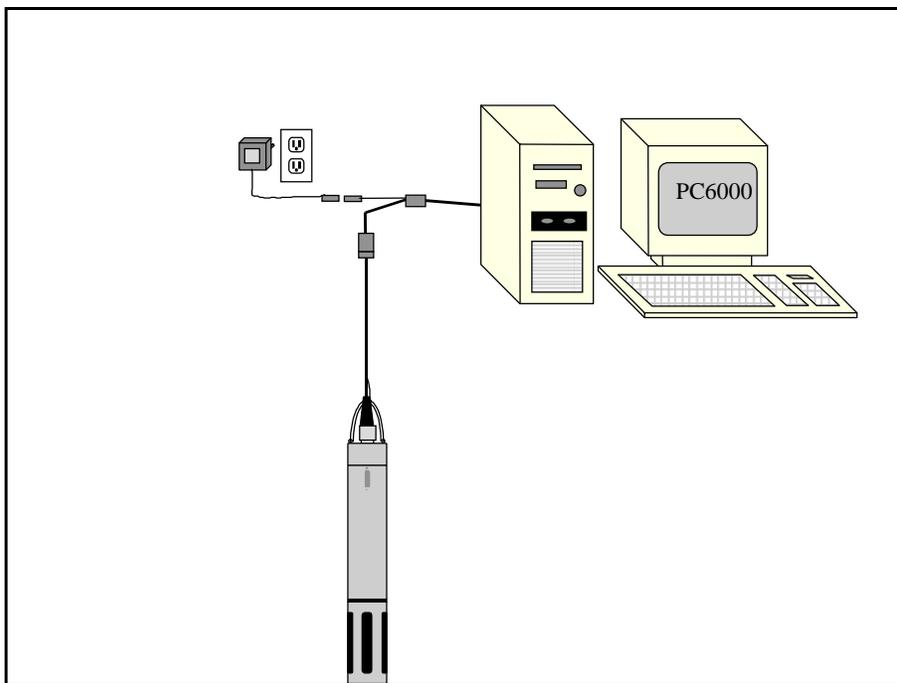


Y S I *incorporated*



PC6000 SOFTWARE

Operations Manual



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SECTION 1 INTRODUCTION

The PC6000 program is very useful in the operation of the YSI Sondes, and is provided as an option with every sonde. This PC-based software can be used with any IBM-compatible computer.

PC6000 enables you to:

- Configure and deploy the sonde
- Capture data from the sonde
- Create a variety of reports and plots
- Print reports and plots
- Save reports and plots to disk
- Export data to other programs

The PC6000 program is completely menu-driven and easy to use. You can:

- Use the arrow keys to move the cursor and highlight menu options.
- Use the Enter key to select a highlighted menu option.
- Use the Esc key to return to a previous screen.

When each menu option is highlighted, a short, descriptive help line is displayed at the bottom of the screen.

In Section 2 of this manual, you will learn how to:

- Install the software to your PC
- Run the software and set up the Com ports, and the display and plot colors
- Establish communication between your sonde and computer using PC6000

Section 3 of the manual provides the basics on how to:

- Capture data from the sonde to your computer using PC6000
- Upload data from your sonde to your computer
- Report, plot, and analyze data files using PC 6000 software

Sections 4 through 9 provide complete details of the capability of PC6000 as well as providing YSI Customer Service contact information and a list of YSI sonde and software accessories.

SECTION 2 GETTING STARTED

2.1 INSTALLING PC6000 SOFTWARE

PC6000 software can be used with an IBM-compatible PC with at least 256KB of RAM and DOS 3.0 or later. If your system is not IBM-compatible, any terminal emulation program can be used with your computer. PC6000 software is an optional accessory that can be requested at no charge with each Sonde. The diskette is located in the back of this instruction manual.

You need a graphics adapter for operation of the plotting feature. You need one RS-232 port (also called a Com port or serial port) to communicate with the sonde and to capture data files. This port must be either Com1 or Com2.

For IBM-compatible computer systems with a hard disk drive: Insert the PC 6000 disk into your floppy disk drive. At the C:\ prompt, type the letter of the drive in which the disk was inserted followed by a colon, then press **Enter**.

Example: “A: Enter”

To install PC6000 software execute the following command from the DOS prompt: “**INSTALL <destination>**” where *<destination>* is the drive and directory in which you want the PC6000 files to be installed.

Example: “INSTALL C:\PC6000”

If you have a non-standard video adapter and monitor (rare except on CAD work stations) you will also need to:

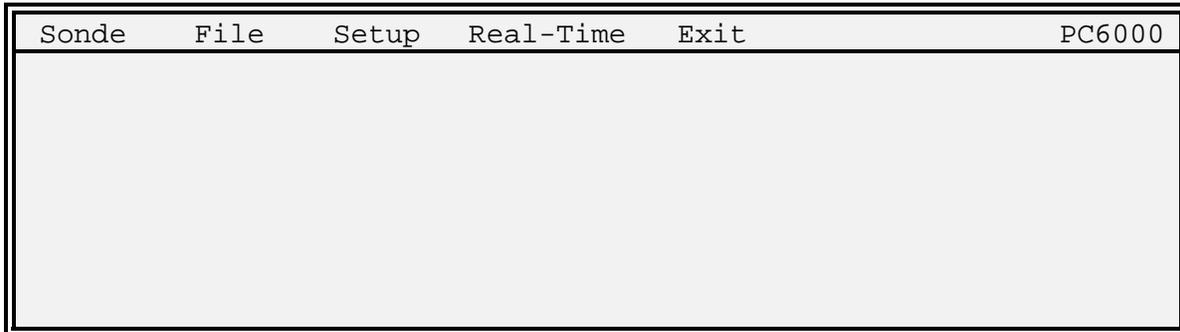
1. Put your video adapter into a compatible (standard) video mode. Typically the manufacturer of the video adapter provides a program or utility to set the video mode.
2. Type PC6000-V to run the program. This tells PC6000 to send video output through the computer BIOS (built-in firmware), rather than directly to video memory. This procedure slows down the video output somewhat, but guarantees compatibility.

2.2 RUNNING SOFTWARE

To start the software, make your current drive C:\PC6000 (or another directory where you have installed PC6000). Then type “**PC6000**” and press **Enter**. The PC6000 software will load and the menu bar will appear at the top of the computer screen.

Use the arrow keys to move the cursor and to highlight different menu options. Press **Enter** to select a highlighted option. Press **Esc** to cancel an entry.

PC6000 Main Menu Bar



2.3 SOFTWARE SETUP

To begin setting up your computer to communicate with a sonde, highlight **Setup** and then press **Enter**. Check the default setup values by referring to the following instructions and/or the PC6000 Setup Screen below.

```

---DISPLAY -FORMATS-----COMPUTER-CONNECTIONS-----
Date format:          MDY          Comm port:          1
Date separator:      /              Baud rate          9600
Time separator:      :              Printer Port       1
Radix mark:          .              Printer type       HP LaserJet laser

-----MORE-SETUP-----COMPUTER-DISPLAY-----
Data capture setup... Menu colors:          User-defined menu colors
Advanced Setup...     Plot colors:          User-defined plot colors
                       Graphics mode:      Automatic selection hi-res

```

Select the **Comm** option to enter the number of the Com port (1 or 2) to which your sonde is connected. Press **Enter** to confirm a new entry. If the default setting is correct, it does not need to be changed.

Select the **Baud** option to check the baud rate. The baud rate should be 9600. If it is not, highlight it and press **Enter**. A list of possible baud rates will appear. Select 9600 from the list and press **Enter**.

Select the **Printer** option to specify the parallel port (LPT1, LPT2 or LPT3) to which your printer is connected. If no printer is connected, select LPT1. Press **Enter** after making your selection.

Select **Printer type** to select the type of printer connected to your computer system. From the list, choose the selection that best describes your printer. If your printer is not on the list, refer to your printer's instruction manual to determine what type of printer your printer emulates. Press **Enter** after making your selection.

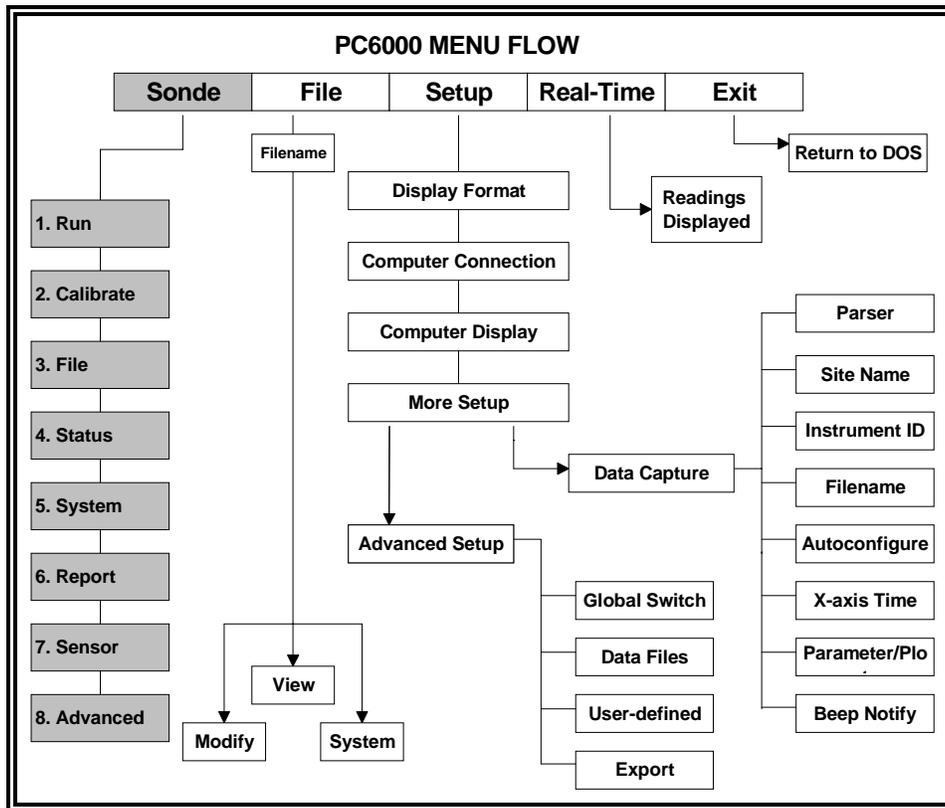
Select the **Menu colors** option to choose a color scheme for the PC6000 menus. As you move the cursor between color schemes, the screen changes to display your selection. Press **Enter** to confirm a selection.

Select the **Plot colors** option to choose a color scheme for the PC6000 plots. As you move the cursor between color schemes, the screen changes to display your selection. Press **Enter** to confirm a selection.

Other setup functions are described in Section 4.2, **Setup Menu**, but are usually are not necessary for a quick start into the sondes operations. Press **Esc** to exit the Setup Menu. The cursor will return to the PC6000 Menu bar.

The PC6000 menu flow chart will help you visualize the relationship between the most often used options in this PC-based software. To better understand the relationship between Sonde software and PC6000 PC software, the sonde software menu items are listed in the shaded areas. Refer to this chart as you learn more about the specific functions of these menu items in the following descriptions.

PC6000 Menu Flow Chart for Sondes (Some choices in the sonde menu are not available with all sondes)



2.4 COMMUNICATING WITH YOUR SONDE

There are two sets of software at work within the YSI sonde. PC6000 is resident in your PC, while the other software is resident in the sonde itself. When you select **Sonde** from the PC6000 Main menu the PC based software begins direct communication with the sonde-based software via standard VT100 terminal emulation.

Using the arrow keys, highlight and select **Sonde** from the Main menu bar. Press **Enter** as instructed, type “**menu**” after the # sign and the Main sonde menu will appear.

To use PC6000 to establish communication between your computer and sonde:

1. Connect one end of your YSI cable to the sonde and the other to the computer 's Com port that was selected above.
2. Make certain that your sonde is powered either with batteries or a power supply.
3. Using the arrow keys, highlight the **Sonde** selection in the top menu bar of PC6000 and press **Enter**.

A display similar to that shown below will appear, followed by a # sign. As instructed, type "menu" after the # sign and the Main sonde menu will appear.

PC6000 Main Menu Bar

Sonde	File	Setup	Real-Time	PC6000
# menu				

Sonde Main Menu

-----Main-----	
1-Run	5-System
2-Calibrate	6-Report
3-File	7-Sensor
4-Status	8-Advanced
Select option (0 for previous menu):	

After establishing sonde communication proceed to Section 2 of the Sonde's Operations manual supplied with your sonde to learn about the basics of Sonde setup. Pay particular attention to leaning low to set up Discrete Sampling and Unattended Sampling studies from the Run menu. Then proceed to the next section of this manual to learn how to capture data from the sonde to the computer in real time, to upload data from sondes containing memory, and to analyze the captured or uploaded data.

SECTION 3 USING PC6000 TO CAPTURE, RETRIEVE AND ANALYZE DATA

CAPTURE – ALL SONDES

Once you have learned how to carry out Discrete Sampling studies using the sonde software (Section 2 of your Sonde Operations Manual), you can capture that information into a data file on your computer hard drive. This function is particularly useful when using sondes with no internal memory (600R, 600XL, and 6820). *Note, however, that this capture function can take place only after the PC6000 software has been properly configured to match your parameter selection as described in the following paragraphs.*

PC6000 uses the date and time from your PC's internal clock to stamp each incoming data point. It is important, therefore, to make sure that the date and time are set up correctly inside your computer. Consult your computer instruction manual if you are unsure how to set the internal clock.

To set up for data capture return to the PC6000 menu bar by pressing F10.

Sonde	File	Setup	Real-Time	PC6000
# menu				

Highlight **Setup** from the top-line menu and press **Enter**.

Select **Data Capture Setup** from the Setup menu and press **Enter**. The Data Capture Setup menu will be displayed.

Parser: 6000		
Site name: Clear Lake		X-axis time per screen: 1
Instr ID: 96E12345		Parameters per plot: 2
Filename: CLRLAKE3	Auto-configure	Beep notification: Both
<u>ColumnParameter & Units</u>	<u>Minimum</u>	<u>Maximum</u>

Use the arrow keys to highlight the **Filename:** then type in a name that you will use to store the data on the computer hard drive or diskette. Remember that while you can type up to 15 characters in the name, MS-DOS will only recognize the first 8 for file designation.

Now highlight **Auto-configure** and press **Enter**. This makes sure that the Data Capture setup in PC6000 software has the same parameters as selected in the Report setup of the Sonde software.

The parameters listed in the lower part of the display (not shown) are likely to change during the Auto-configure execution.

IMPORTANT: Without the execution of the Auto-Configure command, the PC6000 software may display error messages that refer to “differing parameters” that prohibit you from proceeding.

Leave all of the other selections with their default settings intact and then press **Esc** twice to return to the menu bar of PC6000.

To capture data, use the arrow keys to select **Sonde** from the main menu and press **Enter**. At the # sign type “**menu**”. This command returns you to the Main Sonde menu. Next select **1-Run** from the Main menu, and **1-Start sampling** from the Setup Menu (600R, 600XL or 6820) or the Discrete Sample menu (600XLM, 6600 or 6920). Lines of data will be displayed to the screen and updated at the interval specified.

Now press the **F3** key and a message appears on the screen asking for the type of data file you wish to create. Select **PC6000** and press **Enter**. A message now appears on the screen asking, “**OK to create new data file?**” Press **Enter** to indicate ‘yes’ and data capture to your designated file will begin.

As noted above, a change in the format of the displayed data in that both date and time will now be displayed. In this mode, data appearing on the screen will be saved to your computer memory until you press either **Esc** or **F3**. When you press either of these keys, data capture halts and returns the display to the original data scrolling. A second press of **Esc** will stop the sampling and return the display to the Run menu.

You may view and/or analyze the data by pressing F10, and then following the instructions in the **Section 3, Analyzing Data**.

RETRIEVE – 600XLM, 6600 AND 6920 SONDES

PC6000 Software can also be used as the interface to transfer (upload) data logged to sonde memory from the sonde to the computer hard drive. This function only applies to sondes with internal memory (6920, 6600 and 600XLM).

To carry out this operation, consult Section 2 of your Sonde’s Operations Manual on the logging of data to sonde memory using the Discrete Sample and Unattended Sample features of the sonde software. Make certain that you have logged at least one file (or study) to the sonde memory. After logging is complete and the studies terminated, attach the sonde to the computer via the YSI cable as described above.

You may now retrieve data files using the following procedure. Remember these are not files in the PC6000 directory, but are in the sonde file directory.

Run PC6000 software on your PC and select **Sonde** from the PC6000 menu bar using the arrow keys. At the # sign, type “**menu**” to enter the Sonde Main menu. Next select **3-File**.

```

-----File-----
1-Directory      4-View file
2-Upload        5-Quick view file
3-Quick Upload  6-Delete all files

Select option (0 for previous menu): 1
    
```

Select number **1-Directory** to view all files currently stored in the sondes flash disk memory, the screen below shows 5 files. File 4-CLRLAKE2 is a 2-week study from August that can be uploaded to PC6000 for viewing or plotting. The other 4 files are related to different studies. You do not need to upload all files in the directory.

File	Samples	First sample	Last sample	Interval	Site
1-BRIDGE1	20	07/10/96 09:42:52	07/10/96 09:44:12	Discrete	Kenton Rd.
2-BRIDGE2	20	07/10/96 10:15:20	07/10/96 10:16:40	Discrete	Lakeview Dr.
3-UPLAKE	672	07/10/96 12:00:00	07/14/96 12:00:00	00:15:00	Lake Site A
4-CLRLAKE2	1672	08/14/96 11:00:00	08/28/96 11:00:00	00:10:00	Clear Lake
5-DWNLAKE2	21	08/31/96 12:42:31	08/31/96 12:43:54	Discrete	Lake Site B2

Select option (0 for previous menu):

Press **Esc** to return to the previous menu, File.

Select number **2-Upload** to view file lists in memory, and uploads the data to PC-based software. With YSI PC6000 software you can produce reports, plots, data manipulation, statistics, and more.

Prior to upload, a “**Time window**” display appears that will allow you to select portions of the logged data to upload. You may select **1-Proceed** to upload all logged data from the dates and times displayed.

```

-----Time window-----
1-Proceed
2-Start date=08/14/96
3-Start time=18:00:00
4-Stop  date=08/28/96
5-Stop  time=11:00:00

Select option (0 for previous menu):
    
```

Select **1-Proceed**. Choose the appropriate file transfer protocol (in this example, PC6000) and a status box will appear in the lower right quadrant of the screen. Verification of a successful transfer is indicated when all of the requested data are transferred.

```
-----File type-----  
1-PC6000  
2-Comma & ' ' Delimited  
3-ASCII Text  
  
Select option (0 for previous menu):
```

In the File menu, when you select **3-Quick Upload**, the same operation as **2-Upload** is performed, except only the most recent flash disk file is uploaded in its entirety. You still must choose the transfer format.

Select **4-View File** to examine the data in any file currently stored in the sondes flash disk memory. You will first view the same screen as viewed in the Directory menu. From this menu choose the file of interest, then, using the Time window menu, choose the dates and/or times of interest. If you choose dates or times that are not within the designated start and stop times, no data will be displayed.

You also may choose the entire file. You can use the **Space Bar** to stop and restart the scrolling at any time. Use the **Esc** key to stop the view.

Select number **5-Quick view file** to view the last page of data from the last data file in flash disk memory. This feature is particularly useful to quickly review any recently acquired data so that system performance can be assessed.

Select number **6-Delete** all files to **IRREVERSIBLY** removes all files from the sonde flash disk memory. It is critical not to use this option until all relevant data from sonde memory is transferred to your computer via one of the upload options. There is a verification screen that appears, so that pressing the number 6-key does not immediately delete all files.

Now proceed to the next section to get the basics relevant to analyzing your captured or uploaded data.

ANALYZE

This section provides only basic information on obtaining reports, plots, and analysis of your uploaded or captured data files. Detailed information on the many powerful functions associated with these aspects of PC6000 software are found in **Section 4, PC6000 Menus** of this manual.

To begin your data analysis, select **File** from the PC6000 menu bar.

A box will appear on the screen asking you to enter a filename. You may type a filename or press **Enter** for a directory listing all PC6000 format files on your hard drive. Use the arrow keys to

highlight the desired file and then press **Enter** to access the selected file. If only one file resides in the directory, it will automatically load into PC6000.

Filename: CLRLAKE2.DAT		
MODIFY	VIEW	SYSTEM
Parameters...	Header	Print Report
Control Info...	Report	Print Plot
Scaling Info...	Plot	Definitions
	Statistics	Export

Any changes you make from this menu will affect only the file listed, in this case CLRLAKE2.DAT. To change default values for all files, see **Section 4.1, File Menu**.

To view general information on the screen including filename, site description, a list of active sensors, logging information, and more use the arrow keys to highlight **Header** and press **Enter**. Press **Esc** to return to the File menu.

Using the arrow keys highlight **Report**, press **Enter** and the information will scroll by. You can view a time-stamped report of the entire set of data collected in the study. Press **Pause/Break** to stop the report and press **Enter** to resume. Press **Esc** to return to the File menu.

Select **Plot** to view a graphical expression of the data from the study. All Reports and Plots can be customized to your preference.

Press **Esc** until the menu of the PC6000 program appears. You have now completed Basic Operation of the sonde, which included basic calibration procedures, basic sampling and deployment procedures, data capture, and data retrieval and viewing using PC6000 software.

SECTION 4 PC6000 MENUS

4.1 FILE MENU

The **File** menu option of PC6000 software allows you to specify and customize reports and plots based on data that has been captured from the sonde. Select **File** from the PC6000 menu bar, and press **Enter**.

Sonde	File	Setup	Real-Time	Exit	PC6000
-------	------	-------	-----------	------	--------

The following prompt appears on the monitor screen.

Filename: *.dat

At this prompt, press **Enter**. A list of all data files in the current directory will be displayed. Highlight the file you wish to retrieve from the list. If only one data file exists, that file will be loaded automatically.

SAMPLE.DAT	38046	2/06/92	11:11 am
CLRLAKE.DAT	21035	10/30/93	6:00 am
RIVER2.DAT	1926	7/23/96	10:22 pm

NOTE: To retrieve files stored on another drive or directory, at the **filename:** prompt, type the source drive and directory, then press **Enter**. For example, when you type A:\PC6000\ at the prompt, you will view a list of all files located in the directory named PC6000 and stored on a disk in the A: drive.

When you choose a file, the following screen will appear. Highlight the option you prefer, then press **Enter**. Use the Tab or Arrow keys to move through the options. There are 10 options, the first being "Parameters". MODIFY, VIEW and SYSTEM are column headers only. The figure below shows "Parameters" is highlighted as an example.

Filename: SAMPLE.DAT		
MODIFY	VIEW	SYSTEM
Parameters...	Header	Print Report
Control Info...	Report	Print Plot
Scaling Info...	Plot	Definitions...
	Statistics	

The following descriptions are the various options under the **File** menu, beginning with MODIFY, then VIEW, and finally SYSTEM.

4.1.1 MODIFY

Any modifications performed with these functions will allow you to customize data and format reports and plots for a selected file only. See **Setup** later in this section to change default values permanently. Select **Parameters** from the Modify menu.

X-axis parameter	

Date + Time	
Y-axis parameter	

Temperature	C
Specific Cond	mS/cm
DO	mg/L
pH	
ORP	mV

Add parameter here
Delete this parameter
Move parameter up
Move parameter down
Detail this parameter

The Parameters menu helps you define the way you want your reports and plots to appear. When you highlight any parameter on this display and press **Enter**, the submenu appears. Each of the submenu functions is described below. You may select one parameter for the X-axis, and up to twelve parameters for the Y-axis.

Select **Add parameter here** to add a parameter to a report or plot. A list of all available parameters that can be added will be displayed. Choose those parameters that you want to be included in reports and plots.

Select **Delete this parameter** to delete the highlighted parameter from reports and plots.

Select **Move parameter up** or **Move parameter down** to shift the highlighted parameter up or down one position. By using these options all parameters within a report and plot can be displayed in the order you prefer.

Select **Detail this parameter** to view the detailed information of a highlighted parameter. PC6000 has many built-in formulae. Each formula accepts certain inputs and produces a single output. An example of this is the formula for specific conductance, which is calculated from temperature and conductivity. Most formula inputs must be in the input data file from the sonde, but some can be entered as constants. For example, the total dissolved solids (TDS) constant can be manually entered.

Parameter:	TDS (g/L)
Formula:	Temp(C) Cond(mS/cm) TDScoef
Inputs:	Temperature (C) from 6030 probe, channel 0 Conductivity (mS/cm) from 6030 probe, channel 3 TDS coeff source not selected
Compensate:	

Parameter identifies the parameter you just chose.

Select **Formula** to view and change the formula used by PC6000 to calculate the selected parameter. This option will allow you to change formulae and input sources only in circumstances where multiple formulae or input sources exist. If formula options for the highlighted parameter exist, they will be displayed when pressing Enter while the formula is highlighted.

The **Inputs** option is reserved for future software enhancements.

Select **Compensate** to compensate a data file for long term sensor drift. This compensation procedure is also commonly called Post-Calibration.

Compensation Example: Dissolved oxygen data can be collected periodically throughout a long-term deployment using a separate, freshly calibrated DO meter. This independent data can then be used to compensate the sondes data for any sensor drift that may occur over time.

NOTE: The setup menu options for date format, date separator, time separator, and radix separator, all apply here. The date, time and value are separated from each other by spaces. Lines that do not match the above format are ignored.

To create a compensation file, use a word processing program or follow the procedure below. The file must be simple ASCII. In WordPerfect you use the DOS Text Out feature. In Word, save as file type Text Only (*.TXT). From DOS, proceed as follows:

1. Issue the DOS command "COPY CON DO.CMP". The DO designation reminds you that you are compensating DO % data in this exercise.
2. Type the compensation data into your file, placing each independently acquired reading on a separate line. Make sure each line is correct before you press **Enter** for that line.

Example: 12/31/92 23:59:59 100
 1/15/93 16:02:00 98
 2/15/93 18:00:00 94

In this example, an independent DO reading taken at 4:02 PM on 1/15/93 showed a value of 98 % air-saturation.

3. After the last line has been typed and entered, hold down Ctrl and press Z, then press **Enter**.
4. The message "1 File(s) copied" should appear.

If only one data point is entered into the compensation file, all data after that date and time will be corrected. If more than one data point is included in the compensation file, data between points will be corrected linearly.

To enter the compensation filename, press TAB while the highlight cursor is on Compensate. The highlight cursor will move to the right. Enter the path and file name.

Example: C:\DO.CMP Enter.

When you enter a compensation filename, the program performs a test load of that compensation file. A summary is displayed so you can verify the file structure. The summary includes how many lines were accepted, rejected, or blank, the total number of lines, and the earliest and latest date.

If you compensate a constant used in calculating one parameter, you must also compensate the same constant if you use it to calculate other parameters. A total of 1000 compensation points are allowed for any single report or plot.

Select **Control Info** from the Modify menu. The Control Info menu will be displayed.

Enter title line	
SAMPLE.DAT	
First sample was at:	02/05/92 13:58:00
Enter start time:	begin
Enter stop time:	end
Last sample was at:	02/06/92 11:42:00
Logging interval was:	60 seconds
Enter averaging interval:	0
X-axis time per screen:	1304
Cross-parameter style:	AVG
Cross-parameter bins:	100 (maximum 2350)
Parameters per plot:	2

The Control Info menu allows you to report or plot an entire file, or any portion of a file. Other options on the Control Info menu allow you to average several data points together and set up reports and plots to display data in the format you choose.

Below the prompt, **Enter title line**, assign a title that will appear on all reports and plots. SAMPLE.DAT is shown in the example screen above.

Select the four options below to view start and stop times of the file, and specify portions of the file to report or plot.

First sample was at:
Enter start time:
Enter stop time:
Last sample was at:

The first and last line of this block of information indicates the actual start and stop times of the current file. You can identify any segment of time from within a file to report and plot data. For example, if the duration of the deployment was five days, but you wish to see a report and plot for only the third day, simply enter the start and stop dates and times associated with day three. Even though all five days of data are retained, reports and plots will show only day three.

The following two options show the sampling interval which was in effect throughout the deployment and a method by which you can consolidate readings to improve report and plot appearance.

Logging interval was:
Enter averaging interval:

You may choose to average several data points together for reporting and plotting. For example, if the sondes readings were captured every 900 seconds (15 minutes) during the deployment, you might want the reports and plots to average four of these readings together so that the information can be reported or plotted on an hourly basis. To do this, define an averaging interval of 3600 seconds.

Select **X-axis time per screen** option to specify the time interval on the X-axis. This line is only applicable when Date + Time have been defined for the X-axis. You can define the width of a given plot screen in minutes by changing the number of minutes in this option.

Select **Cross-parameter style** to choose one of four plot styles. This option is only applicable if a parameter other than Date + Time is selected for the X-axis (see Parameters above).

An averaged plot (**AVG**) assumes a correlation between the X-axis and the Y-axis parameters. The averaged plot divides the X-axis into equal-sized memory bins. Each sample is tallied into the appropriate memory bin based on its X-axis value. When finished, the average value for each Y-axis parameter in each memory bin is displayed.

A sequential plot (**SEQ**), plots each point successively as it comes from the data file. A sequential plot provides more detail on the data than an averaged plot, but can appear rather messy.

The increase (**INC**) and decrease (**DEC**) plots are types of sequential plots. An increasing plot only displays points when the X-axis values are increasing. A decreasing plot only displays points when the X-axis values are decreasing. The increasing and decreasing sequential plots are especially useful if you are profiling and display depth on the X-axis. Thus the plot shows only the time in which the sonde is being lowered or raised.

Select **Cross-parameter bins** to set up the number of bins that will appear on the X-axis. This feature only applies to reports and averaged plots (see descriptions above) with a parameter other than Date + Time on the X-axis. Changing this value modifies the number of bins into which the X-axis is divided. The smaller the number of bins, the wider and more general is the plotted information. The maximum number of allowable bins varies with the capability of your computer system, and is displayed in parentheses. For example, 100 is selected, and the maximum is 2350 as shown in the screen above.

Select **Parameters per plot** option to setup the number of parameters that will be plotted together. If you choose 1, there will be an individual X and Y-axis displayed for each selected parameter. Select any number of parameters per plot, (from 1 to 4) which provides your data with the best plot presentation.

Select **Scaling Info** from the Modify menu.

Scaling technique: automatic							
Copy default to manual							
Copy automatic to manual							
Parameter	Units	Default Scaling		Manual Scaling		Automatic Scaling	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
Temperature	C	-5	45	-5	45	4.6	2.1
Conductivity	mS/cm	0	100	0	100	0	100
pH		2	14	2	14	2	14
ORP	mV	-1000	1000	-1000	1000	-1000	1000
DO	mg/L	0	20	0	20	6.1	15

There are three scaling options.

Default Scaling offers fixed limits. These limits correspond to the range of each parameter as defined by the sensor specifications, so your plot will always fit within these limits.

Manual Scaling allows you to enter custom limits for each parameter.

The computer scans the data file and determines the limits, then displays those limits on the plot in **Automatic scaling**.

NOTE: When entering a scaling technique, you need only type the first letter of the desired technique and press **Enter**. PC6000 will fill in the rest.

Select **Copy default to manual** or **Copy automatic to manual** to provide a quick way to copy from either the default or automatic limits columns to the Manual scaling column.

Once you copy data into the manual scaling column, it can be modified. After copying is complete, you will lose “manual limits” that were defined previously.

- You can not change Default Scaling limits.
- You can change Manual Scaling limits.
- You can not change Automatic Scaling limits, but they are updated each time an automatically scaled plot is generated.

4.1.2 VIEW

All of the **VIEW** file options allow you to view file data on the screen.

Filename: SAMPLE.DAT		
MODIFY	VIEW	SYSTEM
Parameters...	Header	Print Report
Control Info...	Report	Print Plot
Scaling Info...	Plot	Definitions...
	Statistics	Export

Select **Header** to display complete information about the sonde, probes, and configuration of the current file.

Select **Report** to display a complete list of all readings (as defined by the settings in the Modify portion of the menu) from the current file to the screen. As the report is scrolled onto the screen, you can pause at any time by pressing any key. Once the entire report has been displayed, use the Arrow keys, the Page Up and Page Down keys, or the Home and End keys to move to any location within the report. If your computer system has limited RAM, early data points within a report may become unavailable for viewing. To redisplay unavailable data points, simply redisplay the Report from the beginning.

Select **Plot** to display a plot of the current data file to the screen. The plot can be customized, see Parameters and Control Info above. A plot can be abandoned at any time by pressing Esc, or paused by striking any other key. If a plot is too large to fit on one screen, it will automatically move to a new screen.

Select **Statistics** to view statistics of a data file, or portion of a data file. As with reports and plots, the displayed statistics are affected by the choices you make in the Parameters, and the Control info menus described previously. To view statistics for a portion of a file enter the start and stop times in Control Info. Statistics are only available after a report or plot is run.

Sensor Type	Minimum	Maximum	Mean	Std.Dev.
Temperature (C)	4.69	21.00	5.88	2.877
Conductivity (mS/cm)	0.01	29.94	0.41	1.934
pH	6.32	9.44	7.64	0.200
ORP (mV)	75.7	313.5	156.7	36.45
DO (mg/L)	6.12	14.97	6.70	0.696
Number of samples = 1305				

To print a copy of the Statistics screen, press the F2 key.

4.1.3 SYSTEM

SYSTEM menu options allow you to print the report and plot the data, or export the data to another software program. The specific setup format of the report or plot can also be frozen for future use.

Filename: SAMPLE.DAT		
MODIFY	VIEW	SYSTEM
Parameters...	Header	Print Report
Control Info...	Report	Print Plot
Scaling Info...	Plot	Definitions...
	Statistics	Export

Select the **Print Report** option to send your report to the printer. After you select this option, a prompt appears on the screen asking if your printer is ready. Press **Enter** to proceed with the print operation. If more than 8 parameters are to be printed, PC6000 will assume you have a wide-carriage printer. If your printer is not wide-carriage, set your printer to compress mode before printing (see your printer manual for instructions). The printer port option, in the setup menu, specifies the computer port to which the report will be sent.

Select the **Print Plot** option to send your plot to the printer. After you select this option, a prompt appears on the screen asking if your printer is ready. Press **Enter** to proceed with the print operation. The printer port option, in the setup menu, specifies the computer port to which the plot will be sent.

Select **Definitions** to create and save different report or plot configurations from the same data file. Each file contains all options and setup information you defined in the Modify menus, see the MODIFY options section, described earlier. After you have selected Definitions from the SYSTEM menu.

```

Active definition:          default report/plot
Select an action:         Select a definition
                          Create new definition
                          Rename active definition
                          Delete active definition
                          Clear active definition

```

Active definition displays the name of the current active definition.

Highlight **Select a definition** and press **Enter** to retrieve an old definition.

Highlight **Create new definition** and press **Enter** to create a new report and plot format. You will need to name the new definition, then specify the new definition by variation of the current format.

Example: if you want to report and plot only dissolved oxygen readings in mg/L for your study instead of all parameters, first create a new definition at the prompt by typing **“DO”**. Then exit the definition menu by pressing **Esc**. Scroll to the **Parameters** menu and eliminate all parameters except DO, mg/L. This data presentation can then be reported, plotted, or exported, but more importantly, if you return to this data file at a later time, the **“DO”** definition can always be selected to provide this same data format since it has been saved under its own designation.

Remember: Always name the new definition in the “create new designation” option prior to making changes that will define the new format.

Select **Rename active definition** option to change the name of the active definition.

Select **Delete active definition** option to remove the active definition from the file.

Select **Clear active definition** option to reset the active definition to default values. Thus all customization features that you previously set up are reset to the default values.

Select **Export** menu option to export a data file to another program. After selecting the Export option you will be asked to name the file to be exported. The default name is the same as the current data file with the extension .PRN, .CDF, or .SDF, depending on the export format selected, ASCII, Comma & Quote Delimited or Space Delimited, respectively. Export formats are selected in the Advanced Setup menu, see **Section 4.2, Setup Menu**). After the file has been exported to disk, it can be retrieved using any program you choose. This feature is especially useful when exporting to a database or a spreadsheet program. Follow the importing instructions outlined in the destination program to retrieve the export file you have created.

4.2 SETUP MENU

Highlight **Setup** from the PC6000 menu bar and press **Enter** to configure the PC program to your specifications.

```
-----DISPLAY-FORMATS-----      -----COMPUTER-CONNECTIONS-----
Date format:          mdy          Comm port:          2
Date separator:      /            Baud rate:         9600
Time separator:      :            Printer port:      1
Radix mark:          .            Printer type:      HP LaserJet laser

-----MORE-SETUP-----            -----COMPUTER-DISPLAY-----
Data capture setup...  Menu colors:       Pacific Ocean (color)
Advanced setup...     Plot colors:       Danube River (color)
                       Graphics mode:       Automatic selection
```

Other than the Comm port and Printer port options, the default values should be adequate to perform virtually every function of the Sondes.

Under the COMPUTER-CONNECTIONS heading, select **Comm port** to make necessary changes if the default value is not correct. This option must be properly set before you can communicate with the software inside the Sonde. See **Section 4.1.3, System**, to verify agreement between the sonde and PC software. If you have difficulty communicating with the sonde, change the Com port and try again. PC6000 allows only Com port 1 or 2.

Change the baud rate by highlighting **Baud rate**, then press **Enter**. Select from the list of possible baud rates that are displayed. The baud rate you select here must match the baud rate set in the sonde (which defaults to 9600).

Select **Printer port** to specify where your computer's printer is connected. If you have difficulty printing, specify a different printer port (1, 2, or 3) and try again.

Select **Printer type** to provide a list of printers that are supported by PC6000. Select a printer that best describes your system's printer. If you have difficulty printing, try a different selection here. You may need to consult the printer instruction manual to determine what type of printer your printer emulates. The printer type option only affects plot output, having no effect on report printing.

Under DISPLAY-FORMATS change any default values that are not appropriate by typing in the correct format.

Date format: **mdy**
Date separator: **/**
Time separator: **:**
Radix mark: **.**

Users may specify any order of day (d), month (m), and year (y) by selecting Date format. The other options are used primarily outside of the US where other characters are sometimes used to separate numbers in dates, times, or decimals.

Use the options below to specify what type of monitor your computer has, and change the colors of both menus and plots as they are displayed on the screen.

Menu colors
Plot colors
Graphic Mode

The color selections have no effect on the printed output of reports and plots. Simply press **Enter** to activate either the Menu or Plot color selections, scroll through the choices with the Arrow keys, and after selecting a color scheme, confirm it by pressing **Enter** again. If none of the color schemes are to your liking, you can setup a User Defined color scheme. See **Section 5, Advanced Setup**.

From the list provided, choose a graphics mode which best matches your video adapter and monitor. If you have difficulty, consult your video adapter's instruction manual.

Under **MORE-SETUP** there are two important menu options. Each has been given a separate subsection. Section, **Data Capture/ Real-Time Setup**, provides the instructions for you to configure your sonde to provide "real-time" graphical display of in the discrete sample mode.

4.3 DATA CAPTURE / REAL-TIME SETUP

When **Real-time** mode has been properly set up, you will be able to view the data in real-time as it is taken in the Discrete sample mode by the sonde. Each reading is displayed at the bottom of the real-time screen, and plots are updated with the arrival of each data point. In addition, the data will be automatically stored to the disk drive that you select.

The **Data capture setup** screen will appear similar to the one shown below.

Parser:	6000	X-axis time per screen:	1
Site name:	YSPRINGS	Parameters per plot:	2
Instr ID:	96K12345	Beep notification:	off
Filename:	CLRLAKE2	Auto-configure	
Column	Parameter & Units	Minimum	Maximum
-----	-----	-----	-----
1	Temperature (C)	-5	45
2	Specific Cond (mS/cm)	0	235
3	DO (%)	0	200
4	DO (mg/L)	0	20
5	DO Charge	0	110
6	pH	2	14

The Data capture setup process is not difficult, but you must *carefully* follow the instructions below to be sure of successful operation.

STEP 1. Verify parameters in the Report setup (sonde software). Select **Sonde** from the PC6000 main menu bar and, if required, type “menu” at the #_sign. Select **1-Run**, then **1-Discrete_sample**, then **1-Start sampling**. Make certain that the parameters that you want to view in real-time are displayed correctly. Adjust these parameters, if necessary, via the Report Setup menu in the Sonde software. Check these parameters again by viewing what is displayed on the screen. Exit the Sonde menu by pressing **F10** and return to the main menu bar of the PC6000 software.

STEP 2. Choose parameters in Data capture setup (PC6000 software). From the PC6000 main menu bar select **Setup**, then **Data capture setup**. Verify that the Parser setting is “6000” for 600XLM, 6600 and 6920 sondes or “600” for 600R, 600XL and 6820 sondes. If not, type “6000” in at the prompt and press **Enter**. Enter an appropriate site name, then press **Enter**. The Site Name identifies the sampling location and is displayed on the File Header and Real-Time screens and printouts. Enter an appropriate file name, then press **Enter**. The filename is limited to 8 characters. Next highlight **Auto-configure**, then press **Enter**. There will be a 5-10 second delay while the PC6000 software examines the sonde software to determine the parameters that you have decided to view in real-time. When the process is complete, these parameters appear in the list in the lower portion of the Data capture setup screen.

STEP 3. Set up display parameters which you wish to view (or hear) in real-time. Be sure to press **Enter** after each entry. First, set the **X-axis time per screen** in minutes. Next, set the **Parameters per plot** that can be a value from 1 to 4. Finally, set the **Beep notification** to indicate the acquisition of good data, bad data, or all data (both). Bad data contains errors in the communication protocol when arriving from the sonde. This is rarely observed. If you prefer, you can eliminate the beep function completely by selecting “off”. Simply type in one of the 4 notifications (good, bad, both, off) indicated above, and press **Enter**.

STEP 4. Set the scaling for each of the parameters in the lower right portion of the menu. There is no automatic scaling in this mode, so you should select the manual scaling ranges that will result in

a meaningful display of your data. These selections will become easier with experience. Use the Tab key to move from Minimum to Maximum, and the arrow keys to move vertically within the scaling limits. Be sure to press **Enter** after each scaling entry.

STEP 5. Start sampling with the sonde. After entering scaling factors, exit to the PC6000 main menu bar by pressing Esc twice. Then access **Sonde** from the PC6000 main menu and press **Enter**. Type “**Menu**” at the # prompt and press **Enter**. Select **1-Run**, then **1-Discrete** sample, then **1-Start sampling** and begin sampling at the sample interval that is suitable for your study. *While the discrete sample mode is still operative, exit to the PC6000 main menu bar by pressing F10. Do not press Esc or the sampling will be terminated.*

STEP 6. View the data in real-time. From the PC6000 main menu bar, select Real-Time and press **Enter**. The Discrete Sample data from the sonde will be plotted on the display and will be logged to disk automatically under your designated file name.

COMMON CAUSES OF ERRORS IN Real-Time MODE

The Parser is not set correctly. Set the Parser by typing in “6000” for 600XLM, 6600 and 6920 sondes, and “600” for 60R, 600XL and 6820 sondes.

You have selected more parameters in the Sonde Report setup than can be viewed on the computer screen. Remove Time and Date and/or other less important parameters in the Report setup menu so that all selected parameters are visible in Discrete Sample display.

The name that you entered for your file name already exists on your storage disk, but the file format for the initial study is different from the current file format. Change the name of the data file or delete the existing data file of this name from your disk.

You exited the Discrete sample mode of the sonde software using Esc rather than F10. Return to the Sonde menu and select 1-Run. Restart the Start sampling mode and exit with F10 to the PC6000 menu bar. Choose Real-Time and press **Enter**.

SECTION 5 ADVANCED SETUP

These options are provided for the advanced user who has special requirements of PC6000. It is important to remember that the default values assigned to these options will be appropriate for most operations.

Select **Setup** from the PC6000 main menu bar, highlight **Advanced Setup** and press **Enter**. Advanced Setup menu appears.

```
-----GLOBAL-SWITCHES-----      -----EXPORT-----
      ---                          --
Default scaling technique: automatic  Export file format:  prn
Default parameters per      2         Export date format:  form
plot:
Full screen sonde menu:     no        Export header
                                   format:
Multiple formula query:     yes       CDF delimiter:     ,

-----DATA-FILES-----
      ---
Default data directory:

-----USER-DEFINED-----
      ---
User-defined menu
colors...
User-defined plot
colors...
User-defined printer control codes...
```

Select **Full-screen sonde menu: yes** to specify whether terminal emulation should use the entire PC screen, or should take place within the usual border drawn by the PC software.

Select **Export date format: FORM** to choose from a variety of date formats for the exported data.

FORM (formatted):
MM/DD/YY and HH:MM:SS.

SEP (separated):
6 numeric values (m,d,y,h,m,s).

COMB (combination):
YYYYMMDD and a string of the form HH:MM:SS.

JUL (Julian):

A ten-digit integral number of seconds past midnight March 1, 1984.

NUM (numeric):

A fixed point number of the form DDDDDD.TTTTTT where DDDDDD is the number of days past December 31 1899, and where TTTTTT is the fractional part of the day which has elapsed (.750000 is 6 PM).

REL (relative):

A fixed-point number of the form HHHH.HHHH giving the number of hours elapsed since the first sample in the file.

NOTE: The export date format only applies to CDF and SDF export files. The date and time formats displayed on the PC6000 screen are determined in the SETUP menu.

Select **Export header format:** -- to specify what header lines (if any) should be included at the top of CDF and SDF export files. The header can contain up to three lines.

(-): No header lines.

P: One header line, containing the name of each Parameter.

U: One header line, containing the name of each Unit.

T: One header line, containing the name of the report Title.

Select **Multiple formula query:** N to change the characteristics of a derived parameter. This option should be set to N for no, except for advanced users.

Select **User-Defined menu colors** to customize the menu colors of PC6000. Changing the colors using this option permanently modifies the color scheme of **User Defined Colors** in the Setup menu. To use this feature, select a menu item to be changed from the lists provided. Find the box that has the same title as the item you selected. Stop scrolling when the desired color is displayed and press **Esc**. Continue this process until all colors appear to your liking.

Select **User-Defined plot colors** to modify the plot colors of PC6000. As detailed in the User-defined menu colors section above, select plot items to be changed from the list provided and press **Enter**. Watch the sample plot as you repeatedly press **Enter**. Press **Esc** when the item color you prefer is displayed. Repeat this process until all plot colors are to your liking.

Select **Default Data Directory:** to specify the drive and directory to which you want all PC6000 files to be stored. Type the drive and directory to which you wish all PC6000 data files to be stored when captured from the sonde.

Example: Typing C:\PC6000 would save all data files to the C:\ drive and to a directory called PC6000.

Select **User-defined printer control codes:** to manually enter special printer commands. Consult your printer's instruction manual for the specific commands compatible with your printer.

Select **Export file format:** **PRN** to setup a format if you wish to export data to another program. See **Section 4.1, File Menu** for more information. The software determines the correct format to specify to which you want to export data. Consult the manual of the destination software to determine the compatible format.

The three export format choices PC6000 allows are:

Printer format (PRN):

Select this option to export data in exactly the same format as it would be sent to a printer. All page headings, column headings, and form feeds are present in the export file.

Comma & Quote (“”) delimited format (CDF):

Select this option to export data in a format that encases all strings of data in double quotes, and separates each option on each line with a comma (or other delimiter character). There will be no spaces on any line unless they are inside a string.

Example: "12/31/92","23:59:59",123.45,12.3,123

Space delimited format (SDF):

Select this option to export data in a format with fixed-column fields, which can be string or numeric. Strings and dates are left justified in their field, numbers are right justified. Strings are not encased in quotes. Lines are fixed width, and columns are apparent when viewing the file.

Field widths are as follows:

- title is 80 characters
- parameter names and units are 8 characters each
- numbers are 8 digits including the radix separator and decimal digits
- formatted dates are two 8 character strings separated by 1 space
- separated dates are six 3-digit values
- combined dates are an 8-digit number and an 8 character string separated by 1 space
- Julian dates are 10 digits
- numeric dates are 13 digits
- relative dates are 9 digits

Example: 12/31/92 23:59:59 123.45 12.3 123

Select **Default scaling technique:** or **Automatic** or **Default parameters per plot: 2** to modify the default values for reports and plots. These options are described in detail in **Section 4.1.1, Modify**. The Setup menu determines what the default scaling technique and parameters per plot should be for each new data file. Change the values here to modify these options for future reports and plots. To modify these options only for a current file, see **Section 4.1, The File Menu**.

SECTION 6 TROUBLESHOOTING

This section contains a troubleshooting table that will be helpful to identify the causes of the most common difficulties that may occur while operating the PC6000 software. The **Symptom** column describes the type of difficulty that you might experience. The **Possible cause** column describes the conditions that might cause the stated symptom. The **Action** column provides simple steps that can be followed to correct for the "possible cause" and cure the "symptom" being experienced. The column entitled **Ref** is the number of the reference section and subsection in the manual where you may find additional information.

If you need assistance that this Troubleshooting section can not provide, please contact YSI or your authorized dealer. See Section 7 for specific contact information.

SYMPTOMS	POSSIBLE CAUSE	ACTIONS	REF
PC6000 software operates but no data are captured to disk.	Data capture not set up	Move cursor to data capture setup and make proper selections.	3
	Will not auto configure.	Enter parser, site name , ID	5
	After auto configure, no data arrives	Return to sonde menu and start sonde	
PC6000 displays data, no files found.	Data directory path not recognized	Move cursor to PC6000 Advanced setup and establish a directory	2
	Data files not readable	Export file as PRN, CDF, SDF	6
Expected parameters are not displayed on reports or plots	Parameters not added to Y-axis list	Add parameter	3
	Sensor disabled	Check sensor setup instructions in the sonde manual	
Unable to print reports or plots	Printer port improperly configured	Try a screen print out to the printer (print scrn)	
	Printer port improperly set	Check setup	6
	Printer type improperly selected	Check setup	6
	Print cable improperly connected	Check connections at both ends	
Video screen of PC is not readable	Incorrect menu color option has been selected	Select appropriate menu parameter	
	Incorrect graphic mode	Select compatible graphic mode	5
When selecting "sonde" from PC6000 top line, sonde menu not shown	Prompt # appears in place of menu	Type "menu" and press (enter)	4
	Communication problem	Make certain com port selection is correct.	

SECTION 7 CONTACT INFORMATION

For any questions regarding PC6000 software, or any YSI equipment, please contact YSI Technical Support at (800) 897-4151 or e-mail at ysi@support.com. For ordering YSI equipment or accessories, please see your YSI dealer, or the contact information below.

1700/1725 Brannum Lane
Yellow Springs, Ohio 45387 USA
(800) 765-4974 (937) 767-7241
FAX: (937) 767-9320
Website: <http://www.ysi.com>
E-mail: info@ysi.com

SECTION 8 SENSOR DRIFT APPLICATION NOTE

SENSOR DRIFT COMPENSATION

The following application note is designed to facilitate the use of the sensor drift software included in the PC6000 package by providing the user with a specific example.

After laboratory calibration, a user deployed their sonde in a readily accessible stream on 10/14/92 with the instrument set to capture data to memory at 15-minute intervals. The study was named SRUN7. The instrument was left in place for approximately 2 weeks and during this time period, the user visited the site 3 times, took a water sample in a sealed bottle, and, on returning to the laboratory, measured the dissolved oxygen and pH with recently calibrated instruments. The user also collected a water sample when the instrument was retrieved (10/26/92) and measured dissolved oxygen and pH in the laboratory. The following records were kept.

Laboratory Measurements

Date	Time	DO (mg/L)	pH
10/17/92	8:00	5.40	7.62
10/29/92	8:00	7.50	7.63
10/23/92	10:00	7.30	7.58
10/26/92	8:15	6.32	7.60

The user now has everything required to compensate the DO and pH readings for field drift:

- The data file captured by the computer or data collection platform.
- The correct DO and pH readings at various times during the study based on grab samples of water which were analyzed with recently calibrated laboratory instruments.
- PC6000 software for retrieval and manipulation of the data from the sonde memory.

COMPENSATION PROCEDURE

- 1- For this example, make certain that the data file is present in a subdirectory of the hard drive (C:\PC6000).
- 2- "Exit" from PC6000 software using the top menu bar. The "C:\PC6000" prompt should be displayed.

- 3- The user must now write compensation files which contain the above data points and which will be accessed automatically by the PC6000 software. If the "C:\PC6000" prompt is displayed, the files will be located in the same subdirectory as the SRUN7.DAT data file. A *compensation file for each parameter (DO and pH, in this example) must be written*. Since the overall filename is SRUN7.DAT, the DO compensation file will be called SRUN7DO.CMP and the pH compensation file will be called SRUN7PH.CMP. Note that for accurate record keeping, the compensation file name should somehow be related to the name of the overall study. For example, it will become extremely confusing if all dissolved oxygen compensation files are named "DO.CMP" as shown in the brief example in the manual.
- 4- To compose the DO compensation file, type the following at the "C:\PC6000" prompt:

```
C:\PC6000 COPY CON SRUN7DO.CMP --
(Return)
10/17/92 8:00:00 5.40 (Return)
10/20/92 8:00:00 7.50 (Return)
10/23/92 10:00:00 7.30 (Return)
10/26/92 8:15:00 6.32 (Return)
Control Z (Return)
```

The screen will display "1 File Copied" if all is correct and the file SRUN7DO.CMP will now be in the "PC6000" subdirectory of the C drive. Note that the data must be entered in exactly the above format:

- (1) The time must contain a designation for seconds even if the user does not know this value exactly; an entry of XX:XX:00 is suggested for all time inputs
- (2) There must be a space between the date, time, and parameter value entries.

- 5- To compose the pH compensation file, type the following at the "C:\PC6000" prompt:

```
C:\PC6000 COPY CON SRUN7PH.CMP --
(Return)
10/17/92 8:00:00 7.62 (Return)
10/20/92 8:00:00 7.63 (Return)
10/23/92 10:00:00 7.58 (Return)
10/26/92 8:15:00 7.60 (Return)
Control Z (Return)
```

The screen will display "1 File Copied" if all is correct and the file SRUN7PH.CMP will now be in the "PC6000" subdirectory of the C drive.

- 6- After writing the DO and pH compensation files to the C:\PC6000 directory, type "PC6000" at the "C:\PC6000" prompt to re-enter the PC6000 software package. Just as would be done for no compensation, prepare the plot and report output format desired by manipulation of the "Parameters", the "Control Information", and the "Scaling Information".
- 7- After the format is finalized, re-enter the "Parameters" section of the software. Place

the cursor on the "DO (mg/L)" entry, press "Return", and then select the "Detail this parameter" option within the window.

- 8- Move the cursor to the "Compensate" entry and press "Return". Move the cursor to the "DO, mg/L" entry and press "Return" to activate the compensation of this parameter.
- 9- Press the "Tab" key once to move the cursor to the right portion of the screen and then enter the location and designation of the DO compensation file in this bar. In this case, the entry is: **C:\PC6000\SRUN7DO.CMP**. Press "Return" and the screen should appear as follows if the procedure has been followed:

Parameter:	DO (mg/L)		
Formula:	Temp (C)	Cond (mS/cm)	DO (%)
Inputs:	Temperature (C) from 6030* probe, channel 0		
	Conductivity (mS/cm) from 6560 probe, channel 1		
	DO (%) from 6560 probe, channel 2		
Compensate:	DO (mg/L)		c:\pc6000\srundo.cmp

- 10- Carry out the same procedure for pH:
 - (a) Activation of the compensation, and
 - (b) Entry of the location and designation of the pH compensation file.

SECTION 9 ACCESSORIES

STANDARD EQUIPMENT WITH YSI SONDES

- 600R, 600XL, 600XLM, 6820, 6600 or 6920 Sonde with Calibration Cup
- EcoWatch for Windows Software
- Operations Manual
- Guard for Probe Compartment
- 6570 Maintenance Kit
- 6560 Conductivity/Temperature Probe (not supplied with the 600R)

PROBES FOR THE SONDES

- 6560 Conductivity/Temperature Probe
- 6561 pH Probe
- 6562 Rapid Pulse DO Probe
- 6565 Combination pH/ORP Probe
- 6026 Turbidity Probe, wiped
- 6036 Turbidity Probe, unwiped
- 6882 Chloride Probe
- 6883 Ammonium Probe
- 6884 Nitrate Probe

OPTIONAL ACCESSORIES FOR THE SONDES

- PC6000 Software (Available at no cost)
- 6027 Turbidity Wiper Kit
- 6035 Probe Reconditioning Kit for 6562 Dissolved Oxygen Probe
- 062655 Carrying case
- 6038 12 VDC power supply with 110 VAC input
- 6037 12 VDC Power Supply with 220 VAC input
- 6100 External Power Connector, attaches to 6095B Field Cable
- 6570 Maintenance Kit
- 5775 Membrane Kit
- 6108 Desiccant Cartridge Kit
- 6109 Desiccant Canister Kit
- 065802 Replacement Desiccant

CABLES FOR THE SONDES

- 6093 Field Cable, 100 ft (30 m)
- 6092 Field Cable, 50 ft (15 m)
- 6091 Field Cable, 25 ft (7.5 m)
- 6090 Field Cable, 8 ft (2.4 m)
- 6191 Field Cable, Vented, 25 ft (7.5 m)
- 6192 Field Cable, Vented, 50 ft (15 m)
- 6067B Low Cost Calibration Cable, Dry use only; 10 ft (3m)

- 6077B CE Calibration Cable, 10 ft. (3m)
- SP6093-L Special field cables available in 25 ft (7.6 m) increments; Maximum 1000 ft (305 m)
- 6098B Field Cable to 610-D/610-DM adapter
- 6096 Field Cable to Flying Lead (wire) adapter, 15 ft (5m)
- 6095B Field Cable to Female DB-9 (PC Serial with Power Connector)
- 6099: 610 to Female DB-9 (PC Serial)
- 6100 External Power Connector, attaches to 6095B Field Cable (6ft)
- 6102: 610 to Portable Power Pack Adapter
- 6103 MS-8 Dust Cover (caps connector when not in use)

CONDUCTIVITY REAGENTS

- 3161 Calibrator Solution, 1,000 uS/cm (quart)
- 3163 Calibrator Solution, 10,000 uS/cm (quart)
- 3165 Calibrator Solution, 100,000 uS/cm (quart)
- 3167 Calibrator Solution, 1,000 uS/cm (box of 8 pints)
- 3168 Calibrator Solution, 10,000 uS/cm (box of 8 pints)
- 3169 Calibrator Solution, 100,000 uS/cm (box of 8 pints)

pH REAGENTS

- 3821 pH 4 Buffer (box of 6 pints)
- 3822 pH 7 Buffer (box of 6 pints)
- 3823 pH 10 Buffer (box of 6 pints)

ORP REAGENTS

- 3682 Zobell Solution (125 ml)

AMMONIUM REAGENTS

- 3841 1 mg/L ammonium-nitrogen standard solution
- 3842 10 mg/L ammonium-nitrogen standard solution
- 3843 100 mg/L ammonium-nitrogen standard solution

NITRATE REAGENTS

- 3885 1 mg/L nitrate-nitrogen standard solution
- 3886 10 mg/L nitrate-nitrogen standard solution
- 3887 100 mg/L nitrate-nitrogen standard solution

TURBIDITY REAGENTS

- 3845 0 NTU standard
- 6073 100 NTU standard suspension
- 3846 200 NTU standard suspension
- 3847 800 NTU standard suspension

DISPLAYS, LOGGERS, AND ACCESSORIES

- 610-D Handheld Field Display with Accessories
- 610-DM: 610-D with 128K of memory
- 610-DM: 610-D with 512K of memory
- 614 Ultraclamp, C-clamp Mount for 610
- 615 Leather Carrying Case for 610
- 616 Cigarette lighter adapter (powers and charges 610s)
- 617 Replacement Battery Pack for 610
- 6099: 610 to Female DB-9 (PC serial)
- 6097 Blank port plug for 610
- 6104 Replacement Charger Jack for 610
- 6042 Battery Charger for 610
- 6101 Portable Power Pack for 610 or sondes

LOGGER/TELEMETRY

- 1240: SDI-12 Logger for interfacing as many as 10 6-Series devices. Can also serve as RF telemetry platform (RF radio, battery, interface cable, junction box not included)
- 1240B1: 7 amp hour, lead acid 12 VDC rechargeable battery
- 1240B2: 20 amp hour, alkaline 6 VDC battery (2 required)
- 1240AC: 110 VAC charger/transformer assembly, charges 1240B1
- 1240SO: 1240 Solar Panel Assembly, includes panel, mount, cable
- 1240SE: 1240 Serial data interface cable, connects 1240 to PC
- 1240JU: 1240/6 series Junction Box, provides input of multiple SDI-12 devices (standard configuration is for 5 devices)

Note: For RF radio frequency telemetry system applications, contact YSI Customer Support @ 1-800-363-3269 (USA) or 508-748-0366 or fax 508-748-2543.

SOFTWARE

- PC6000: MS-DOS compatible communication, upload, plotting
- 610SOFT: Software upgrade for Model 610 D/DM
- 6920SOFT: Software upgrade for Model 6920
- EW-DOS EcoWatch for MS-DOS Applications
- EW-WIN EcoWatch for Windows (Use EW-WIN for 6-Series Applications)



YSI incorporated

1700/1725 Brannum Lane
Yellow Springs, Ohio 45387 USA
(800) 765-4974 (937) 767-7241
FAX: (937) 767-9320
Website: <http://www.ySI.com>
E-MAIL: INFO@YSI.COM

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