured with jumpers.
- Serial port hardware inside PC disabled.
- Operating system software not properly configured, relating to com ports.
- Infrared Communications (IR) conflicts with Com Port.

### 10.3 COM1 Not Available

"Last time I ran the UIP, I used COM1, but this time the UIP says COM1 not available."

This can occur if you are running some other application program that uses a communication port, such as a terminal emulation program, or a modem communications program. You may need to stop that other application program in order to make COM1 available.

Another possibility is that the UIP is already running. If you didn't completely close the previous session, the program will not allow for two sessions to run simultaneously. In Windows® 95, you can look on the task bar — usually at the bottom of your windows desktop — and see if you have buttons for more than one running UIP program. Click each of the UIP buttons on the task bar to bring that application to your desktop so you can shut it down. In Windows® 3.1, hold the Alt key and press the Tab key several times to display icons for each of the application programs running on your system. When you see an icon for the UIP program, let go of both the Alt and Tab keys to bring the application to your desktop so you can shut it down.

### Limited Warranty

This Telaire product has been examined and tested for proper operation. Please operate this product only in accordance with the instructions.

Telaire warrants this product against defects in workmanship and materials for a period of 18 months from the date of purchase by the original owner. If the product should become defective within this warranty period we will repair or exchange it. A return authorization number must be obtained from the factory prior to returning equipment. Items received without a return authorization number will be refused. Product to be serviced under this warranty should be sent to Telaire, 6489 Calle Real, Goleta, CA 93117. Shipment must be pre-paid, properly packed and insured.

Telaire is not and will not be liable for any consequential loss or damages that may occur by reason of purchase and use of this product. The responsibility of Telaire, in any event, is strictly limited to the replacement/repair of the product.