M&M Refrigeration, Inc.

PC Monitor

User's Manual

Revision History

Revision	Date	Change
-	11/2003	Initial Release

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Introduction

M & M Refrigeration, Inc.'s (M&M) **PC MONITOR** is a centralized Computer Control System (CCS) monitoring software package designed to meet the needs of plant control and monitoring. **PC MONITOR** and its companion package **MAINTENANCE MANAGER**™ can help reduce plant operating costs, lower resource requirements, and provide an easy to use integrated control system through its use of an intuitive graphical interface. **PC MONITOR** can be used on-site through a direct communication or network link or off-site with the use of a modem. **PC MONITOR** and **MAINTENANCE MANAGER** are customized to match your control system's configuration and provide all of the features available on the CCS. Capabilities of **PC MONITOR** and **MAINTENANCE MANAGER** which will aid in the management of your plant are as follows:

- CCS Control and Monitoring
- System Logging of CCS Data
- Save and Restore Function for System Setpoints
- Standard Report Printing of Logged Data
- Custom Report Generator
- Automatic Printing of Specified Reports
- Real-Time Graphics Screens Displaying Plant Equipment and Layout Information
- Historical Graph Plotting of Logged Data
- Real-Time Graph Plotting of Analog Data
- Exporting of Logged Data for Use by Third Party Software
- Equipment Runtime Monitoring and Editing Capability
- Maintenance Plan Generation and Scheduling

PC MONITOR and Maintenance Manager are *Microsoft Windows*™ (Windows) compatible packages and as such require that Windows 95 or higher be installed on your system. If you have chosen to purchase a complete system from M&M Refrigeration, all necessary software has been configured on the delivered system. If you have purchased the software separately, contact your local software dealer or M&M Refrigeration, Inc. for information on Windows software.

About This Manual

The *M&M Refrigeration* **PC MONITOR** *User's Manual* is a comprehensive guide that contains descriptions of all the procedures you need to use the **PC MONITOR** software. To help you learn and use **PC MONITOR** efficiently, this manual is organized in a top down manner. The manual begins with definitions of the Windows environment, screen types, button types, and then moves on to actual procedures used in the various **PC MONITOR** functions. Some of the features described in this manual are optional and may not be included in your version.

Conventions

The **PC MONITOR** document uses a few special conventions which are described in the following sections.

The Keyboard

- The keys on your keyboard may not be labeled exactly as they are in this manual. All key names are shown using capital letters. For example, the Control key is shown as CTRL; the Escape key is shown as ESC.

- Keys are frequently used in combinations or sequences. For example, SHIFT+F1 means to hold down the SHIFT key while pressing the F1 key. ALT, F, A, means to press and release each of these keys in order: first ALT, then F, and then A.

- *Arrow keys* is the collective name for the UP ARROW, DOWN ARROW, LEFT ARROW, and RIGHT ARROW keys.

Text

- Specific text you are to type is shown in bold. For example, if the manual says to type **cd monitor** you type the lowercase letters "cd" followed by a space and the lowercase word "monitor". What you type is always shown in lowercase letters, unless it must be typed in uppercase letters to work properly.

- Place holders for items such as filenames that you must supply yourself are shown in italic. For example, when the manual says to type **cd** *directory_name* you type the letters "cd" followed by a space and the name of a directory. For a directory called "budget", you would type **cd budget**.

- Command buttons or field areas on screens are shown with their first letter of each word capitalized. For example, the print screen button will be referred to as "*Print Screen*".

Document

- The ☞ symbol will be displayed throughout the manual to indicate tips.

Hardware and Software Requirements

In order to provide proper performance, version 2.0 or higher of **PC MONITOR** requires the following minimum hardware and software configurations:

Hardware

Windows 95 or higher:

- Pentium 100 MHz Computer
- 16 MB RAM
- 500 MB Hard Drive
- 3.5" 1.44MB Floppy Disk Drive
- VGA Graphics Board with 1MB RAM
- 14" VGA Monitor (.28 dpi)
- Microsoft MS-Windows Compatible Mouse

☞ **TIP:** If you are not using the system logging feature only 300 MB of free hard disk space is required.

Additional Requirements

The following is a list of special considerations when using **PC MONITOR**:

- A security key is required
- Windows 95 or higher is required to run a network version of **PC MONITOR**
- Depending on your PC and operating system, a 256 color or less Video Driver must be used to utilize the ink saver mode for printing
- Windows NT and 2000 can be supported but may a special software configuration.

Communication Requirements

The **PC MONITOR** package has the ability to communicate with the CCS through both an on-site 9600/19200 baud direct link, an off-site 1200/14400 baud modem link or through a Local Area Network (LAN). In order to work properly the following hardware requirements apply for each type of communications:

Direct Link

- Optically isolated RS-422 Interface Card (Direct Connect)
- Belden #9503 6 Conductor 22 AWG Twisted Shielded Pair with Drain Wire Cable

Modem Link

- Hayes Compatible 1200/14400 Baud External/Internal Modem (Phone Line Access)

☞ **TIP:** A Practical Peripherals brand modem is preferred but not required

Network Link

- TCP/IP and Windows Sockets Compatible Network
- Special server and client software must be installed in addition to **PC MONITOR**

Installation

PC MONITOR first requires the installation of Windows 95 or higher. If you have purchased a complete system from M&M, the current version of Windows is pre-installed and configured on your system. If you have purchased the **PC MONITOR** software only and do not have the current version of Windows loaded on your system you will need to purchase and install Windows as described in the *Microsoft Windows User's Guide*.

Additionally, if you did not purchase a complete system from M&M you will need to install the **PC MONITOR** software as directed in the installation instructions included with your software. **PC MONITOR** may be distributed on only one CD or on several 3.5" high density floppy diskettes, depending on the size of your CCS. Once **PC MONITOR** is successfully installed it may be executed directly from Windows by using the default **PC MONITOR** icon.

Technical Support

If you have questions about the M&M **PC MONITOR** package, first refer to this manual or consult on-line help for a solution. To use help, press the Help button located on all **PC MONITOR** screens and select the category you want.

If you can't find the answer in your documentation contact M&M Technical Support, using the phone number or address provided with the software.

If you call, you should be sitting in front of your computer with **PC MONITOR** running and this manual available. Whether you call or write, please provide the following information:

- The version number of Windows and the version number of **PC MONITOR**
- The type of hardware you are using, including network hardware, if applicable
- A description of what happened and what you were doing when the problem occurred
- The exact wording of any messages that appeared on your screen

Getting Started

This chapter presents the basic skills and concepts that you need to use M&M Monitor. In this chapter you will learn Windows fundamentals and Monitor screen types, buttons, and status indicators.

PC Monitor in the Windows Environment

If you are new to Windows the following sections will help you learn Windows fundamentals, especially the ones evident in the Monitor program. Some of the fundamentals covered are using the mouse, cursor types and their meanings, types of selection/editing tools, and button types used in Monitor. For a more detailed overview of Windows you should refer to the *Microsoft Windows User's Guide*.

Using the Mouse

The mouse controls a pointer on the screen. You move the pointer by sliding the mouse over a flat surface in the direction you want the pointer to move on the screen. You do not press the mouse buttons when you move the mouse. If you run out of room to move the mouse, lift it, move it, and then put it down. The pointer doesn't move while the mouse is in the air.

The mouse will have two or three buttons; the left button is used for most tasks in Monitor. It should be noted that although a mouse may have three buttons, you will only need to concern yourself with the left and right buttons when working with Monitor. Moving the mouse and pressing a mouse button are the only actions required in the basic mouse skills of *pointing, clicking,* and *dragging.*

Pointing	Moving the mouse to place the pointer over an item is called pointing.
Clicking	Quickly pressing and releasing a mouse button is called clicking. You can select items on the screen and move around within Monitor by clicking. Double-clicking, pointing to an item and quickly pressing a mouse button twice, is a convenient shortcut for many of the tasks you will do in Monitor.
Dragging	Holding down a mouse button as you move the pointer is called dragging. You can use this technique to select text during different functions in Monitor.

Mouse Cursors

When you point with the mouse to different parts of a screen in Monitor the pointer shape changes, allowing you to perform different tasks. Some commands also change the pointer shape to provide you with feedback that a task is being performed.

The following table lists the common pointer shapes and their significance.

Pointer Shape	Significance
⌖ **Arrow Pointer**	The arrow pointer appears in inactive windows, scroll bars, or tool bars. You can choose a command, click a button, and pull down list boxes.
I **I Pointer**	The insertion pointer appears when you are in the text area. This is sometimes called the "I-beam" pointer. You use this pointer to indicate where you want to begin typing by clicking the mouse at that position.
⧗ **Hourglass**	The hourglass pointer appears when Monitor is performing a task that will take a few seconds.
☝ **Pointing Finger**	The finger pointer appears on a custom graphics screen when the pointer is over an area that contains additional information. Clicking the left mouse button will move you to this additional screen. This pointer is also present in the help screens when the pointer is over an item which contains more detailed information.
⌖ **Left Mouse Button**	The left mouse button pointer appears when you are over a selectable field which is not currently selected. Clicking the left mouse button selects the field.
⌖ **Right mouse button**	This right mouse button pointer appears over a selectable field which is selected. Clicking the right button will cycle the field through the available choices.

Icons

Icons are small pictures that represent various types of applications and files in the Windows environment. You may run a desired application by double-clicking with the mouse on the icon. Most application icons look unique to allow you to easily choose between them. An example of an icon is the M&M Monitor icon shown below.

PC Monitor

If you wish to become more proficient in the Windows environment and with the use of icons you can refer to the *Microsoft Windows User's Guide*.

Scroll Bars

Scroll Bars are used to move different parts of a log, report, etc. into view when all the data does not fit in the window. You can also use scroll bars to view unseen portions of lists and other information that cannot fit in the space allocated by the window. Scroll bars may be present in both the vertical and horizontal position, as shown in the example below.
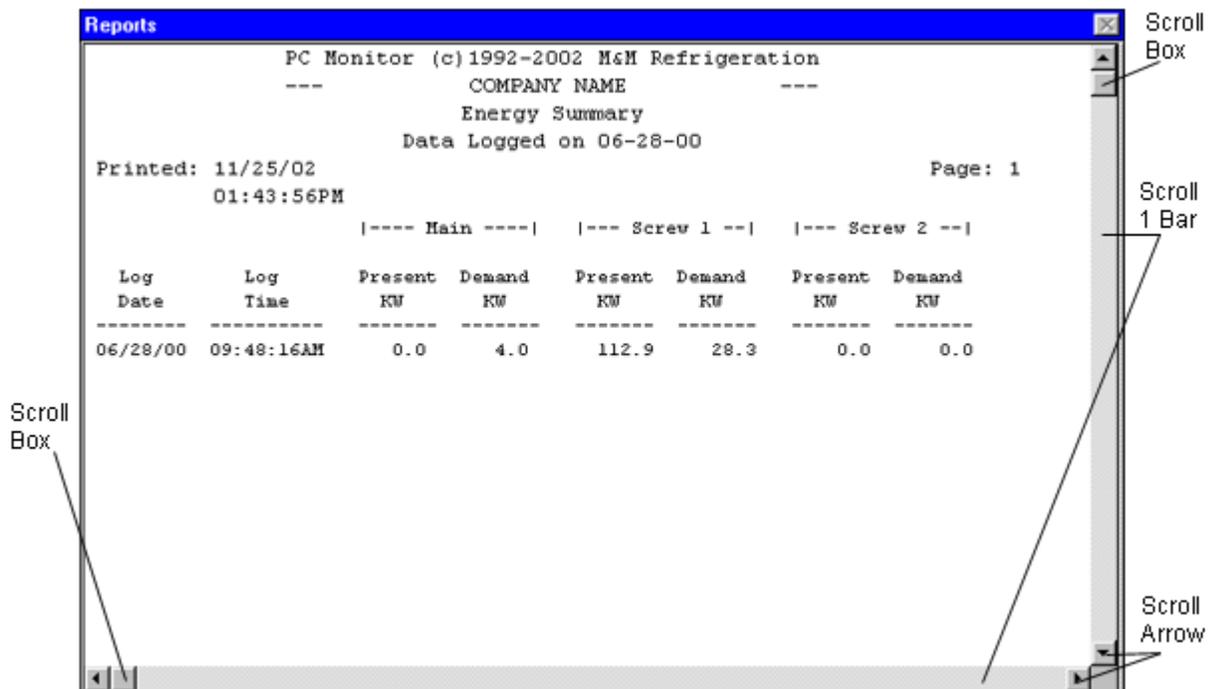
You can move through the information by simply dragging the scroll box with the mouse in the direction you want to move. You also can use the following techniques to scroll.

To scroll	Do this with the mouse
One line up or down	Click the up or down scroll arrow.
One screen	Click the scroll bar above or below the scroll box on vertical scroll bars, and to the left or right of the scroll box on horizontal scroll bars.
Continuously	Point to one of the scroll bar arrows, and hold down the left mouse button until the desired information comes into view.
To any position	Drag the scroll box in the scroll bar to the position you want. The section of the log or list that moves into view depends on where you position the scroll box. For example, if you position the scroll box halfway down the vertical scroll bar, the text in the middle of the log or list appears.

Edit Cells

Edit Cells are used to enter text or numbers that are used by Monitor as shown in the following example:

Name | M&M Refrigeration |
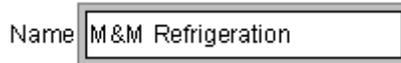
If the edit cell is empty, an *insertion pointer* (flashing vertical bar) appears in the far left side of the box. The text or numbers you type start at the insertion point.

When you move to an edit cell that already contains text or a number, the text is selected and any text you type replaces it. You can also delete the existing text or number by pressing DEL or BACKSPACE. If you do not wish to delete the entire selected text you can also use the left and right ARROW KEYS to de-select the text and move the cursor to the desired position.

Selecting Text

You can make changes to blocks of text by selecting (highlighting) the text you want to change, and then typing in the new text or number you desire.

To select text

1. Point with the mouse to the first character you want to select.

2. Hold down the left mouse button and drag the insertion point to the last character you want to select.

3. Release the left mouse button.

To cancel the selection, click again anywhere on the window. If you click on an edit cell the insertion pointer will be displayed at the position where you clicked. This allows you to insert letters, numbers, or words into any position in the text string.

☞ **TIP:**   You can select a single word by double-clicking on it with the left mouse button.

Editing text

You can modify text once it has been selected. The following table describes some of the techniques and shortcuts that can be used with selected text or numbers. The Windows environment provides temporary storage for information you may want to transfer in an area called the Clipboard.

Do this with the keyboard	To
Type the new text	Replace the text with new text or a number.
Press DEL or BACKSPACE	Delete the text or number. (It is not placed onto the Clipboard.)
CTRL+INS or CTRL+C	Copy the selected text and place it onto the Clipboard.
SHIFT+DEL or CTRL+X	Delete the selected text and place it onto the Clipboard.
SHIFT+INS or CTRL+V	Paste text from the Clipboard into the active edit cell.
CTRL+Z or ALT+BACKSPACE	Undo the last editing action.

List Boxes

A *List Box* displays a list of choices. If there are more items than can fit in the box, scroll bars are provided so you can move through the entire list. An example of a typical list box is shown below.

Available Numbers
1-800-888-8888 : Joe's Food Barn
1-403-897-6543 : Barnyard Foods
1-207-401-3899 : Smith Industries
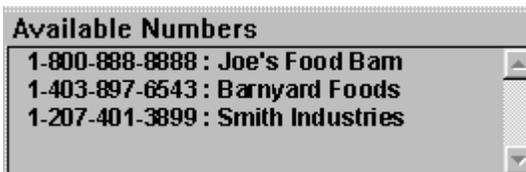
List Box

To select an item from a list box

1. Use the mouse to click the up or down scroll bar arrow or to drag the scroll box until the item you want to select appears in the list box.

2. Click on the item.

Drop-Down List Boxes

A *Drop-Down List Box* appears initially as a rectangular box with a downward facing arrow at the far right. The current selection will be displayed in the box area. When you select the arrow, a list of available choices appears. If there are more items than can fit in the box, scroll bars are provided. An example of a typical drop-down list box is shown below.
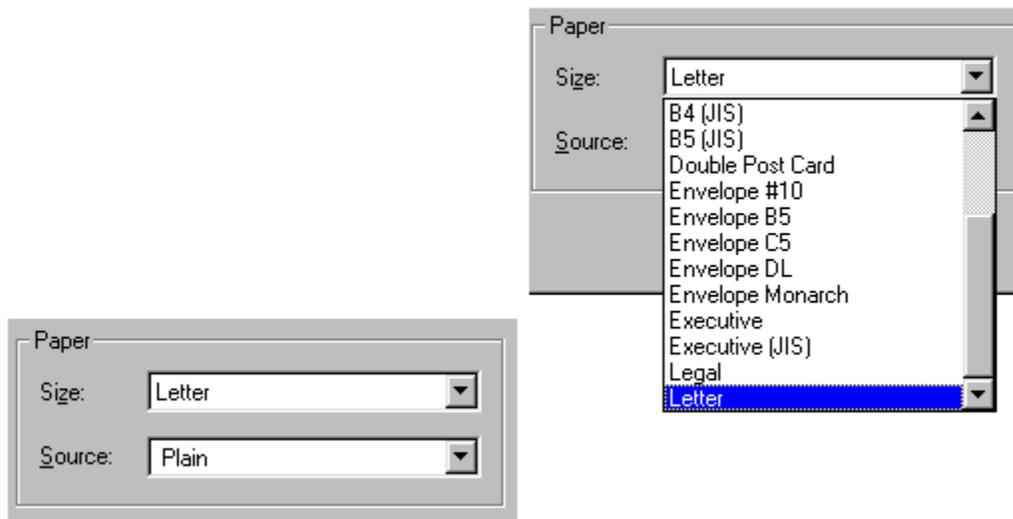
Drop Down List Boxes

To open a drop-down list box and select an item

1. Use the mouse to click the arrow at the right of the box to open the box.

2. Click the up or down scroll bar arrow, or drag the scroll box, to move the item you want to select into the display area.

3. Click on the item.

☞ **TIP:**   Typing the first letter of an item in a list box will automatically scroll the list box to that area.

Option Buttons

Option Buttons, also referred to as *Radio Buttons*, represent mutually exclusive options. You can select only one option at a time.

The selected option button contains a black dot. Unavailable options are dimmed (disabled). An example of option buttons is shown below.
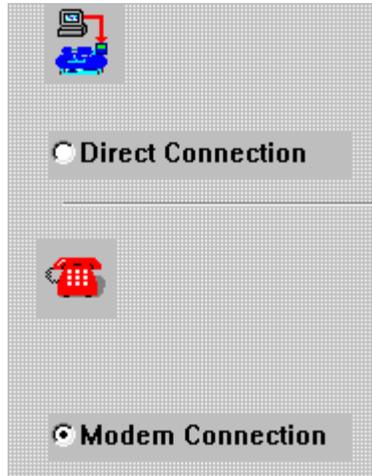
Communication Options

To select an option button

1. Place your cursor over the white dot, and with the left mouse button, CLICK to complete your selection. A small black dot will be inserted indicating the selection was completed.

Check Boxes

A *Check Box* next to an option means you can select or clear the option. You can select as many check box options as needed. When a check box is selected, it contains a ✓. Unavailable options are dimmed. An example of check boxes is shown below.

Printer
✔ Ink Saver Mode

Printer Font
✔ True Type Only
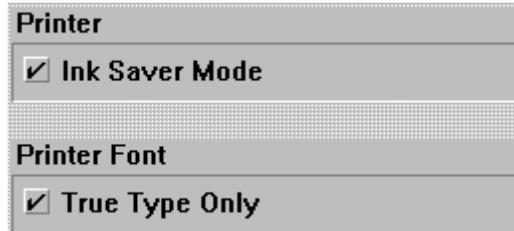
To select or clear check boxes.

1. Click the blank check box with the mouse to select it.

2. Click a selected box to clear it.

☞ **TIP:** If the option has an underlined letter, press and hold down the keyboard's ALT key while typing the underlined letter to select or clear the check box.

Command Buttons

A *Command Button* is used to initiate an immediate action, such as carrying out or canceling a command. The OK, Cancel, and Previous buttons are common command buttons. Monitor makes extensive use of command buttons to allow you to quickly perform various functions. An example of typical command buttons is shown below.

Command Buttons

To choose a command button

1. Click on the command button with the mouse.

☞ **TIP:** If the button has an underlined letter in its name, you can choose the command button in one step. Press and hold down the keyboard's ALT key while typing the underlined letter.

Screen Types

The Monitor program in conjunction with the Windows environment will display information using different types of screens. The following sections will discuss the common screen types used in Monitor and provide information that may be specific to them.

Graphics Screens

The Monitor program may contain various *Graphics Screens* depending on the configuration of you CCS system and what options were purchased. The graphics screens are used to provide visual information to the user in an easy to understand form. The information may be a plant's floor plan, equipment controlled in an engine room, or simply available command buttons. The main screen displayed in Monitor is a graphics screen that shows the CCS boxes that the program can access. An example of a typical graphics screen is shown below.
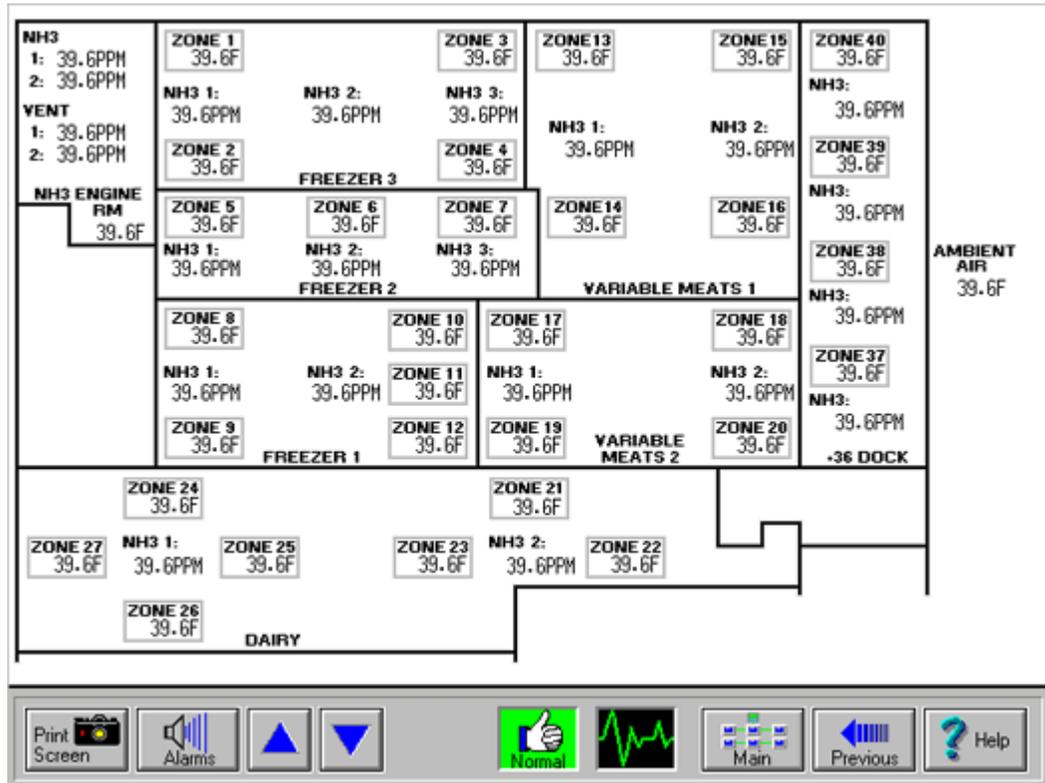
Floor Graphics Screen

CCS Panel Screens

The *CCS Panel Screens* are intended to provide you with all the information present on the corresponding screen of the actual CCS box. The screen is broken down into various areas as shown below.
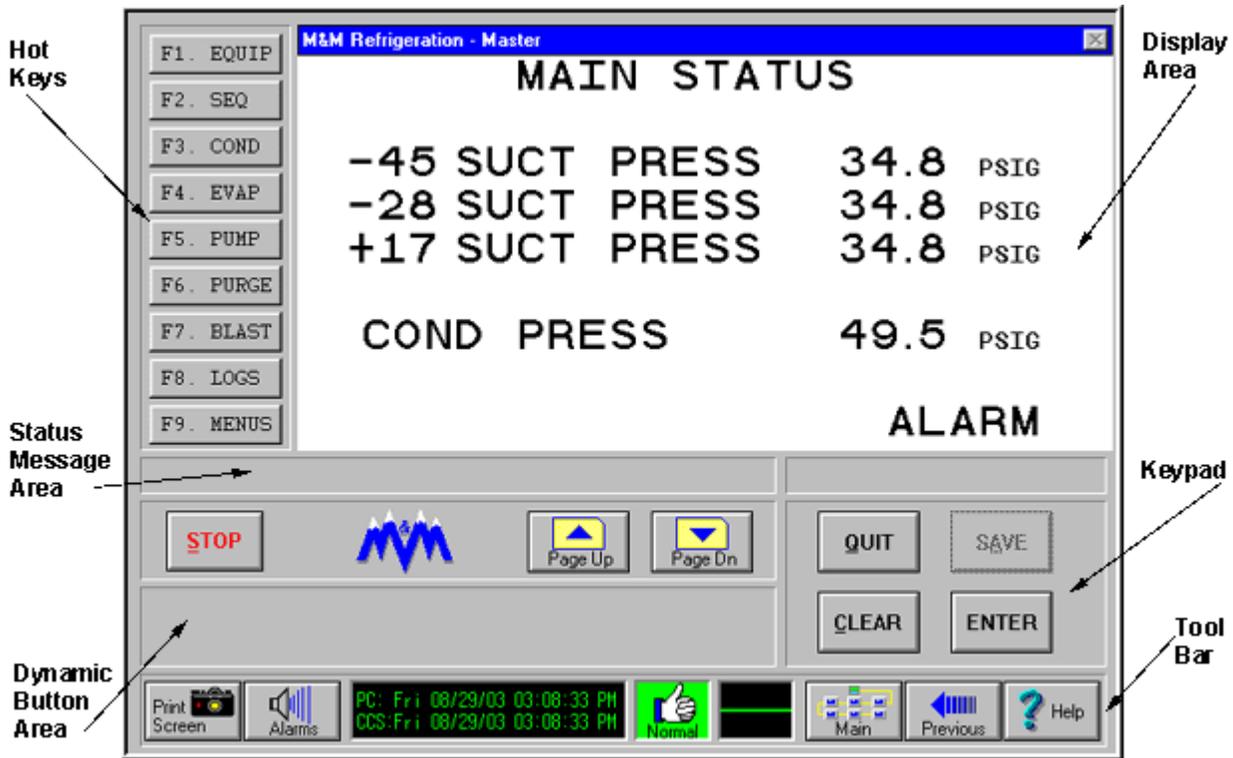
Main Status Screen

Display Area	This area is an exact duplicate of what would be displayed on the LCD display on the actual CCS box.
Hot Keys	The hotkeys on the CCS panel screen are always active. These command buttons can be used by clicking on them with the mouse or by pressing their corresponding function keys.
Dynamic Button Area	Various buttons will appear in this area based on which screen is currently being viewed. Examples include *Print*, *Load*, *Unload*, *Keypad* and *Export*.
Status Message Area	Shows status information relavent to the current screen, communications, or errors.
Keypad Area	This area of the screen is similar to the keypad present on an actual CCS box with the addition of page up and page down buttons for moving through logs and status screens. The numbers keys have been removed since you are able to use the computer keyboard to enter in numbers.
Bottom Tool Bar	This area of the screen contains the various command buttons for navigating within **PC MONITOR**.

Dialog Boxes

A *Dialog Box* screen is displayed to request information about a task you are performing or to supply information you might need. A dialog box may contain many different features to present or request information, including command buttons, edit cells, list boxes, and option buttons. An example of a typical Monitor dialog box is the system setup screen shown below.
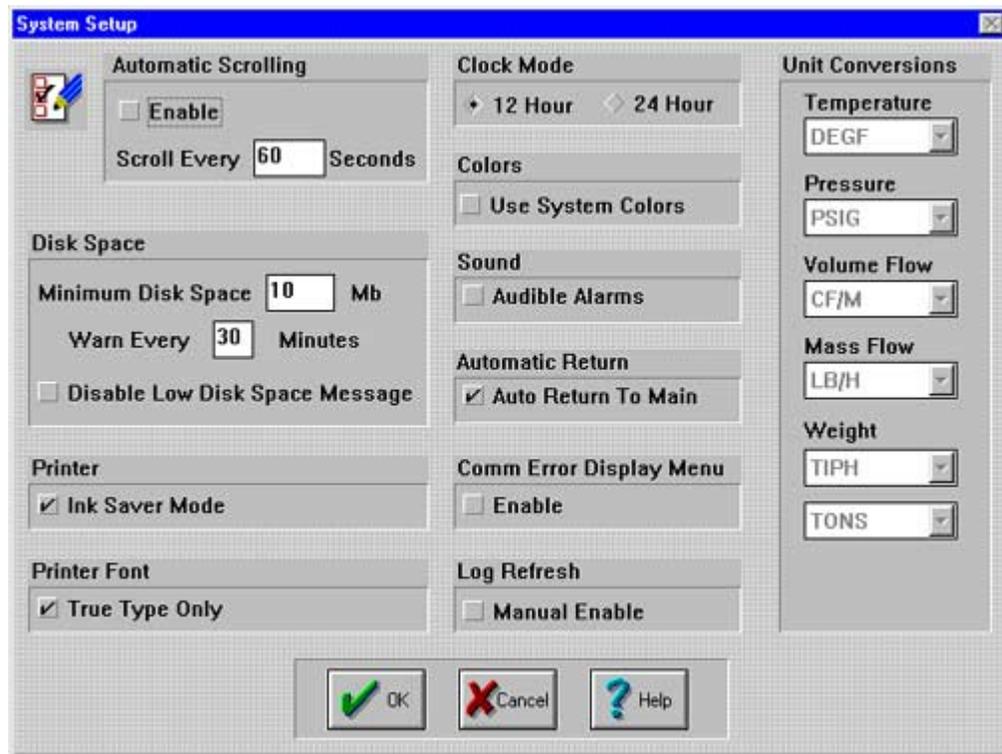
System Setup Screen

Moving Within a Dialog Box

Often you need to move within a dialog box to select one or more options. The currently selected option is marked by the selection cursor, which appears as a dotted rectangle, a highlight, or both.

To move within a dialog box

- Click with the mouse on the option or area you want to move to or use the **TAB** key to tab between the areas.

Message Boxes

A *Message Box* is used to provide information about the current state of the function being performed. When a message box appears it will have the OK button present on it. The message box will remain on the screen until you click on the OK button to let Monitor know you have completed reading the message. Monitor uses message boxes to inform you when there is a problem or when you have requested a task which is not available. The following is an example of a message box used in Monitor.
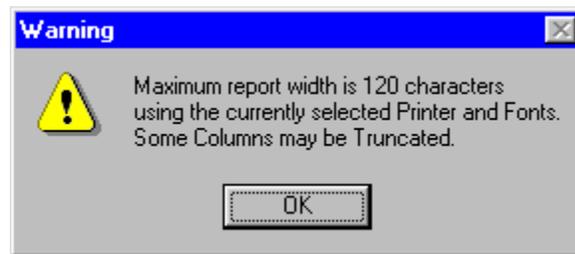
Message Box Screen

Clearing a message box from the screen

• Click on the OK button with the mouse.

Progress Boxes

A *Progress Box* is displayed whenever Monitor is performing a task which will take more than a few seconds, such as during the downloading of a log. The progress box will display a horizontal bar which will dynamically fill from the left to indicate how much of the task is complete. Some variations of the progress box may even give an estimate of the time remaining to complete the task.

All progress boxes will contain the Abort command button to allow you to stop the task before it is complete if you do not want to wait. An example of a Monitor progress box is shown below.
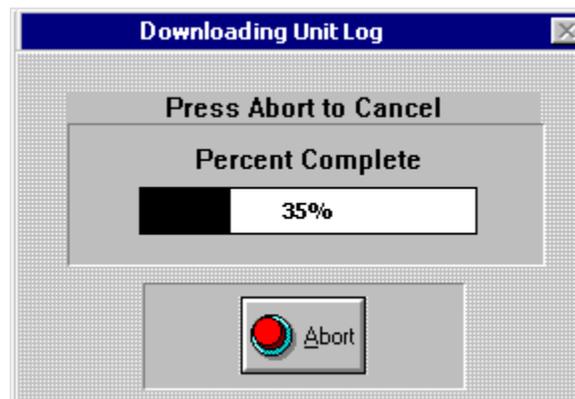
Progress Box

Stopping a task in progress

1. Click with the mouse on the **Abort** button.

Buttons Used in Monitor

The Monitor program uses several command type buttons to perform specific functions. Some of the more common buttons used in Monitor are described in the following sections. Some of these buttons and additional special purpose buttons will be present in a lower tool bar area on every Monitor screen.

BUTTON / INDICATOR	FUNCTION
Print Screen	The *Print Screen* button is used to print a snapshot of the current screen being displayed.
Alarms	The *Alarms* button opens the Monitor *System-Wide Alarms* screen which displays active alarms and failures on the system.
Previous	This command button will return you to the previously viewed screen.
Up Arrow	The *Up Arrow* button is displayed on custom graphics screens when more than one screen is available for viewing. Clicking with the mouse on this button will move you to the previous custom graphics screen.
Down Arrow	The *Down Arrow* button is displayed on custom graphics screens when more than one screen is available for viewing. Clicking on this button with the mouse will move you to the next custom graphics screen.
Main Button	This command button allows you to quickly return to the Main graphics screen.
Tools Button	The *Tools* button is used to move you to the tools screen which allows for system setup and access to various Monitor features such as graph plotting and reports.

BUTTON / INDICATOR	FUNCTION
![Keypad] **Keypad**	The *Keypad* button is displayed on data entry screens when an editable field may be selected. Clicking on this button will open up a numerical keypad to allow setpoint entry from the mouse versus the keyboard. The keypad may also be activated by double clicking on the editable field you want to change. There are different types of keypads (Panel Keypad, Panel Time Pad, Select Pad, etc.) available based on the type of data entry field selected.
![Help] **Help Button**	The *Help* button allows you to access Monitor's on-line help feature.
![Exit] **Exit Button**	The *Exit* button will allow you to exit Monitor and return to Windows. When you click on the Exit button a message box will be displayed asking you if you want to exit to Windows. You can click on the Cancel button if you want to remain in Monitor, or OK if you want to exit.

Status Indicators

Monitor uses three status indicators to inform you of the current state of the system. The indicators are displayed in the bottom tool bar area on most screens.

Pulse

The *Pulse* indicator informs you of whether or not the Monitor program is communicating with the CCS master box. The master is the communications hub through which Monitor communicates to all the CCS boxes in the system. The various states of the pulse indicator are described below.

Pulse State	Significance
Green Pulse	The indicator will toggle between this green pulse and a flat green line to provide you with a heartbeat indicating communications with the CCS master. The lines will be green on a black background.
Red Flat Line	This red flat line state indicates that communications to the CCS master has been broken and is not currently active. The line will be red on a black background.
Red Pulse	This red pulse indicates that Monitor is sending a sync signal to the CCS master in an attempt to re-establish communications. The pulse will be red on a black background.

Dual Time

The dual time display indicator is used to inform you of the current system time on the PC and the CCS it is connected to. The display is available on Monitor screens when the space is not already occupied by functional buttons such as Up/ Down Arrow.

DUAL TIME	SIGNIFICANCE
PC: Wed 05/22/02 10:26:05 AM CCS:Wed 05/22/02 10:26:05 AM Dual Time	The dual time display allows you to view the current time for both the PC and CCS. This is especially helpful if the CCS being monitored via modem is in a different time zone than the facility where the PC is located.

Alarms and Failures

The *Alarm and Failure* indicator is used to inform you of whether the system is operating normally, is in alarm, or is failed. The indicator will flash during alarm and failure states if the alarm or failure has not been acknowledged.

Monitor will also cause the PC the emit an audible beep (alarm) when an alarm or failure occurs. Once the alarm or failure has been acknowledged the PC will stop beeping.

The various states of the alarm indicator are described below.

Alarm State	Significance
Thumbs Up on Green	This indicates that the system is operating normally and that there are no alarms or failures. This thumbs up will be displayed on a green background.
Thumbs Down on Yellow	This thumbs down indicates that the system has at least one reported alarm. The background will toggle from yellow to black if the alarm has not been acknowledged. Once the alarm is acknowledged the background will remain solid yellow.
Thumbs Down on Red	This thumbs down indicates that the system has at least one reported failure. The background will toggle from red to black if the failure has not been acknowledged. Once the failure is acknowledged the background will remain solid red.

Running **PC MONITOR**

PC MONITOR runs under the Windows environment to provide an easy to use graphical interface. Windows has specific conventions which establish a consistent "look and feel" to the system. **PC MONITOR** follows these conventions to allow those individuals familiar with Windows to start using the program without any specific introduction. If you are new to Windows please review Chapter 2 of this manual or the *Microsoft Windows User's Guide* to attain a basic working knowledge of the Windows environment.

PC MONITOR may be started from its icon by simply double-clicking on the picture of the M&M mountains. The software may also be configured to start automatically whenever your computer is powered on. If you have purchased a complete system from M&M, **PC MONITOR** is configured to start automatically, unless otherwise requested.

Once the **PC MONITOR** package is started the main graphics page will be displayed. This screen is defined as the main screen and is the gateway to all functions contained in **PC MONITOR**. The remainder of this chapter will describe the basic procedures used in running **PC MONITOR**.

Main Graphics Screen

The *Main Graphics Screen* in **PC MONITOR** consists of a series of command buttons and system indicators. The main portion of the screen will display a network diagram of the CCS boxes making up the system which will communicate with **PC MONITOR**. The bottom portion of the screen is reserved for a tool bar which contains various command buttons and system status indicators.

Network Diagram

The *Network Diagram* contained on the main graphics screen is actually a series of command buttons which allow you to access specific CCS boxes. The screen may also contain command buttons for custom graphic screens identified as the Equipment and Floor Plan buttons. The various buttons displayed on the screen and their functions are as follows:
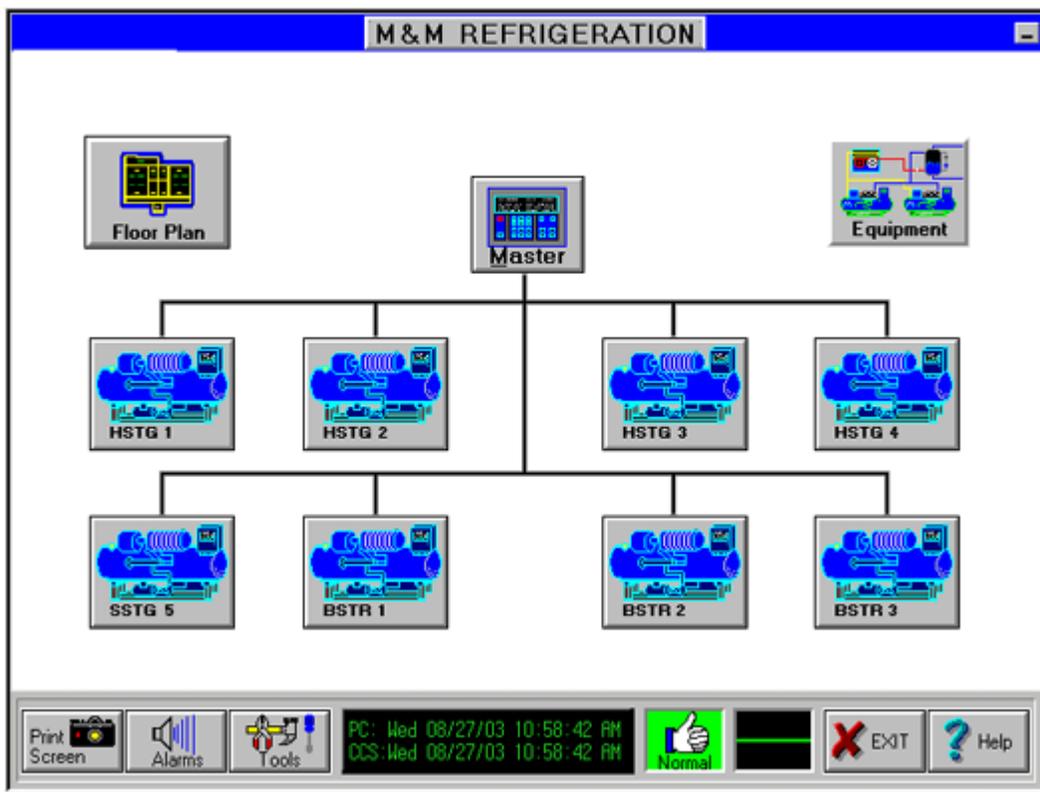
Main Grahpics Network Diagram

Command Button	Function
Master Button	Clicking on this command button pulls up the *CCS Panel Screen* for the master CCS box. The CCS panel screen will be described in a later section.
Screw Button	This button is used to move to the corresponding *CCS Panel Screen* for the device whose name appears on the button.
Equipment Button	This is an optional button which will pull up the *Custom Graphics Screens* which define the various equipment in the plant. A later section will discuss the custom graphics screens.
Floor Plan Button	This is an optional button which will pull up the *Custom Graphics Screen* that depicts the floor plan for the plant.

Tool Bar

The main graphics screen tool bar contains a set of command buttons which are used to setup and access the additional features contained in **PC MONITOR**. The *tool bar* also contains indicators which allow you to watch the system status. The command buttons and indicators contained on the main graphics screen tool bar from left to right and their functions are as follows:

Button / Indicators	Function
Print Screen Button	This command button is used to print a snapshot of the current screen.
Alarms Button	This button allows viewing of the system alarms and failures.
Tool Button	Clicking on this button provides access to the *Tools Screen* which consists of the command buttons for the utilities, setup functions, and optional features contained in **PC MONITOR**.
PC: Wed 05/22/02 10:26:05 AM CCS:Wed 05/22/02 10:26:05 AM **Dual Time**	The *Dual Time* indicator is used to display both the PC and CCS time.
System Status Indicator	The *System Status Indicator* is used to inform you that the system is operating normally or is in alarm or failure.
Pulse Indicator	The *Pulse Indicator* shows that **PC MONITOR** is communicating with the CCS master.
Exit Button	This command button is used to exit **PC MONITOR** and return to Windows.
Help Button	This button provides access to **PC MONITOR**'s on-line *Help* feature.
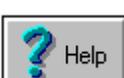
CCS Panel Screen

The *CCS Panel Screen* is intended to be a close duplicate of the screen on the actual CCS box panel. The screen is divided into a keypad, hotkeys with a status area, a display, and a tool bar area as shown below.
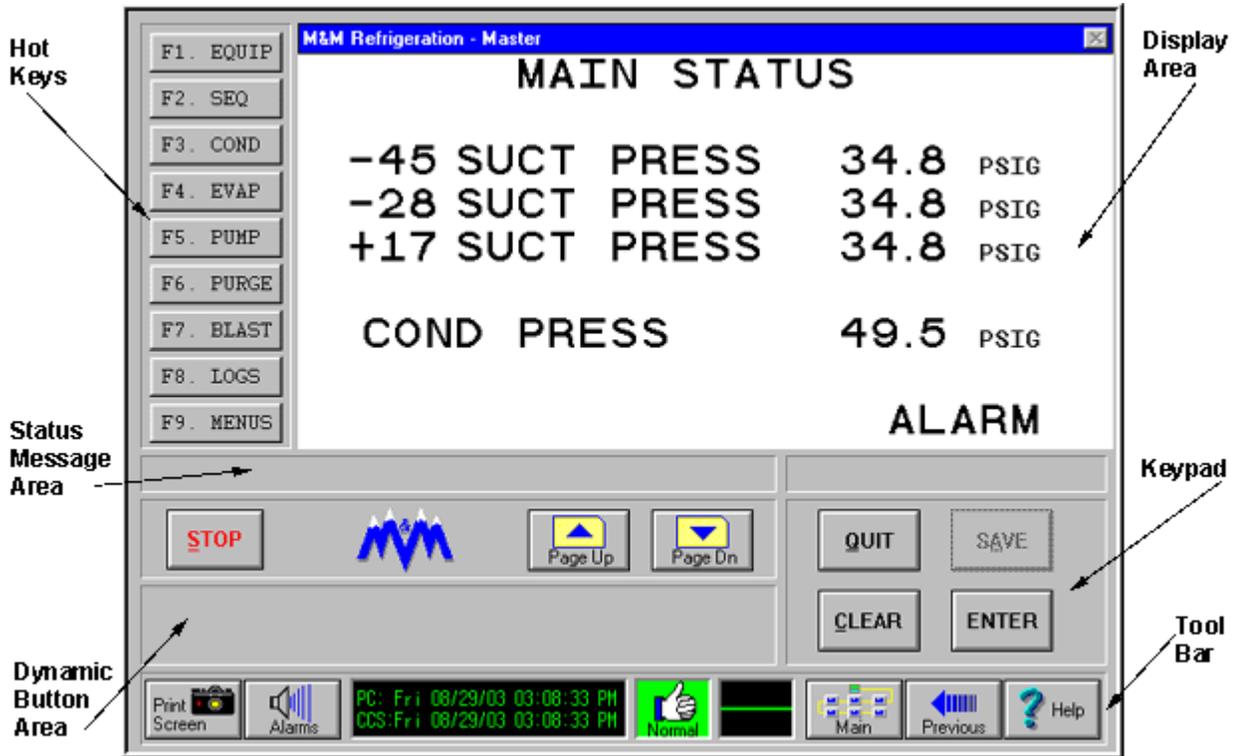
Main Status Screen

The CCS panel screen displays data as if you were looking at the actual panel. With this in mind it should be noted that the terms, screen types, and field types defined in the CCS documentation are used throughout this manual. If you are unfamiliar with the workings of the actual panel you should review the *M&M Refrigeration Computer Control System General Operating Overview* document.

Display Colors

PC MONITOR uses various *Display Colors* to signify differences between types of information.

Dynamic Data

Dynamic Data is information which changes over time. For example, the motor current on the main CCS panel is considered to be dynamic data since it changes dynamically as the motor runs. To help distinguish between different types of information all Dynamic Data displayed on the **PC MONITOR** CCS screens is shown as green letters on a black background. This convention will only change if the data provides for alarm highlighting, which may change the color to help you identify potential problems in the CCS system.

Alarm Highlights

PC MONITOR takes advantage of the color monitor on your system to display *Alarm Highlights* of various dynamic data information in meaningful colors. This color high-lighting technique takes the place of the reverse video effect used on the CCS boxes and provides you with additional information. A description of the various alarm high-light colors and their meanings are as follows:

Colors	Significance
Green on black	The value is within its normal range. No alarms or failures exist.
Red on black	The value is in the alarm state.
Yellow on red	The value is in the failed state.

Data Entry

In an effort to help you identify the *Data Entry* edit cells on a screen, **PC MONITOR** uses light blue numbers on a blue background to identify this type of field. If the data in the edit cell is selected it will be represented as light blue numbers on a black back-ground.

Units

The various *Units* displayed on the **PC MONITOR** CCS screens are identified by the use of light blue colored text on a black background.

Entering Data

PC MONITOR provides many of the features present on the CCS box to aid in data entry. The program also takes advantage of your computer's power to offer additional methods of *Entering Data*. Data can be entered using the keyboard or by using the mouse and a software generated keypad.

Data Validation

Just like on the CCS box, all data entry is validated to verify that it is within the appro-priate ranges. If you enter a number, date, time, etc. which is invalid, **PC MONITOR** will highlight the entry with a red background and display an error message in the hot-key status area. The error message will typically give the valid range for the data.

☞ **TIP:** When **PC MONITOR** identifies an incorrect data entry and highlights the background red, the text is already selected and the desired value can be entered directly.

Number Fields

The *Number Fields* in **PC MONITOR** are identified by the use of light blue text on a blue background. These fields are actually Windows edit cells and as such all standard Windows' editing functions are available. **PC MONITOR** also provides a keypad button for all data entry fields. When using either option, the ENTER key can be used to move to the next field after you have entered your data. Once you try to save the screen or move off the field, **PC MONITOR** will perform data validation.

To enter a number value using the keyboard

1. Point with the mouse to the number field where you want to enter data.

2. Click with the left mouse button to select the field.

3. Type in the desired number using the keyboard.

4. Press the ENTER key on the keyboard, or click on the Enter button, or click on another field to accept the data and allow **PC MONITOR** to validate it.

- or -

To enter a number value using PC MONITOR's dynamic keypad

1. Point with the mouse to the number field where you want to enter data.

2. Click with the left mouse button to select the field (or double click with the left mouse button to select the field and open the keypad, then go to step 4).

3. Click the keypad button.

4. Click on the number buttons in the keypad to enter the enter the desired data.

5. Click on the Enter button. The selected field will update and the screen cursor will move to the next data field.

6. Click on the keypad Cancel button to remove the keypad after you have made your last data entry

☞ **TIP:** Specific keypads (Number, Time, Selectable, Phone Number, Keyboard, etc.) are available for all data entry field types.

Selectable Fields

The *Selectable Fields* in **PC MONITOR** use the mouse and/or scroll bar arrows to allow selection of the desired value. When you move the mouse pointer over a selectable field the pointer will change to a left button or right button mouse pointer.

The left mouse button pointer signifies that you are over a selectable field which has not yet been selected. Clicking the left mouse button on the field will select it and allow the value to be changed. Once a field is selected the right mouse button pointer will appear. Clicking the right mouse button will cycle you through the available choices for the field. It should be noted that some selectable fields will also have scroll arrows for use in selecting a choice.

To change a selectable

1. Point with the mouse to the selectable field that you want to modify.
2. Click with the left mouse button to select the field.
3. Click with the right mouse button until the desired value appears.

☞ **TIP:** Once a selectable field is selected the ARROW KEYS can be used as scroll arrows to make a choice.

☞ **TIP:** A Selectable keypad utilizing drop-down list boxes is available.

Suction Pressure Fields

The *Suction Pressure Fields* in **PC MONITOR** work similarly to those on the CCS box. You may use the ENTER key to input numbers and move to the units field which is treated as a selectable. An additional feature is that you can use the mouse to click on either the units field or number field independently and make the desired changes. Once you try to save the screen or move off the field, **PC MONITOR** will perform data validation.

To change a suction pressure value

1. Point with the mouse to the number portion of suction pressure field you want to modify.
2. Click with the left mouse button to select the field.
3. Type in the desired number using the keyboard.
4. Press the ENTER key on the keyboard, or click on the Enter button, or click on the corresponding units field to accept the number and move to the units field.
5. Click with the right mouse button to choose the units you want displayed.
6. Press the ENTER key on the keyboard, or click on the Enter button, or click on another field to accept the data and allow **PC MONITOR** to validate it.

☞ **TIP:** A Number keypad is available for entry of numerical data.

Date Fields

The *Date Fields* in **PC MONITOR** work the same as on the CCS box. Once the Save button is pressed or you move off the field, data validation will be performed. If you enter an incorrect value **PC MONITOR** automatically selects the text to allow you to type in a correct value.

To enter a date

1. Point with the mouse to the date field you want to select.

2. Click with the left mouse button to select the field.

3. Type in the desired value using the keyboard.

4. Press the ENTER key on the keyboard, or click on the Enter button, or click on another field to accept the data and allow **PC MONITOR** to validate it.

☞ **TIP:**   A Number keypad is available for entry the desired date.

Time Fields

The *Time Fields* in **PC MONITOR** can be entered in 12 hour or 24 hour mode as on the CCS box. The only difference in **PC MONITOR** is when you are in 12 hour mode. Instead of having a selectable field for the AM/PM indicator which can only be reached after entering a time in the time field, you may change each field indepen- dently. Once a 12 hour time field is selected, clicking the right mouse button over the time number will toggle between the AM and PM values. Once you try to save the screen or move off the field, **PC MONITOR** will perform data validation.

To enter a time

1. Point with the mouse to the time field you want to select.

2. Click with the left mouse button to select the field.

3. Type in the desired value using the keyboard.

4. Click with the right mouse to choose between the AM or PM indicator if you are in 12 hour time mode.

5. Press the ENTER key on the keyboard, or click on the Enter button, or click on another field to accept the data and allow **PC MONITOR** to validate it.

☞ **TIP:**   A Time keypad is available for entry of the desired time. You must precede single digit hour minute and second values with a leading zero.

Logon Field

The *Logon Field* in **PC MONITOR** works exactly like the one on the CCS box with the additional benefit of the field being a Windows edit cell. As such, should you enter an incorrect password you can use the mouse insertion pointer to change specific char- acters in the password. As with all other data entry fields, **PC MONITOR** will perform data validation when you press the Enter or Save buttons.

To logon

1. Type your password using the keyboard.

2. Press the ENTER key on the keyboard, or click on the Enter button, or click on the Save button to accept the password and allow **PC MONITOR** to validate it.

☞ **TIP:** A Number keypad is available for entry of numeric passwords for logon.

Phone Number Fields

The *Phone Number Field* is included in **PC MONITOR** when the Auto dial option is available on your system. The phone number field is used to enter the telephone numbers to be dialed for each contact in the Auto Dial phone number list.

To enter a phone number:

1. Point with the mouse to the phone number field you want to select.

2. Click with the left mouse button to select the field.

3. Type in the desired number using the keyboard.

4. Press the ENTER key on the keyboard, or click on the Enter button, or click on another field to accept the data and allow **PC MONITOR** to validate it.

The following characters can be included with the phone number field to modify the answer/dial sequence:

Character	Answer/Dial Modification
@	This command causes the modem to wait for one or more rings followed by 5 seconds of silence before processing the next symbol in the sequence.
,	Use a 2 second pause to access an outside line or long distance services.
P	Set the modem to pulse signals for rotary dialing.
T	Set the modem to tone signals for dialing. This is the default setting.
!	An electronic request or flash for operator assistance.

☞ **TIP:** A Phone Number keypad is available for entry of auto dial phone numbers. The *Wait*, *Pause*, *Pulse*, *Tone* and *Flash* buttons on the keypad allow you to enter the characters for answer/dial modifications in the preceding table.

String Fields

String Fields are selectable character string entries highlighted on specific screens on some versions of **PC MONITOR**. This option allows you to enter character strings to customize the screen for the current demands of your system configuration. For example it allows you to setup specific parameters to be monitored while the system is in operation.

To enter a string field:

1. Point with the mouse to the string field you want to select.

2. Click with the left mouse button to select the field.

3. Type in the desired data string using the keyboard.

4. Press the ENTER key on the keyboard, or click on the Enter button, or click on another field to accept the data and allow **PC MONITOR** to validate it.

☞ **TIP:**   A Keyboard keypad is available for entry of string fields.

Alarms and Logs

As with the CCS box, the **PC MONITOR** CCS panel provides for an alarm status screen and the viewing of logs. In addition, colors are used to help highlight alarms and log entries to provide a more visual interface than is available on the CCS box.

Alarms

PC MONITOR handles alarms much the same way as the CCS box with the use of an active alarms and failures status screen and a system alarm status field. **PC MONITOR** takes advantage of your color display by using various color combinations to indicate the alarm status of the CCS box you are viewing. The alarm status indicator is displayed on the CCS panel's main status screen and on the alarms and failures screen just as it is on the actual CCS box. It should be noted that the CCS alarm indicator shows the status of a specific CCS box only; it should not be confused with the system alarm indicator which is displayed in the CCS panel tool bar. The colors used to signify alarm conditions are described below.

Colors	Significance
Green word NORM on blue background	The CCS box is running normally. No alarms or failures exist.
Red word ALARM on yellow background	The CCS box is in alarm. If the background is flashing between yellow and black the alarm has not been acknowledged. If the background is a constant yellow the alarm has been acknowledged.
Yellow word FAIL on a red background	The CCS box is failed. If the background is flashing between red and black the failure has not been acknowledged. If the background is a constant red the failure has been acknowledged.

Logs

PC MONITOR is capable of downloading logs from the actual CCS box for viewing. A log may take more than a few seconds to download depending on its size and the type of communications link you are using. When you select a particular log from the log menu screen **PC MONITOR** will request it to be downloaded automatically and will display a progress box to show the progression of the task. If you wish to cancel the download before it is completed you can click on the Abort command button on the progress box. The program also utilizes the color display to help identify parameters in the log which have caused an alarm or failure. The following descriptions explain the combination of colors used in the logs.

Colors	Significance
Red text on a black background	This signifies that the parameter caused an alarm. This color corresponds to the use of a small "a" next to the parameter if the log had been viewed on the actual CCS box.
Yellow text on a red background	This shows that the parameter caused a failure. This color combination relates to the use of a small "f" next to the parameter if the log had been viewed on the actual CCS box.

Printing Logs

Once a CCS panel log has been downloaded both *Print Log* and *Export* command buttons like the ones shown below will appear in the dynamic button area.

Clicking on the *Print Log* button will produce a formatted printout of the downloaded log. The printed log will contain an "a", "f", or "o" next to any parameters which caused a CCS alarm, failure, or OEM failure condition respectively.

Clicking on the *Export* command button will open the *Export Entry* screen. The *Export Entry* screen is a dialog box which allows you to enter a filename to export the log data to. This file can be utilized independently of **PC MONITOR** by third party software. You can enter a new filename or select an existing one to export the log data to. The default filename is export. The file will be saved to the export directory under your job name's directory tree (c:\MMPC*JOBNAME*\EXPORT).

Click on the *Refresh* command button to repeat downloading the log and re-paints the screen with the latest log information.

Tool Bar

The CCS panel screen tool bar contains a set of command buttons which are used to perform various tasks. The tool bar also contains indicators which allow you to watch the system status. The command buttons and indicators contained on the CCS panel screen tool bar from left to right and their functions are as follows:

Button / Indicators	Function
Print Screen Button	This command button is used to print a snapshot of the current screen.
Alarms Button	This button allows viewing of the system alarms and failures.
PC: Wed 05/22/02 10:26:05 AM CCS:Wed 05/22/02 10:26:05 AM **Dual Time**	The dual time display allows you to view the current time for both the PC and CCS. This is especially helpful if the CCS being monitored via modem is in a different time zone than the facility where the PC is located.
System Status Indicator	The system status indicator is used to inform you that the system is operating normally or is in alarm or failure.
Pulse Indicator	The pulse indicator shows that PC MONITOR is communicating with the CCS master.
Main Button	This command button allows you to quickly return to the main graphics screen.
Previous Button	This command button will return you to the previously viewed screen.
Help Button	This button provides access to PC MONITOR's on-line help feature.

Custom Graphics Screens

An optional feature of **PC MONITOR** is the displaying of *Custom Graphics Screens* that provide a visual status summary of the equipment controlled by the CCS. These screens produce status feedback through the use of animation and real-time data. The custom graphics screens are accessed through command buttons placed next to the network diagram on the main graphics screen. These buttons are usually labeled as *Equipment* and *Floor Plan.*

When selected, they will provide access to graphics screens such as the one shown below:
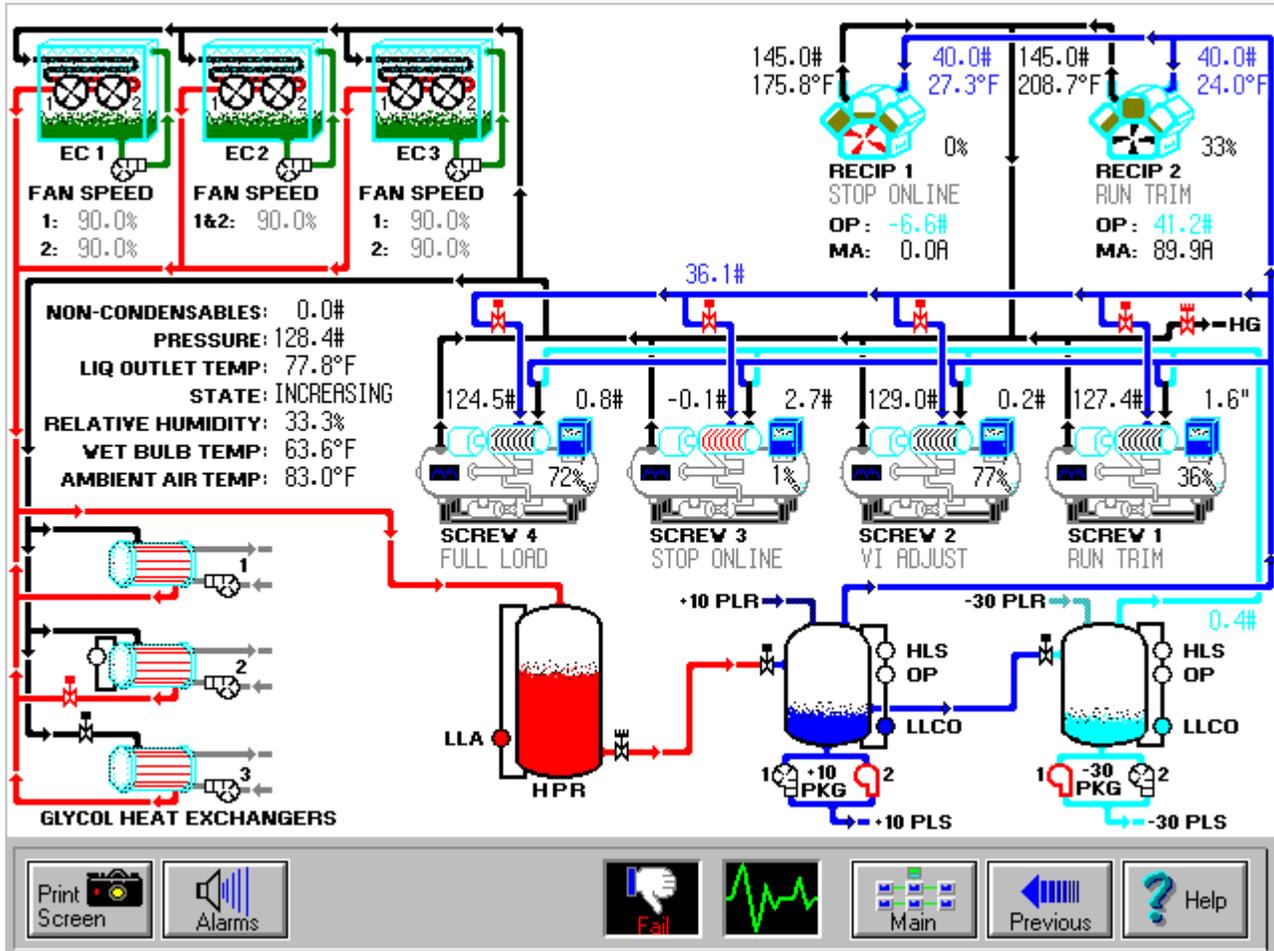
Custom Equipment Room Screen

The custom graphics screens also supply the added features of automatic scrolling and hot spot control. Additionally the screen contains a tool bar area which consists of various command buttons and system status indicators.

Automatic Scrolling

PC MONITOR contains a feature to allow for *Automatic Scrolling* through the custom graphics screens. You are able to enter the time that **PC MONITOR** will remain on a graphics screen before it scrolls to the next screen. This feature is enabled or disabled using a check box on the *System Setup Screen* which is covered later in this document.

Hot Spots

The custom graphics screens also contain a feature called *Hot Spots* which allow you to jump directly to the CCS panel or a graphics screen associated with any equipment displayed on the screen. As you move the mouse pointer across a hot spot on a custom graphics screen it will change to a pointing finger. If you then click the left mouse button you will automatically be moved to the corresponding screen. For example, clicking on a screw compressor will move you to its corresponding CCS panel screen.

☞ **TIP:**   Clicking on the Previous button will return you to the graphics screen.

To select a hot spot

1.   Point with the mouse to piece of equipment you want to select.

2.   The mouse pointer should change to a pointing finger.

3.   Click with the left mouse button.

Tool Bar

The custom graphics screens tool bar contains a set of command buttons which are used to perform various tasks. The tool bar also contains indicators which allow you to watch the system status. The command buttons and indicators contained on the tool bar from left to right and their functions are as follows:

Button / Indicators	Function
Print Screen Button	This command button is used to print a snapshot of the current screen. For graphics screens the entire screen is printed. For CCS screens only the display area is printed. It is important to note that the ink saver mode will not work if a video driver of more than 256 colors is loaded
Alarms Button	This button allows viewing of the system alarms and failures.
Up Arrow Button	This button will be displayed if more than one custom graphics screen is present and will allow you to move to the previous screen.
Down Arrow Button	This button will be displayed if more than one custom graphics screen is present and will allow you to move to the next screen.
System Status Indicator	The system status indicator is used to inform you of whether the system is operating normally or is in alarm or failure.
Pulse Indicator	The pulse indicator shows that **PC MONITOR** is communicating with the CCS master.
Main Button	This command button allows you to quickly return to the main graphics screen.
Previous Button	This command button will return you to the previously viewed screen.
Help Button	This button provides access to **PC MONITOR**'s on-line help feature.

System Wide Alarms Screen

PC MONITOR contains a *System Wide Alarms Screen* to provide you with alarm and failure data for the entire system. The alarms/failures are time stamped based on when the PC receives them and the times may differ from the individual CCS alarms status screens. The alarm screen contains a display area, some sorting option buttons, and a tool bar area as shown below.

System Wide Alarms

Unit	Time	State	Description	Level
BSTR1	01:00:00AM	OEM	START OIL PRESS	LOW
BSTR2	01:00:00AM	FAIL	STOP SLIDE POSN	HIGH
BSTR3	01:00:00AM	FAIL	OIL SUMP TEMP	SENSR
BSTR4	01:00:00AM	FAIL	SUCTION TEMP	SENSR
HSTG1	01:00:00AM	FAIL	SLIDE VALVE	SENSR
HSTG2	01:00:00AM	OEM	START OIL PRESS	LOW
HSTG3	01:00:00AM	FAIL	STOP SLIDE POSN	HIGH

Sort By:
- ◆ Alarm Time
- ◇ Unit Number

Clear | Print | (Internet) | Normal | | Previous | Help

System Wide Alarm Screen

Sorting Alarms

The system wide alarms screen allows you to sort alarms by time only or by CCS unit numbers. A set of option buttons allows you to choose which sorting method you wish to employ.

The sort by time feature list all alarms and failures by time, regardless of CCS unit number, with the most recent listed first.

The sort by unit feature list all alarms and failures by CCS unit number, with the CCS master first and then all remaining CCS units starting from number one with the most recent first.

Tool Bar

The system wide alarms screen also has a tool bar area which contains command buttons and system status indicators. The buttons and indicators contained on the tool bar from left to right and their functions are as follows:

Button/Indicator	Function
Clear Button	This button acts like the Clear button on the CCS panel with one significant difference. When pressed it sends an alarm/failure clear message to every CCS box in the system.
Print Button	This button will print a formatted report with headings for the current system alarms and failures. This is a formatted text report and should not be confused with the output generated from using the *Print Screen* button contained on other screens.
MM Email Server	This button accesses the Optional Email setup screen for alarms and failures.
System Status Indicator	The system status indicator is used to inform you that the system is operating normally or is in alarm or failure.
Pulse Indicator	The pulse indicator shows that **PC MONITOR** is communicating with the CCS master.
Previous Button	This command button will return you to the previously viewed screen.
Help Button	This button provides access to **PC MONITOR**'s on-line help feature.

MM Email

The *MM Email Server* is an optional feature which provides users with ability to enable the system to automatically send an email to a list of pre-selected individuals whenever an alarm or failure occurs. This is particularly useful when the facility has a reduced staff status such as holidays, weekends, and evenings.

1. Launch **PC MONITOR**. The *MM Email Server* will launch automatically and be minimized to the task bar.

2. Click on the [✉ MM Email Server] icon located on the task bar to maximize the Email Server screen.

✎ **NOTE:** *MM Email Server can also be accessed from the Alarms Screen by clicking on the Email icon.*

MM Email Server Screen

Auto Control	This option allows the user to select how the Email features will be used.
Disable	Select this option to disable the auto email feature.
Enable	Select this option to enable the auto email feature
Schedule	The SCHEDULE option allows users to setup a time-of-day schedule to enable the Email feature. For example, only enable Auto Email at night or on weekends.
Control Details	This button allows users to preset the type of message that will be emailed, and the amount of time that will elapse before the email is automatically generated.
Schedule Details	This button allows users to setup the Email schedule.
Recipients	This field displays the email address of the individual(s) selected to receive the email.
Add	This button allows users to select email addresses from the default email address book or type in an address.
Delete	This button allows users to select an email address to be deleted from the Recipients field. Highlight the Recipient name/address to be deleted and click **DELETE**.
Subject	This field is automatically populated with the plant/location experiencing the Alarm and/or Failure.
	NOTE: Users can choose to enter their own text by simply highlighting the default text and begin typing.
Message	This field is automatically populated by the system when an Alarm or Failure occurs, or the User can type in the field if preferred. The information from this field will appear in the body of the email.
	NOTE: Users can choose to enter their own text by simply highlighting the default text and begin typing.
Status	The *Status* field displays the last function the email server performed.
Minimize	This option allows users to minimize the email screen without closing it.
Send	Click the **SEND** button to send the current message. The following is an example of the email received.
Exit	To cancel the email feature select **EXIT**.

Control Details

The Control Details option allows users to select the type of Message that will be generated.

Message Selection	This option allows users to select the type of Message sent.
Alarms & Failures	This option is selected if an email is to be generated anytime an Alarm or Failure occurs.
Failures Only	This option is selected if an email will be generated ONLY if a Failure occurs.
CCAS Comm Failure	An email message will be sent if communications with the Master is lost.
Time Delay (Minutes)	This field displays the amount of time (in minutes) before the server will automatically generate an email. This can be used to allow adequate time for local plant personnel to resolve the problem before the Email is generated.

Schedule Details

The Schedule Details option allows users to set up a timeframe that emails will be sent if a problem occurs. An example would be setting the time to **ON** at 5 pm and **OFF** at 8 am the following morning, Monday through Thursday. Setting the time to **ON** at 5 pm on Friday and **OFF** at 8 am Monday would provide coverage for the weekend.

	On Time	Off Time
Monday		
Tuesday		
Wednesday		
Thrusday		
Friday		
Saturday		
Sunday		

On Time   This field is used to enter the time-of-day the Email feature will be enabled.

Off Time   This field is used to enter the time-of-day the Email feature will be disabled.

Monday thru   Allows users to enable and disable the Email feature at different times on
Friday   different days. Any combination of **ON** or **OFF** times can be deleted to
                   allow the schedule to function over multiple days.
                   EXAMPLE: If the Email feature is to be enabled from 5 p.m. Friday
                   evening through the weekend until 6 a.m. Monday morning, then the **ON**
                   and **OFF** times for **Saturday** and **Sunday** would be left blank.

Adding Recipients

The Add Recipients option allows users to add new user and email addresses to a list of
people designated to receive email if a problem occurs. New entries can be entered by
clicking the *Address Book* button and selecting a name from the list or by simply typing
the email address in the *Address* field.

Editing Recipients

To edit an email address or name , click on the name to be modified from the Recipient field on the MM Email Server screen. Highlight the *Address* field and enter the new infor-mation. When completed, click **OK**.
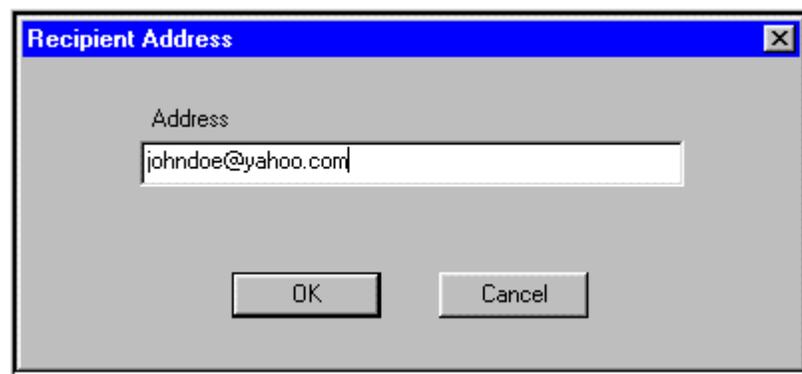
Tools Screen

The *Tools Screen* is entered by clicking on the Tools button on the main graphics screen. This screen allows you to access the utilities, setup functions, and optional features contained in **PC MONITOR**. The screen is broken down into three areas: utilities, setup, and options. If a particular function is not available its corresponding command button will be shaded out.
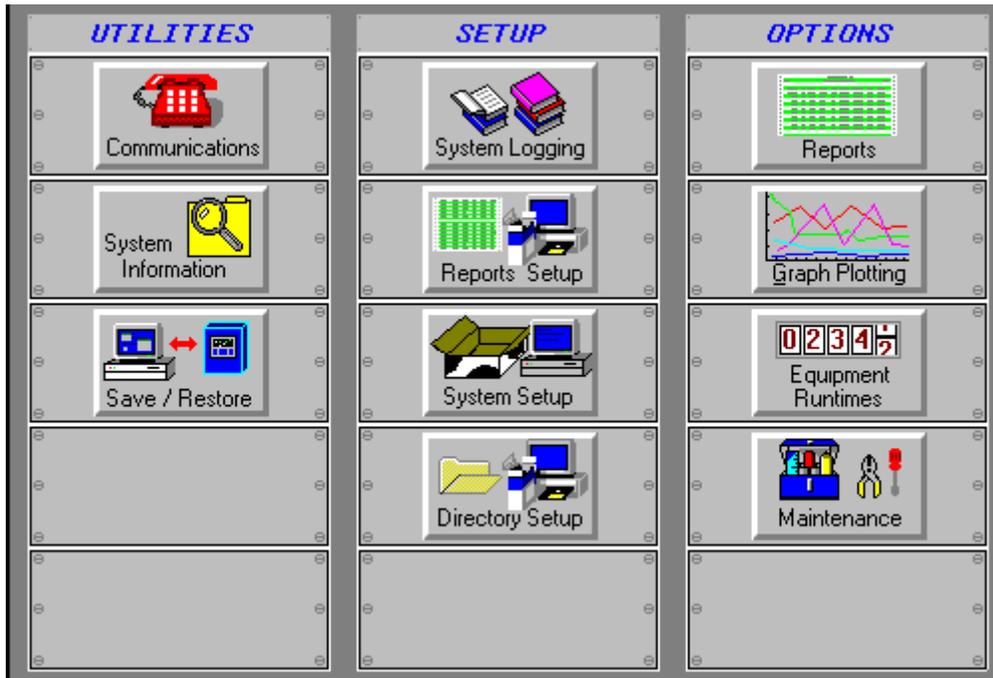
Tools Screen

Utilities

The utility functions of the tools screen allow you to define your communication's link preferences, view **PC MONITOR** system information and save/restore setpoints.

Setup

The setup buttons of the tools screen allow you to define preferences for system logging downloads, report fonts, general system features and directories where data is stored.

Options

The option section of the tools screen provides access to some of the optional features available in **PC MONITOR**. These include standard and custom Reports, Graph Plotting, Equipment Runtime viewing and control, and Maintenance Manager™.

Utilities

The *Utilities* area of the tools screen allows you to define your communications link prefer-
ences, view **PC MONITOR** system information and to perform setpoint save and restore oper-
ations.

Communications

The *Communications Connections* screen is a dialog box which is accessed by clicking on the
tools screen *Communications* command button shown below.

The screen allows you to setup preferred options for communications. It is broken into direct
connection, modem connection, and network connection areas as shown in the *Communica-
tions Connections* screen below:
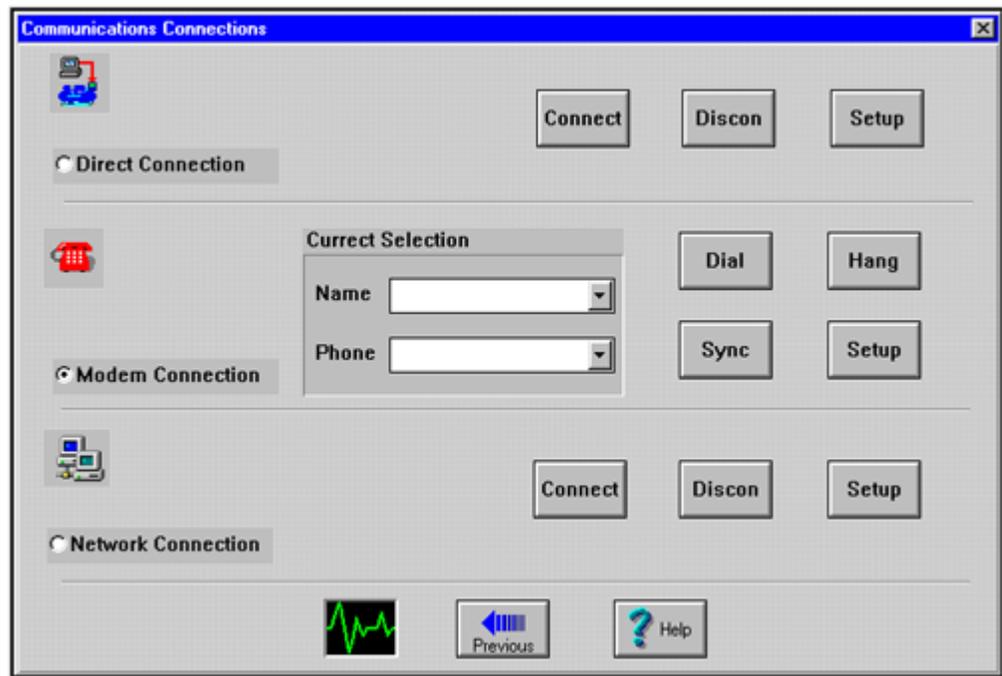
Communications Screen

Direct Connection

The direct connection area of the screen allows you to link directly to the CCS master using an RS-422 interface board in the PC. The direct connection command buttons are as follows:

Connect   Clicking on this button allows you to perform a direct connect to the CCS master if you did not have the auto connect feature enabled. In order to be able to make a connection you need to insure that the direct link method is enabled.

Discon   Clicking this button will disconnect the direct communications link to the CCS master.

Setup   Clicking this button will open the *Direct Connection Setup* screen shown below:
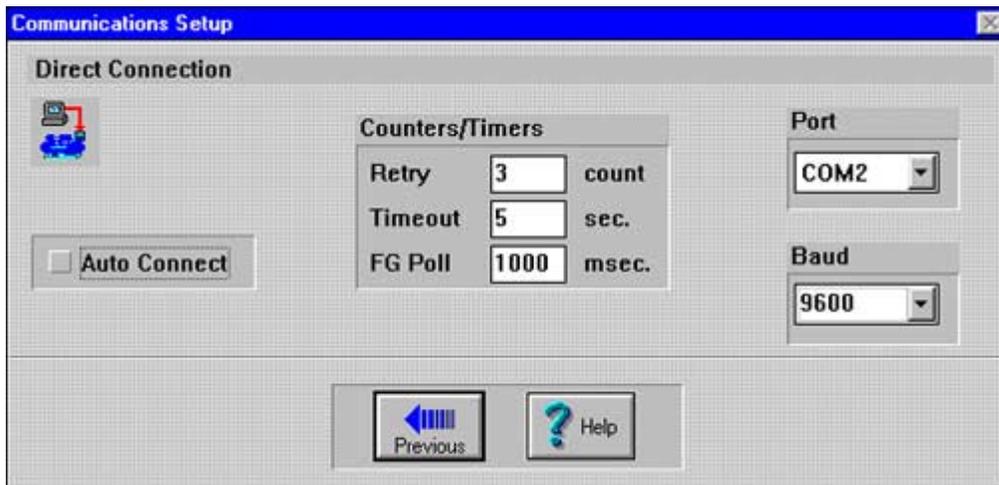
Direct Connection Setup Screen

The screen allows you to modify the following direct communications options:

Auto Connect	This check box will cause **PC MONITOR** to automatically attempt a direct link when the program starts, assuming this form of communication is enabled.
Timers	The timer section provides edit cells to enter the values for Retry, Time-out, and FG Polling. These values are factory set for your specific config-uration, therefore, we do not recommend changing them. The Retry value specifies how long **PC MONITOR** will wait after the communications link has been broken before it will attempt to re-connect to the master. The Time-out value specifies how long **PC MONITOR** will wait since the last time it received a message from the CCS master before it disables the communications link. FG Poll specifies the interval in milliseconds between which **PC MONITOR** will request a message from the CCS master.
Port	This drop-down list box allows you to specify on which COM port the RS-422 interface board is configured for.
Baud	This drop-down list box allows you to specify the speed at which the PC communicates to the CCS master. Clicking on the right down arrow will present a list of baud rate choices and scroll bars to move through the options. The 9600, 19200, and 38400 baud rates are supported on **PC MONITOR** versions 2.01 or higher. Some older versions of the CCS soft-ware do not support the 19200 or 38400 baud rate. If you are running an older version of the CCS software, the 19200 and 38400 baud rate will not be available.
Previous	This command button will return you to the previously viewed screen.
Help	This button provides access to **PC MONITOR's** on-line help feature.

Modem Connection
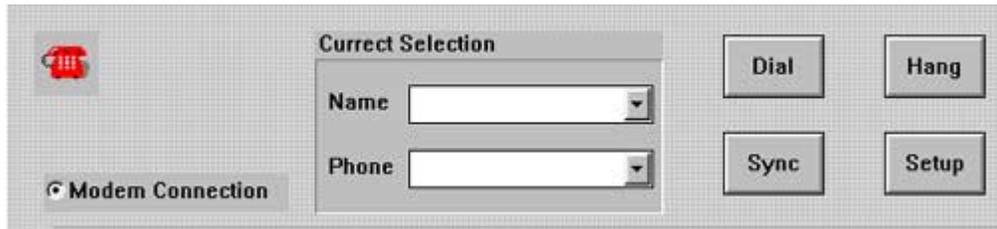
The modem connection area of the screen allows you to view the information required for connecting with the CCS Master via the telephone lines.This feature only functions if a modem and phone line are installed in the CCS Master. The different parts of the modem connection area are as follows:

Name   The name drop-down list box in the current selection area shows the name of the plant which will be dialed if a modem connection is requested. This field can be changed by selecting another name from the drop-down list.

Phone   The phone drop-down list box in the current selection area shows the phone number that will be dialed when a modem connection is requested. This field can be changed by selecting another number from the drop-down list.

Dial   This command button is used to request that **PC MONITOR** dial the currently selected number. This function is used when auto connect is not being utilized. Once you click on this button **PC MONITOR** will attempt to configure and initialize your modem before dialing out. The status and progress of the attempt to initialize the modem and dial the selected number will appear on the *Modem Connection* screen shown below.

Hang   This button is used to hang up the modem and break the communications link to the CCS master. If you click the Exit button on the main graphics screen, **PC MONITOR** will automatically hang up the modem before returning to Windows.

Sync   This button is used to send a sync request to the CCS master once a modem link has been established. The function is typically not used since **PC MONITOR** automatically requests a sync when it connects. **PC MONITOR** will also automatically attempt a retry after a specified time if the sync signal is not received.

Setup   Clicking this button will open the *Modem Connection Setup* screen shown below:
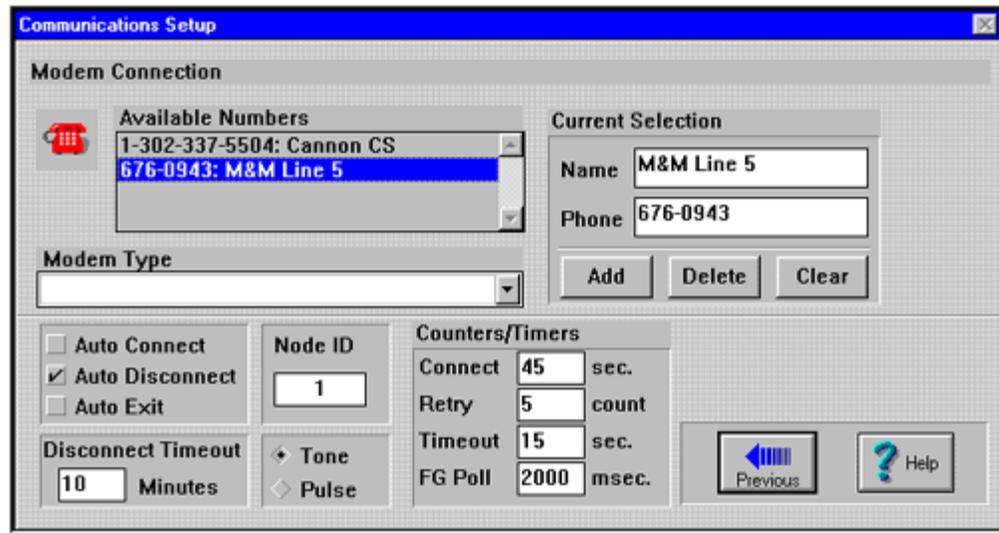
Modem Connection Setup Screen

Available Numbers	This list box displays all the available numbers which can be selected for dialing by **PC MONITOR**. To select a name and number combination click on the desired choice with the mouse. This will place the chosen entry into the current selection area.
Name	The name edit cell in the current selection area shows the name of the plant which will be dialed if a modem connection is requested. This field can be changed, or a new name entered, using standard edit cell techniques.
Phone	The phone edit cell in the current selection area shows the phone number that will be dialed when a modem connection is requested. This field can be changed, or a new phone number entered, using standard edit cell techniques.
Add	Once you have entered the desired new data in the current selection fields, clicking on the Add button will place the current name and phone number data into the Available Numbers list box.
Delete	This command button will delete the name and phone number in the Current Selection area from the Available Numbers list box.
Clear	Clicking on this button clears the current name and phone number fields and places the insertion pointer in the name field. This button is extremely useful when you wish to enter a new name and number.
Modem Type	This drop-down box allows you to choose from several standard modems or select a custom modem profile by entering a class definition string on the *Custom Modem Profile* screen shown below.

✎ ***NOTE:*** *On newer PC's with Windows95 or higher, an optional TAPI modem interface may be provided.*

In this case, the Modem Type only selects from a list of modems already installed under Windows. Any custom modem strings must be entered under the Windows Control Panel under the Modems icon.

Auto Connect	This check box will cause **PC MONITOR** to automatically attempt a modem link when the program starts, assuming this form of communication is enabled.

Auto Disconnect	This check box will allow **PC MONITOR** to automatically hang up the modem link to the CCS master. You can enter the amount of time **PC MONITOR** will wait before disconnecting the modem link if no mouse or keyboard activity has occurred. **PC MONITOR** will prompt you with a message screen 60 seconds prior to logoff warning you of the impending action.
Auto Exit	This check box will allow **PC MONITOR** to automatically exit the program after an automatic modem disconnect occurs.
Disconnect Time-out	This edit cell allows you to enter the time which **PC MONITOR** will wait before automatically disconnecting the modem link. The modem link will only be broken if no mouse or keyboard activity has occurred within the time period you entered.
Tone/Pulse	These option buttons allow you to specify whether to use tone or pulse dialing.
Counters / Timers	The counter/timer section provides edit cells to enter the values for Connect, Retry, Time-out, and FG Polling. These values are factory set for your specific configuration; therefore, we do not recommend changing them. The Connect value specifies the time **PC MONITOR** will wait for a modem connection to be made. The Retry value specifies how long **PC MONITOR** will wait after the communications link has been broken before it will attempt to re-connect to the master. The Time-out value specifies how long **PC MONITOR** will wait since the last time it received a pulse from the CCS master before it disables the communications link. FG Poll specifies the interval in milliseconds between which **PC MONITOR** will request a pulse from the CCS master.
Port	This drop-down list box allows you to specify on which COM port the modem is connected.
Baud	This drop-down list box allows you to specify the speed of the modem you are using. Clicking on the right down arrow will present you with a list of baud rate choices and scroll bars to move through the options. This box should be set to the highest baud rate available for your modem. The CCS master and **PC MONITOR** will then be able to determine which baud rate to communicate at automatically.
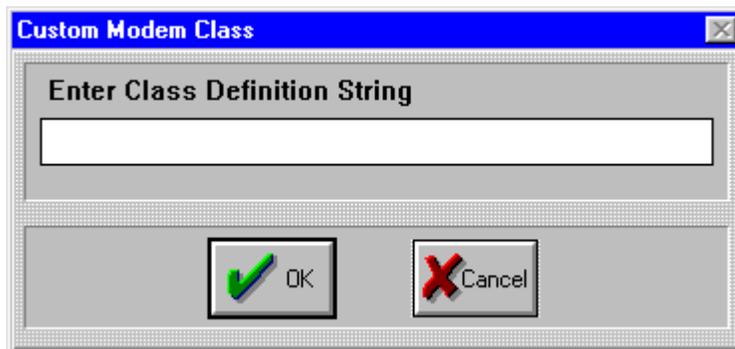
Custom Modem Profile Screen

When the selected Modem type is *Custom Modem Profile* the user may enter a custom modem initialization string for the particular brand of modem in the PC.

Network Connection
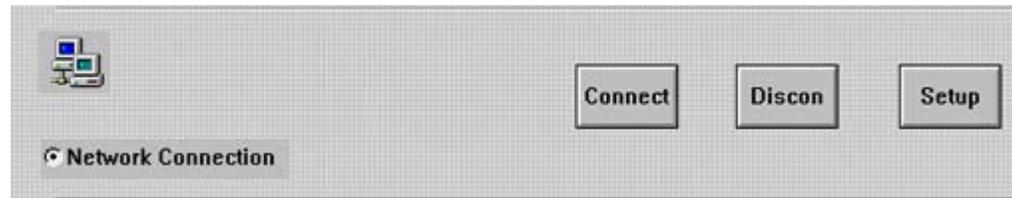
The network connection area of the screen is an optional feature which allows you to link to the CCS master using your local area network (LAN) and special Server and Client software which must be installed in addition to **PC MONITOR**. The LAN is installed by others and one PC on the LAN must be connected to the CCS Master via the Direct Link. The network connection command buttons are as follows:

Connect	Clicking on this button allows you to perform a Client network connection to the Server PC via your local area network (LAN). The Server PC runs special software which transfers messages to and from the CCS master to the Client PC.
Discon	Clicking this button will disconnect the network communications link to the Server PC.
Setup	Clicking this button will open the *Network Connection Setup* screen shown below
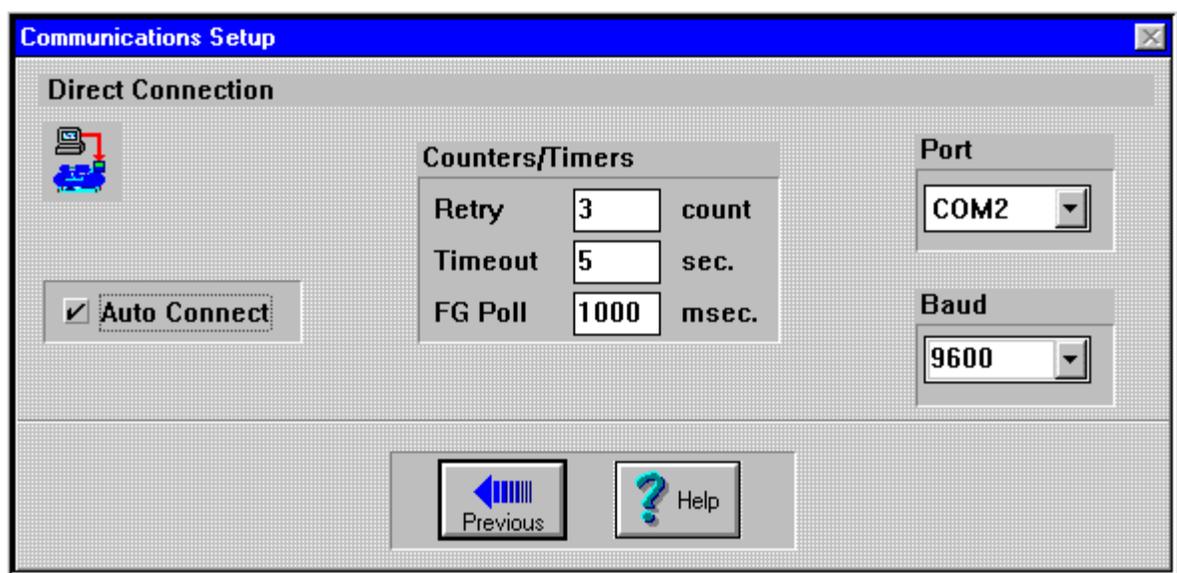
Network Connection Setup Screen

|	
Auto Connect	This check box will cause **PC MONITOR** to automatically attempt a network link when the program starts, assuming this form of communication is enabled.
Counters / Timers	The counters/timers section provides edit cells to enter the values for Connect, Retry, Time-out, and FG Polling. These values are factory set for your specific configuration; therefore, we do not recommend changing them. The Connect value specifies the time **PC MONITOR** will wait for a modem connection to be made. The Retry value specifies how long **PC MONITOR** will wait after the communications link has been broken before it will attempt to re-connect to the master. The Time-out value specifies how long **PC MONITOR** will wait since the last time it received a pulse from the CCS master before it disables the communications link. FG Poll specifies the interval in milliseconds between which **PC MONITOR** will request a pulse from the CCS master.
Server	This edit box allows you to specify the name or IP address of the Server PC on your network that provides the direct connection to the CCS controls.
Port	This edit box allows you to specify the port to be used in network communications. All PCs on the network must utilize the same port value.

Tool Bar

The communication screen's tool bar contains command buttons and system status indicators. The command buttons and indicators on the tool bar from left to right and their functions are as follows:

BUTTON / INDICATORS	FUNCTION
Pulse Indicator	The pulse indicator shows that **PC MONITOR** is communicating with the CCS master.
Previous Button	This command button will return you to the tools screen. If you have made any changes to the communications screen, such as added new numbers or changed the current selection, a dialog box will appear. The box will ask if you want to save your changes; it contains the command buttons, Yes, No, and Cancel to allow you to choose an option.
Help Button	This button provides access to **PC MONITOR**'s on-line help feature.

System Information

The *System Information* screen is a dialog box which is accessed by clicking on the tool screen command button shown below.

The **PC MONITOR** system information screen provides you with information indicating the version of **PC MONITOR** and its root directory. All other information is for use by M&M Service personnel to aid in the maintenance of your system should any problems develop.

System Information Screen

Job Number	The job number assigned to your specific control system.
Job Version	The version number of your job along with the date and time it was generated.
PC MONITOR Version	The version number of your copy of **PC MONITOR** along with the date and time it was generated.
Root Directory	The directory root from which your copy of **PC MONITOR** is running.
Free Resources	The percentage of free resources available for the system (SYS), graphics (GDI), and user (USR) areas as well as the available heap memory size.

Setpoint Save/Restore

The *Setpoint Save/Restore* function allows you to save and restore CCS setpoint data to and from the PC. It is accessed by clicking on the *Save/Restore* command button which is located on the tools screen.

The *Setpoint Control* screen is a dialog box which allows you to set preferences for Setpoint Save and Restore operations by clicking the Save, Restore, View, or Cancel command buttons as shown below:

Setpoint Control Screen

The Save and Restore feature is a useful utility for saving setpoint data for later use. The operator may utilize different setpoints depending on the product being produced or the time of year. By using Save and Restore the setpoint data needs only be entered once and saved to a file. When necessary, all setpoint data in the system can be changed back to the appropriate values by simply using the Restore feature. The Save and Restore feature can also be used to save a copy of all system setpoints before performing a software update.

Save	This command button opens up the *Setpoint Save Process* screen, a dialog box which allows you to specify the units (master, screws, etc.) from which setpoint data will be saved.
Restore	This command button will open the *Restore Setpoint Process* screen, a dialog box which allows you to specify which setpoint data will be restored to the CCS.
View	This command button opens the *Setpoint Report* screen, which allows you to specify which setpoint file to view and/or print.
Cancel	This command button will return you to the tools screen without performing any save/restore operations.

Setpoint Save Process

The *Setpoint Save Process* screen shown below is a dialog box which is accessed by clicking the Save command button on the Setpoint Control screen. It allows you to specify which CCS units will have data saved to a setpoint file.

Setpoint Save Screen

Unit Name	This drop-down list box allows you to select from one or more CCS units to save setpoint data. Possible selections include All, Master, and individual Screw and Slave units, depending on your system configuration. Selecting All would save data for all CCS units. Selecting Master would save data for the master and its remotes units. Selecting a screw would save data for the selected screw. Each screw in the system can be saved separately. Selecting a slave would save data for the selected slave unit which your system may contain.
Filename	You can select New to allow a new filename to be entered or select an existing filename from this list. Use the scrollbar to view additional filenames in the list.
Save Runtimes	A check in this box will also download and save the current value of the Equipment Runtimes.
Comment	This data entry field allows you to enter a comment to be associated with the setpoint save filename. This field is useful to enter a summary of the data being saved, such as "*Ice Cream Production Setpoints*".
Save	This command button will perform a setpoint save on the units selected and will store the data in the user specified filename. Clicking this button activates the *Setpoint Progress Box*.
Cancel	This command button will return you to the main *Setpoint Control* screen without performing any setpoint save functions.
Help	This command button allows you to access on-line help for the *Setpoint Save/Restore* function.

Setpoint Save Progress Box

A progress box is displayed when **PC MONITOR** is saving setpoints from the CCS. If the save operation does not complete successfully, **PC MONITOR** will generate error messages to identify which unit numbers data was not successfully saved from.
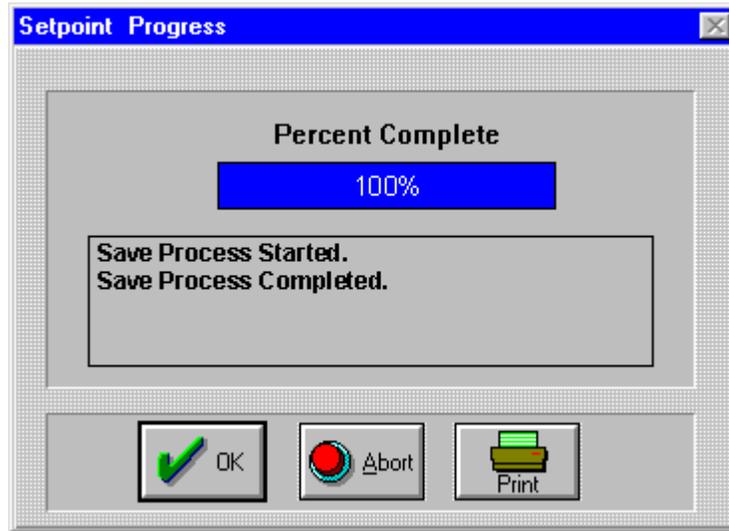
Setpoint Save Progress Meter

OK	This command button will close the progress box after the save operation has been completed.
Abort	This command button will stop the save operation before it is complete if you do not want to wait.
Print	This command button allows you to print error messages from the *Setpoint Progress Box* to document errors which were detected.

Setpoint Restore

The *Setpoint Restore Process* screen below is a dialog box which is accessed by clicking the Restore command button on the Setpoint Control screen. It allows you to select a setpoint file and specify which CCS units to restore setpoint data to.
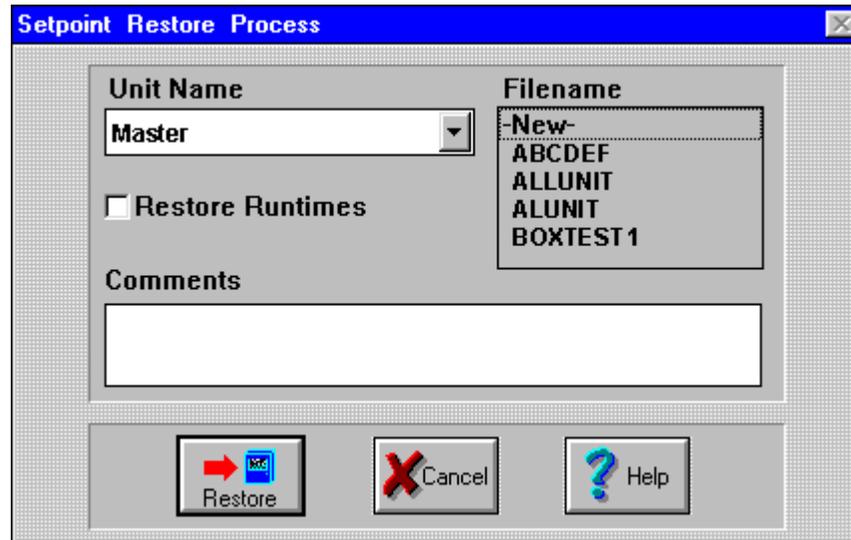

Setpoint Restore Screen

Unit Name	This drop-down list box allows you to select which CSS units will have setpoint data restored. Possible selections include All, Master, and individual Screw and Slave units, depending on your system configuration. Selecting All would restore data to all CCS units. Selecting Master would restore data to the master and its remotes units. Selecting a screw would restore data to the selected screw. Each screw in the system can be restored separately. Selecting a slave would restore data to the selected slave unit which your system may contain. By selecting a Unit Name, you can restore data to a specific unit even if the setpoint filename also contains data for other units.
Filename	You can select a filename from this list to determine which setpoint data will be used for the restore operation. Use the scrollbar to view additional filenames in the list.
Restore Runtimes	When this box is checked, the values of the Equipment Runtimes last saved on the PC will be restored to the selected unit(s).
Comments	Once you select the name of a file to use, this field will be updated with the comments associated with that specific setpoint data file, such as "*Ice Cream Production Setpoints*".
Restore	This command button will restore setpoint data to the units selected. After this command button is clicked, the system will request a user password to verify the operator has the required access level to change setpoint data on the specified units.
Cancel	This command button will return you to the main *Setpoint Control* screen without performing any setpoint restore functions.
Help	This command button allows you to access on-line help for the *Setpoint Save/Restore* function.

Setpoint Restore Progress Box

A progress box is displayed when **PC MONITOR** is restoring setpoints to the CCS. **PC MONITOR** will generate error messages to identify which unit and screen data was not successfully restored from the setpoint file. In addition, you can print a setpoint report of the selected file to compare screen names against the error report.
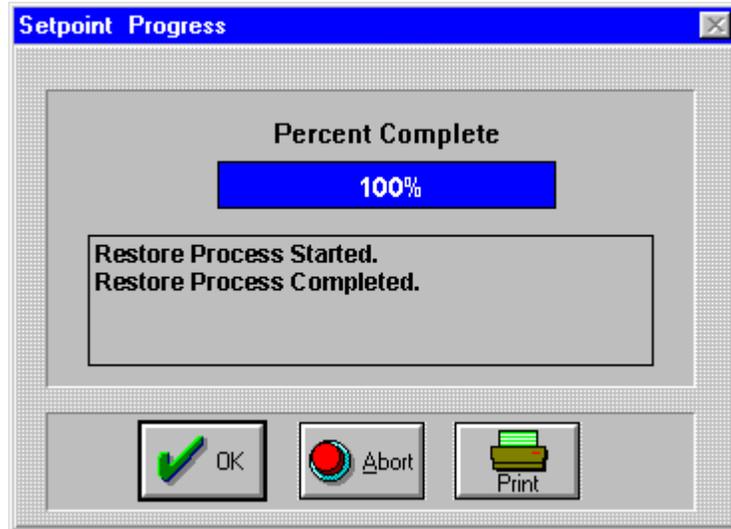
Setpoint Restore Progress Meter

OK	This command button will close the progress box after the restore operation has been completed.
Abort	This command button will stop the restore operation before it is complete if you do not want to wait.
Print	This command button allows you to print error messages from the *Setpoint Progress Box* to document errors which were detected.

    ✎ ***NOTE****: The existence of errors indicates the data for one or more screens may not have been successfully restored. Check the View Setpoint Report for details so that the setpoints may be manually restored.*

View Setpoint Report

The *Setpoint Report* screen shown below is accessed by clicking the View command button on the Setpoint Control screen. The screen allows you to view and print CCS unit setpoint data reports. The report screen contains a display area used to view reports and a tool bar area. Using the *Setpoint Report* screen will enable you to select which reports to view and/or print and the setpoint save filename to use in generating the report.

☞ **TIP:** Since each unit can contain a large number of screens the setpoint report may be quite long. Make sure there is a sufficient amount of paper in your printer or select individual screens to print.

An example of the *Setpoint Report* screen is shown below:
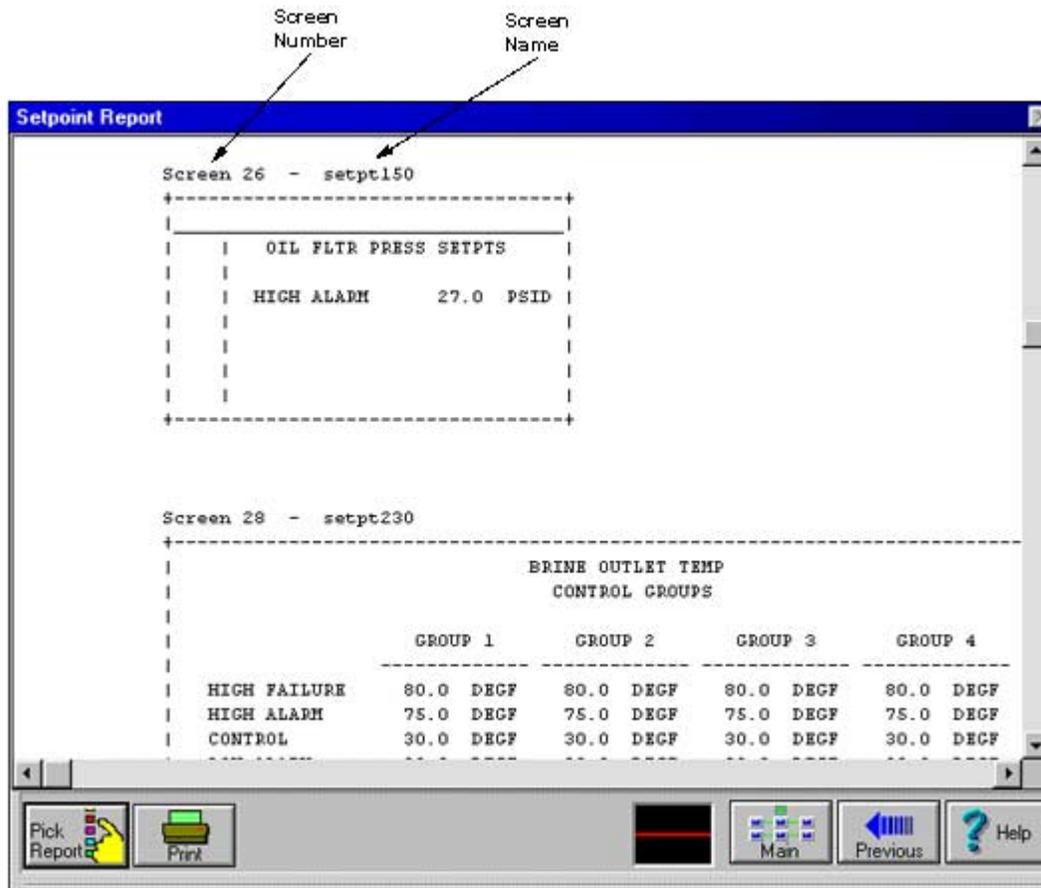
The setpoint report can be used to reference error messages generated during save or restore. Error messages will be listed based on screen number and screen name, which can be viewed in the setpoint report.

☞ **TIP:** If data was not available for a particular field on the screen asterisks (***) will appear in the field instead of data.

Generating Setpoint Reports

Clicking the Pick Reports command button on the *Setpoint Report* screen will open the *Setpoint View Select* screen. This dialog box allows you to choose a unit and specify which setpoint save filename to use in the generation of a report.
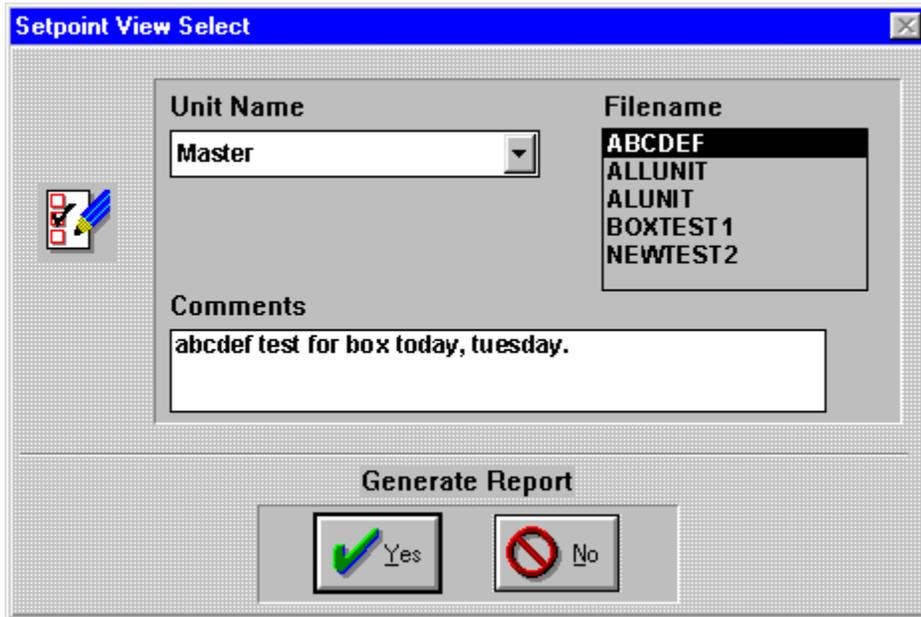
Setpoint Report Screen

Unit Name	This drop-down list box allows you to select which individual CSS unit to use in generating a report. Examples of possible selections are Master, Screws and Slaves, depending on your system configuration. Selecting Master will display data from the master and its remotes units. Selecting a screw will display data for a specific screw in the system. Selecting a slave will display data for a specific slave unit which your system may contain. By selecting a Unit Name, you can view data for a specific unit even if the setpoint filename also contains data for other units.
Filename	The user selects a filename from this list to determine which setpoint data will be used.
Comments	Once the user selects the name of a file to be displayed, this field will be updated with the comment associated with the setpoint data file, such as "*Ice Cream Production Setpoints*".
Yes	This command button will generate the report for the units specified using the selected setpoint data file.
No	This command button will return the user to the *Setpoint* Report screen without performing any setpoint view report generation functions.

Tool Bar

The setpoint view screen tool bar contains the following command buttons and system indicators.

BUTTON / INDICATORS	FUNCTION
Pick Report Button	Clicking on this button opens up the *Setpoint View Select* dialog box which allows you to select the setpoint save filename to use in the generation of a report.
Print Button	This button prints the currently displayed report. Since each unit can contain a large number of screens the setpoint report may be quite long. Make sure there is a sufficient amount of paper in your printer.
Pulse Indicator	The pulse indicator shows that **PC MONITOR** is communicating with the CCS master.
Main Button	This command button allows you to quickly return to the main graphics screen.
Previous Button	This command button will return you to the previously viewed screen.
Help Button	This button provides access to **PC MONITOR**'s on-line help feature.
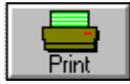
Setup

The *Setup* area of the tools screen allows you to define preferences for system logging downloads, report fonts, general system features and directories where data is stored.

System Logging

System logging is a feature which allows the CCS master to request and store system information and download this data to **PC MONITOR** upon request.

The master continuously collects analog, discrete, and alarm information from all the CCS boxes in the system. Periodically, the master automatically stores a snapshot of this system data into its memory. The rate that this information is stored is defined by the operator and is referred to as the system log rate. Each record of data that gets stored is labeled with the date and time that the sample was taken.

PC MONITOR has the ability to download the system log data and store it on the PC's hard disk. This downloading can be performed automatically at scheduled times or on request by clicking on a command button. When a download is requested **PC MONITOR** receives system log information starting from the date and time the log was last downloaded to the PC's current date and time. The information is then stored on the hard disk and used by the graph plotting and report printing functions.

The typical system log contains approximately 200 entries depending on your system size. When all available entries are filled the oldest data starts to be overwritten by the new data. For a typical system, if the logging rate is set to 15 minutes the master will store just over two full days of information. If the logging rate is reduced, care should be taken to ensure that the log is downloaded before data is overwritten (lost). **PC MONITOR** can perform multiple downloads per day to allow for various logging rates.

☞ **TIP:** Maintaining reduced logging rates will also cause the PC's hard disk to fill up more rapidly.

The list of parameters captured in the system log has been customized for your CCS network. The information typically includes all analogs and discretes, along with any information that is displayed on CCS status screens. The list is displayed to you in alphabetical order for convenience when you view it in the graph plotting or custom report functions.

System Logging Setup

The *System Logging Setup* screen is an optional dialog box which is accessed by clicking on the tools screen command button shown below.
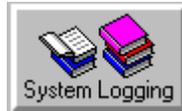
The screen allows you to set preferences for downloading system logs. This setup screen is also used to enable the automatic report printing option.

Downloading System Logs

The *System Logging Setup* screen shown below allows you to specify when you want to download the system log and whether or not automatic report printing is enabled.

System Logging Setup Screen

System Log Download Times	This area contains a list box displaying the times of day at which **PC MONITOR** will attempt a system log download. Depending on the logging rate, multiple downloads may be required per day. The section also contains edit cells to allow the modifying of existing times or the entering of new times. Clicking on a time in the list box will move it into the edit cells. You can then select any of the three fields (hours, minutes, AM/PM indicator) with the mouse and use the up and down scroll arrows to move through the choices.
Clock Time	This field is the time of day for a new download is entered.
Automatic Report Group Names	Selects a pre-defined group of reports or graphs to be printed after the download occurs. Selecting NONE indicates that no reports will be printed. Please refer to the *Automatic Report Printing* section for more information.
Add	Once you have entered a new time and group, click the **ADD** button to update the download list.
Delete	This button will allow you to delete the selected time from the list box.
Change	Once you have selected a time and modified it to the desired value, clicking this button will replace the original value with the new one.
Download Now	This command button is used to instruct **PC MONITOR** to perform a system log download immediately, regardless of the times scheduled for downloads. Clicking on this button will activate the System Log Download Times dialog box shown below:
Remote Data	The *Remote Data* button is used to initiate a download of system log data residing on the hard-wired PC at the facility via the telephone line.
OK	This command button is used to return to the tools screen and will display a dialog box if you have made any changes. The box will ask if you want to save your changes; it contains the command buttons Yes, No, and Cancel to allow you to choose an option.
Cancel	This button will return you to the tools screen without saving any of your changes.
Help	This button accesses on-line help.

System Log Download Times Screen

When the **Download Now** button is selected, the *System Log Download Times* dialog box is displayed, allowing the user to select a range of records to be downloaded.

Start Record	This field is used to enter the date and time to begin downloading information. The default is the date and time of the last record on the PC hard disk. If no prior data resides on the hard drive, the data for the start record will be one year prior to the current date.
End Record	This field is used to enter the date and time to stop downloading information. The default is the current date and time. If a Start Record prior to the last record on the PC hard disk is requested, older data (if available) will be downloaded and will replace the current records on the disk.
OK	This command button is used to return to the tools screen and will display a dialog box if you have made any changes. The box will ask if you want to save your changes; it contains the command buttons Yes, No, and Cancel to allow you to choose an option.
Cancel	This button will return you to the tools screen without saving any of your changes.

⚠

Once a download of the system log is started, whether based on a scheduled time or from clicking on the **DOWNLOAD NOW** button, a progress box, like the one below, will appear to show you the task completion status. If you do not wish to perform the download you can cancel it by clicking on the **ABORT** button.
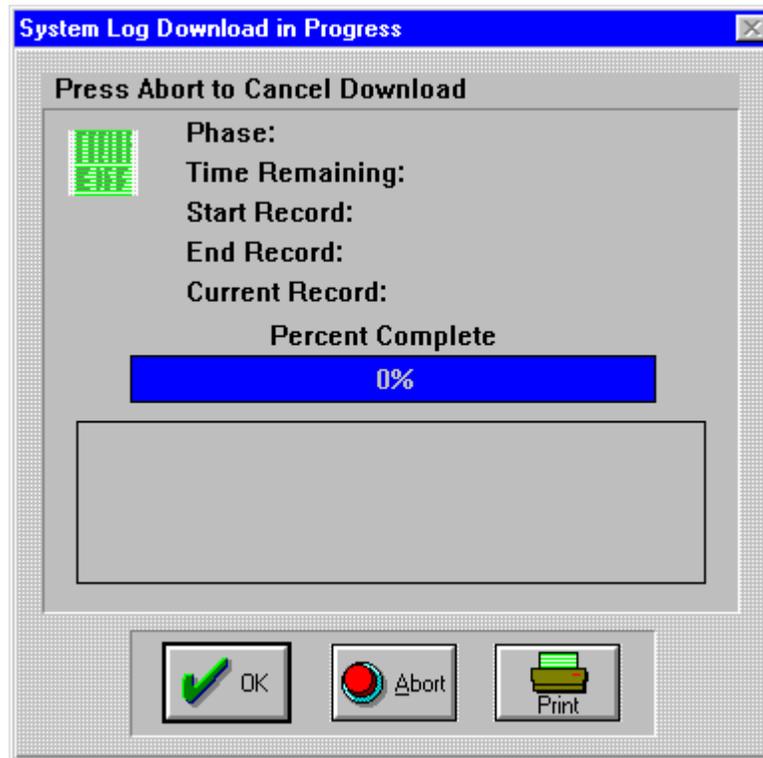
System Log Download Progress Meter

When the download process has completed, the progress box will be updated, like below, to show the completion status. Any errors that occurred during the download will be displayed in the status box. A printout of the status box can be obtained by selecting the **PRINT** button.

If the download took place based on a scheduled time and errors occurred, the error box will be minimized and a small view errors button will be displayed at the top right of the screen. This is done to allow **PC MONITOR** to continue to communicate. The user can click on the button to open the error box and print the errors listed.
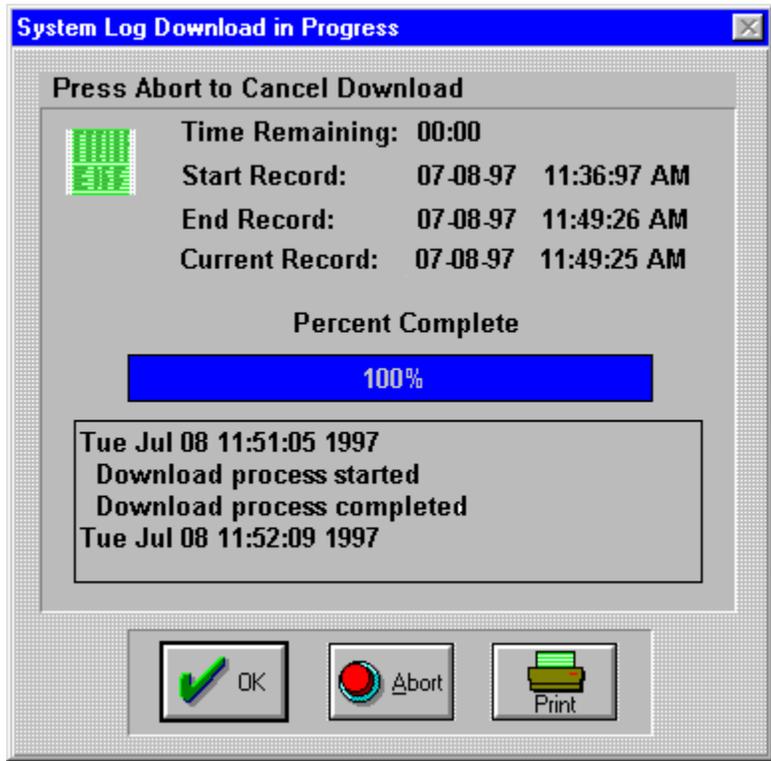
The progress box will disappear automatically if its occurrence was based on a scheduled time. If a manual selection was made to initiate the download, selection of the OK button is required to close the progress box.

OK	This command button will close the progress box after the save operation has been completed.
Abort	This command button will stop the save operation before it is complete if you do not want to wait.
Print	This command button allows you to print error messages from the *System Log Download In Progress* to document errors which were detected.

Remote System Log Data

The *Remote System Log* download feature allows access to stored system log data on a remote computer via the modem and telephone lines.

If this feature is available on your Master CCS processor, a remote PC can dial into the facility and transfer data files from the hard-wired plant PC's hard drive. The local plant PC must be functional and communicating with the Master CCS processor in order for this feature to work.

System Log Remote Download ⊠

Start Record

`10` / `25` / `03`   `12` : `00`   **AM** ⬆⬇

End Record

`10` / `27` / `03`   `11` : `59`   **PM** ⬆⬇

Current Record   10-25-03 01:13:33 AM

Percent Complete

1%

✔ OK   ✗ Cancel

Start Record	The *Start Record* field is the time and date of the starting record to be transferred.
End Record	The *End Record* field is the time and date of the last record to be transferred.
Current Record	Once started the *Current Record* field shows the time and date of the log record currently being transferred.
Percent Complete	The *Percentage Complete* field displays a percentage of the number of records transfered so far.
OK	Starts the transfer process.
Cancel	Stops the transfer process.

There are some requirements that should be kept in mind when using the system logging download feature of **PC MONITOR**.

First, it is important to note that for **PC MONITOR** to perform a system download it must be communicating with the CCS master.

Second, you need to be aware of the hard disk requirements needed to store your logs and determine how you wish to backup you data.

Hard Disk Space

If you have purchased a complete system from M&M your computer has been configured to ensure a minimum of two years worth of log storage assuming a 15 minute system log rate. If you did not purchase a complete system, we recommend that you have a minimum of 300 Megabytes of free hard disk space after installing **PC MONITOR** on your system.

Backups

It is recommend that you perform some type of regular backup to archive your system log data files. The archive of these files provides a safety net should you experience a computer hardware failure. It will also allow you to delete past years' data to make room for new system logs on your hard disk.

The log data files are binary files which are stored in a data directory under your root directory. The root directory for your PC is shown on the **PC MONITOR** system information screen. The data directory will consist of various sub-directories that separate logs by year, month, and day. An example of a typical data directory tree is shown below:

```
DATA
       98
       99
              01
              02
              03
                     03-01-99
                     03-02-99
```
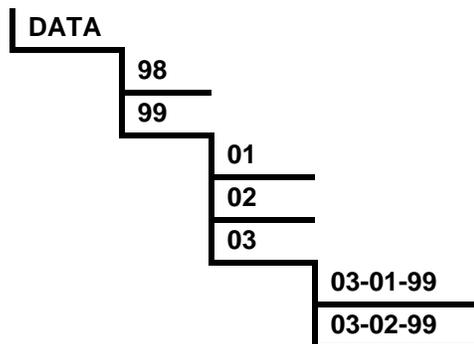
Reports Setup

The *Reports Setup* screen is a dialog box which is accessed by clicking on the tool screen command button shown below.

The screen allows you to set preferences for the text fonts that will be used when displaying or printing logs and creating reports. The screen is broken down into three areas, Printer Fonts, Screen Fonts, and a tool bar.
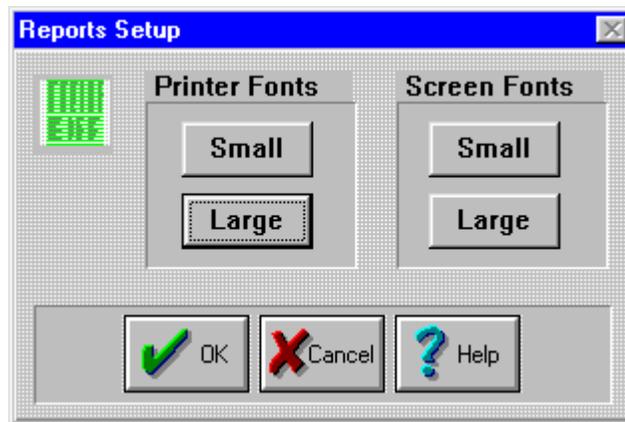
Reports Setup Screen

OK	This command button is used to return to the tools screen and will display a dialog box if you have made any changes. The box will ask if you want to save your changes; it contains the command buttons Yes, No, and Cancel to allow you to choose an option.
Cancel	This button will return you to the tools screen without saving any of your changes.
Help	This button accesses on-line help.

Clicking on the Small or Large command buttons in either the Printer Fonts or Screen Fonts area will open up the following font dialog box to allow selection of your desired font sizes.
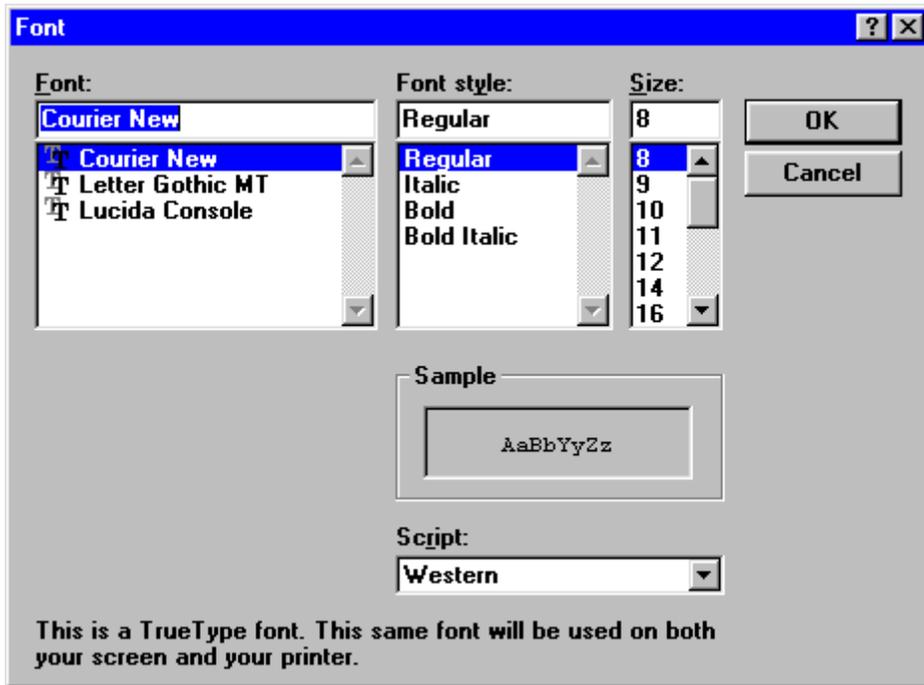
Font Properties Screen

Font	The list box allows you to choose among the fixed width fonts available for your printer.
Font Style	This list box presents the different font styles available for the font selected. We recommend leaving this set to the default (Regular).
Size	This list box allows selection of the desired point size for the font selected.
Script	This list box allows selection of the desired script.
OK	This command button will exit the dialog box and save any changes made.
Cancel	Clicking on this button will exit the dialog box without saving any changes.

Printer Fonts

The printer fonts area of the report setup screen contains two command buttons: Small and Large. These buttons are used to open the font dialog box and set default font preferences used when printing logs and reports in **PC MONITOR**. We recommend that you use the Courier font for both and font sizes 8 and 17 respectively for the Small and Large buttons.

Screen Fonts

The screen fonts area of the report setup screen contains two command buttons: Small and Large. These buttons are used to open the font dialog box and set the font preferences to be used when displaying logs and reports in **PC MONITOR**. We recommend that you do not change these values as they have been factory configured for your system.

# System Setup

The *System Setup* screen is a dialog box which is accessed by clicking on the tool screen command button shown below.

The screen allows you to set preferences for general system setup parameters and is broken down into an option setup area and a tool bar.
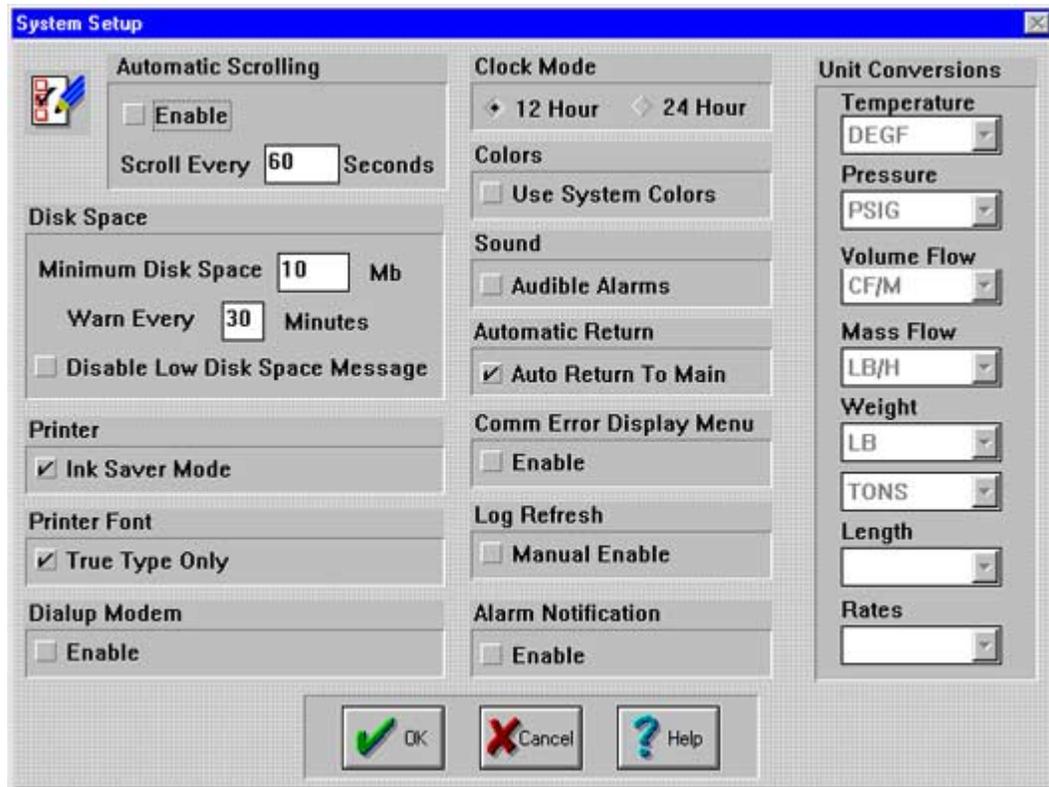
System Setup Screen

Automatic Scrolling	This area allows you to enable the automatic scrolling of custom graphics screens and to enter the time, in seconds, that **PC MONITOR** will remain on each screen.
Disk Space	This area allows you to enter the minimum disk space required for your system before **PC MONITOR** will generate a low disk space message. You also enter the time in minutes from when a warning is issued and when the **PC MONITOR** will re-display the message if the disk space requirement is not satisfied. A disable message check box is provided to allow you to disable the message from occurring.
Printer	This check box allows color substitutions to be made by **PC MONITOR** when ink saver mode is selected. The color substitutions result in less ink being used in creating the screen image. **PC MONITOR** can only make the substitution if a 256 color or less video driver is used. If a greater number of colors is selected, **PC MONITOR** will generate an error when printing a screen and will not make any color substitutions.
Printer Font	This check box will instruct **PC MONITOR** to utilize only true type fonts for printing of data.
Dialup Modem	When enabled, the Modem types available for selection under the *Modem Communications* dialog box will be limited to only those modem types installed under Windows.
Clock Mode	These option buttons allow you to choose whether time is displayed in 12 hour or 24 hour mode on the PC. **PC MONITOR** provides you with the flexibility to select either mode regardless of the time mode used on the CCS master.
Colors	Selects whether **PC MONITOR** uses the Windows system colors. We recommend that you leave this box unchecked to take advantage of the enhanced colors contained in **PC MONITOR**.
Sound	Enables the audible alarm feature of **PC MONITOR**. When a new system alarm or failure occurs, **PC MONITOR** will beep to notify you.
Automatic Return	This feature enables the automatic return feature of **PC MONITOR**. This causes the program to return to the main graphics screen after 10 minutes of inactivity. It should be noted that if you have automatic scrolling enabled and are in a custom graphics screen this option will have no effect.
Comm Error Display Menu	This feature enables the communication error reporting feature of **PC MONITOR**. This causes the program to generate a message every time a communications error occurs.
☞ **TIP:**	We recommend the *Comm Error Display Menu* remain unchecked on the *System Setup* screen and enabled only when directed to do so by M & M Systems.
Log Refresh	Selecting *Manual Enable* will hold the last panel log downloaded in PC memory until the user requests new data. This allows the operator to view a log, exit to another screen, and then return without having to download the log again. This feature is especially useful when viewing logs using the *Modem Connection*.

Alarm Notification   Enables a pop-up dialog box to be displayed whenever an alarm or failure occurs. The VIEW button then allows the user to access the alarm screen for details.

Unit Conversions   A list of possible engineering unit conversions may be available on some systems. If this list is not shaded out, then all system displays, reports and graphs may be viewed using alternate units. For example, all temperature values may be viewed in degrees Fahrenheit (DEGF) or degrees Celsius (DEGC).

Directory Setup

The *Directory Setup* screen is a dialog box which is accessed by clicking on the tool screen command button shown below.

The Directory Setup screen is a dialog box which allows you to set preferences for the location of the data directory files and is broken down into an option setup area and a tool bar.
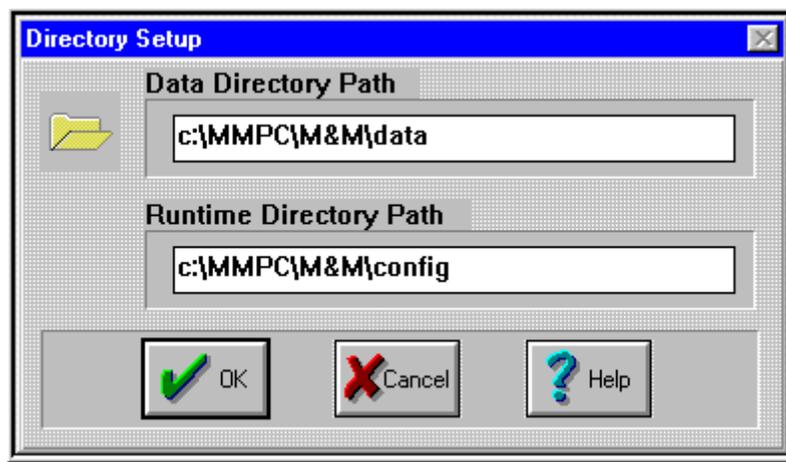
Directory Setup Screen

Data Directory Path	This area allows you to enter the name and location of the directory in which all system log download data will be stored. The field will automatically default to the *MMPC\JOBNAME\DATA* directory on your local disk. If your system is on a network this path can also be used to store the data on another drive located on the network.
Runtime Directory Path	This area allows you to enter the name and location of the directory in which the runtime data will be stored. The field will automatically default to the *MMPC\JOBNAME\CONFIG* directory on your local disk. If your system is on a network this path can also be used to store the runtime data on another drive located on the network.
OK	This command button is used to return to the tools screen and will display a dialog box if you have made any changes. The box will ask if you want to save your changes; it contains the command buttons **YES**, **NO**, and **CANCEL** to allow you to choose an option.
Cancel	This button will return you to the tools screen without saving any of your changes.
Help	This button accesses on-line help.

CHAPTER 6   *Reports*

The *Report Printing* function is a **PC MONITOR** feature which allows you to print pre-defined reports of logged data, to select which reports will be automatically printed, to generate custom reports with the *Custom Reports* function, and to export report data to a file for use by third party software using the *Export* function. The Reports screen is accessed by clicking on the *Reports* command button which is located on the Tools screen.

The screen is divided up into two main areas: (1) a display area used to view reports and (2) a lower tool bar area. Using the reports screen you will be able to select which reports to view and/or print and the date of the logged data to use in generating the report. When you start the function, the display area will show the last report generated as shown in the following example.

✎ **NOTE:** *The first time the Report feature is accessed, the Report screen will appear blank. Refer to the* **Tools** *section in this chapter for information on setting up your reports using the* **Pick Reports** *option.*

```
Reports                                                                            ⊠

                                        PC Monitor (c)1992-2002 M&M Refrigerati ▲
                                        --- M&M Refrigeration, Inc. ---
                                           -20 F Pump Pkg Summary
                                          Data Logged on 10-01-03
     Printed: 10/01/03
              10:16:13

                                                                     |--------
                                                             Pump
         Log       Log     Level    Vessel     Liq            Pump    Low    |--------
         Date      Time     PCT      Mode      Sol     HLS    Press   Press   Mode
       --------  ---------- ------  ---------- ------  -----  ------- -----  ---------
       10/01/03 00:07:47    37.2    NORMAL     CLOSED  NORM   29.7 #     0   AUTOMATI
                00:22:47    36.6    NORMAL     CLOSED  NORM   28.8 #     0   AUTOMATI
                00:37:47    31.3    NORMAL     CLOSED  NORM   28.4 #     0   AUTOMATI
                00:52:47    33.2    NORMAL     CLOSED  NORM   28.3 #     0   AUTOMATI
                01:07:47    35.2    NORMAL     OPEN    NORM   28.9 #     0   AUTOMATI
                01:22:47    32.1    NORMAL     CLOSED  NORM   28.9 #     0   AUTOMATI
                01:37:47    34.0    NORMAL     CLOSED  NORM   28.6 #     0   AUTOMATI
                01:52:47    31.2    NORMAL     OPEN    NORM   29.7 #     0   AUTOMATI
                02:07:47    33.5    NORMAL     CLOSED  NORM   28.6 #     0   AUTOMATI
                02:22:47    35.6    NORMAL     CLOSED  NORM   30.3 #     0   AUTOMATI
                02:37:47    38.1    NORMAL     CLOSED  NORM   30.2 #     0   AUTOMATI
                02:52:48    34.1    NORMAL     CLOSED  NORM   30.4 #     0   AUTOMATI
                03:07:48    35.8    NORMAL     CLOSED  NORM   31.2 #     0   AUTOMATI ▼
                03:23:48    36.0    NORMAL     CLOSED  NORM   30.0 #     0   AUTOMATI
     ◄                                                                            ►

     Pick      Print   Automatic  Custom  Export        ▬▬▬    Main   Previous   ?  Help
     Report
```

Once you have opened the reports screen you may select a report for viewing and/or printing, select the reports that will be automatically printed, or generate custom reports with the optional Custom Reports screen.

Tool Bar

The reports screen *Tool Bar* contains a set of command buttons which are used to perform various functions and indictors to watch the system status. The command buttons and indicators contained on the screen's tool bar from left to right and their functions are as follows:

BUTTON / INDICATORS	FUNCTION
Pick Report Button	The *Pick Report* button opens up the report options screen which allows you to select the report to generate and the date range of logged data to use.
Print Button	The *Print* button prints the currently displayed report.
Automatic Button	The *Automatic* button opens up the automatic reports screen which allows you to select the reports that will be automatically printed.
Custom Button	The *Custom* button opens up the custom report definition screen which allows you to define your own reports.
Export Button	The *Export* button opens up the report export screen which allows you to select the report to be exported to a file for use by third party software. Please refer to the Export section of this manual for a detailed description of the function's operating procedures.
Pulse Indicator	The *Pulse Indicator* shows that **PC MONITOR** is communicating with the CCS master.
Main Button	The *Main* command button allows you to quickly return to the main graphics screen.

BUTTON / INDICATORS	FUNCTION
Previous Button	The *Previous* command button will return you to the previously viewed screen.
Help Button	The *Help* button provides access to **PC MONITOR** 's on-line help feature.

Report Selection

Pick Report

Click the **Pick Report** command button to open the *Report Options* screen. This allows you to select a report and logged data date range.
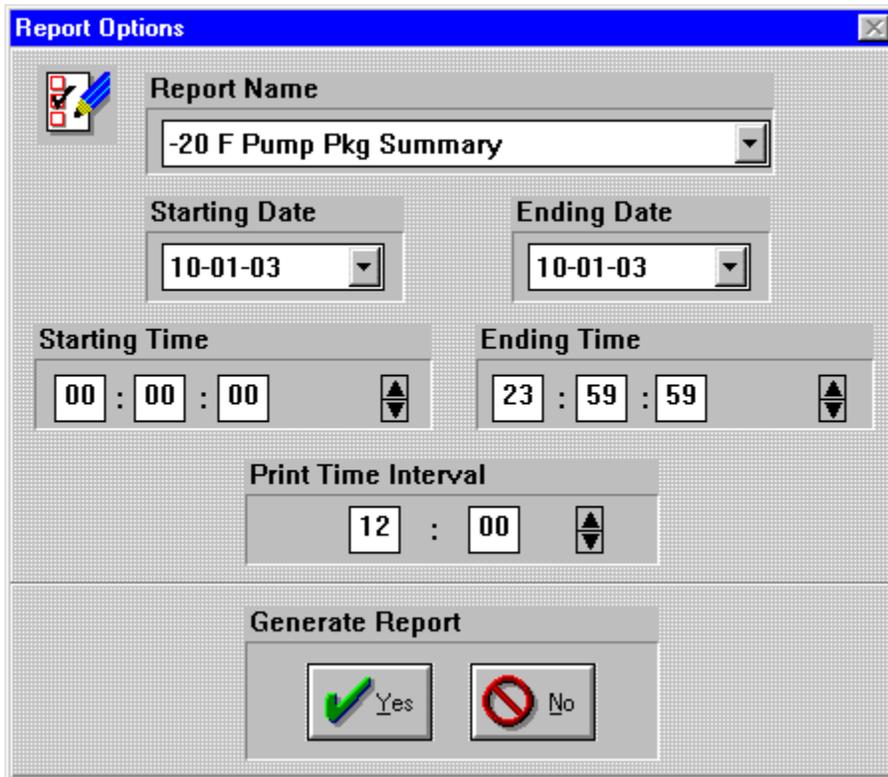

Report Options Screen

FUNCTION	DEFINITION
REPORT NAME	Choose which pre-define or custom report you want to generate using the drop-down list box. These reports have been customized for your specific system.
STARTING DATE	Select the starting date for the report from the available logged data using the drop-down list box.
ENDING DATE	Select the ending date for the report from the available logged data using the drop-down list box. If the ending date is not after the starting date **PC MONITOR** will generate an error.
STARTING TIME	This field is used to select the time of day the information displayed in the report will start in *hh:mm:ss*. *NOTE: Defaults to 12:00 am midnight.*
ENDING TIME	This field is used to select the time of day the information displayed in the report will stop in *hh:mm:ss*. *NOTE: Defaults to stop 12 hours from the Starting Time.*
PRINT TIME INTERVAL	Generates the report with a reduced set of log data to save paper. For example, if log data is taken at 15 minute intervals, the print time interval may be set to one hour so only every 4th log record will be printed.
GENERATE REPORT	**PC MONITOR** generates the selected report using the defined date range of logged data. If you have entered an ending date that is earlier than the starting date, **PC MONITOR** will open a message box to inform you of the problem.
YES	When the **YES** button is clicked, the report is generated and ready to be printed.
NO	When the **NO** button is clicked, **PC MONITOR** will exit the report options screen without generating a report.

Printing a Report
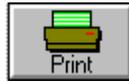
Once a report is generated you can view it by using the scroll bars to display the various parts of the report. A printout of the report can be produced by clicking on the tool bar's **PRINT** command button. This will produce an exact copy of the report as viewed on the screen.
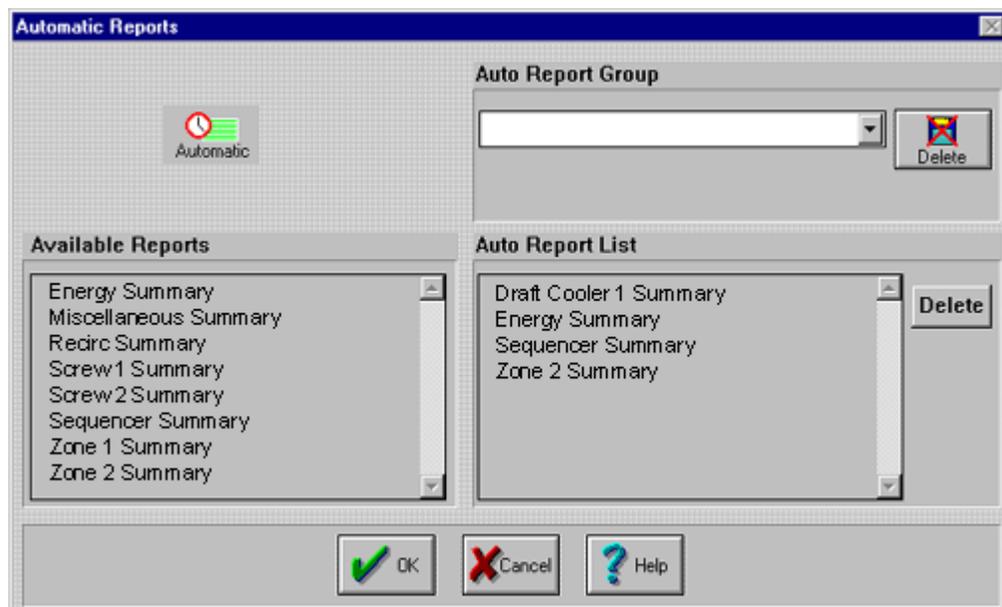
PARAMETER	DEFINITION
PRINTER	Displays which printer the report will be sent for printing.
PRINT RANGE	
All	Prints the entire report.
Selection	Prints only the highlighted selections of the report.
Pages	Prints only selected pages of the report.
PRINT QUALITY	Displays the resolution the report will be printed.
PRINT TO FILE	Prints the report to a file with a **.PRN** extension.
COPIES	Allows the user to print multiple copies of the same report.
COLLATE COPIES	Allows the user to collate multiple copies of the report.
OK	Prints the current report.
CANCEL	Cancels printing the selected report.
SETUP	Allows the user to select a different printer.

Automatic Report Printing

PC MONITOR provides for the automatic printing of reports on a daily basis. You can select which reports will be automatically printed by clicking on the tool bar's Automatic command button to open up the *Automatic Reports* screen.

The *Automatic Reports* screen allows you to create groups of reports that will be automatically printed.

Automatic Report Setup Screen

PARAMETER	DEFINITION
AUTO REPORT GROUP	Automatic Reports may be assembled into multiple groups. This allows different reports to be printed at different times of the day.
AVAILABLE REPORTS	The *Available Reports* list box contains the list of reports available for automatic printing. Click on a report name with the left mouse button to select it and place a copy of it in the *Auto Report List* on the right side of the screen.
AUTO REPORT LIST	Displays the reports selected for automatic printing.
Delete	Removes the selected report name from the *Auto Report List.* You may click on multiple report names to select more than one report before using the **Delete** command button.

PARAMETER	DEFINITION
OK	The **OK** button exits the automatic reports screen and will display a confirmation dialog box if you have made any changes. The box will ask if you want to save your changes; it contains the command buttons, **Yes**, **No**, and **Cancel** to allow you to choose an option.
Cancel	Closes the automatic reports screen without making any changes.
Help	Accesses on-line help for the topic.

There are some guidelines which should be kept in mind when using the automatic reporting printing feature of **PC MONITOR**.

NOTE: *In order for* **PC MONITOR** *to perform an automatic report printing operation the feature must be enabled in the system logging setup screen. For specific information refer to Chapter 5, System Logging.*

Also, the timeframe **PC MONITOR** *will print the selected reports must be setup on the* System Log Download screen*. This allows* **PC MONITOR** *to generate reports using recently downloaded data. For specific information refer to Chapter 5, Downloading System Logs.*

Custom Reports

The *Custom Reports* function is a **PC MONITOR** feature which allows user defined reports to be created. The reports are created using the *Custom Report Definition* screen which is opened by clicking on the tool bar's Custom command button shown below. When a report is completed it can be saved. Saving the report places it into the list of defined reports which can be printed.

Custom Report Definitions Screen

The *Custom Report Definitions* screen can be used to create new reports or to modify existing ones. The screen allows you to select parameters that will be displayed and column properties such as headers, units style, column justifications, and more. An example of the screen with descriptions of the items contained on it is shown below.

Custom Report Setup Screen

PARAMETER	DEFINITION
TITLE	The *Title* drop-down list box allows you to choose an existing report to edit or the **-NEW-** option to create a new report. If the new report option is selected **PC MONITOR** will open a dialog box to allow you to enter the title of the new report and confirm your request.
REPORT HEADING	The *Report Heading* edit cell is used to enter the report heading which will be printed at the top center of each page of the report.
COLUMN HEADING POSITION AND TEXT	The *Column Heading Position and Text* field is divided into two parts. The *Position* spin box is the starting position of the heading text. This is a three digit numerical field which displays the number of characters from the left the heading will begin. `79` ⬆⬇ The *Text* edit cell allows the user to enter the actual text to be displayed. This header text is a one line summary which is displayed one line above the specific column headers and should not be confused with them.
SAMPLE REPORT OUTPUT	The *Sample Report Output* display window will show a sample of what the current defined report will look like when generated. All data will be represented by large X's for numbers and small x's for units to signify the maximum size of each parameter. It should be mentioned that date and time data will be added automatically and shown as MM/DD/YY and HH:MM:SS respectively.
UNIT GROUP SELECT	The *Unit Group Select* selection box is used by **PC MONITOR** to allow the system log parameters to be divided into groups. For example, the parameters for one engine room may be grouped separately from another set of equipment. By using the group select, the data in the list box is changed to contain only parameters pertaining to that group. This reduces the number of items in the parameter list box making it easier to find a desired parameter. This grouping is determined when your system is configured. If no grouping was used all parameters will be in the same list and "Default" will be shown in the list box. You may select a parameter from one unit group and then change groups to use a parameter from a different group on the same report.
REPORT ORIENTA-TION	The *Report Orientation* radio buttons allow you to specify whether the report should be generated in portrait or landscape mode. This allows you to individually customize each report to the layout which best suits it.
MAXIMUM COLUMN PORTRAIT	The *Maximum Column Portrait* status field displays the maximum number of columns that can be displayed on a portrait style report based on the currently selected font sizes and default printer.
MAXIMUM COLUMN LANDSCAPE	The *Maximum Column Landscape* status field displays the maximum number of columns that can be displayed on a landscape style report based on the currently selected font sizes and default printer.
PARAMETER	Select the *Parameter* to assign to a selected column using this drop-down list box. The column is selected by clicking on it with the left mouse button.

PARAMETER	DEFINITION
COLUMN	The *Column* drop-down list box allows you to choose the column that will be selected. If a column is selected using the left mouse button its column number will be displayed in this box. The columns on a report are numbered from left to right starting with 0.
POSITION	The *Position* edit cell is the starting position of the selected column. You can modify this value by using the scroll arrows or selecting the text and entering a new number. Changing this value will move the column left or right depending on the number entered. The valid range of column positions will vary depending on the printer and the font selected. Should you exceed the allowable width for your selected printer **PC MONITOR** will display a message screen to warn you of the problem. **Warning** ☒ ⚠ Maximum report width is 103 characters using the currently selected Printer and Fonts. Some Columns may be Truncated. [OK]
ALIGN	The *Align* drop-down list box allows you to choose justification for the selected column's data. The available choices are left, center, and right justification.
UNITS STYLE	The *Units Style* drop-down list box allows the selection of the units type for the data in the selected column. If the parameter in the selected column does not have units associated with it this selection will be ignored by **PC MONITOR**. The available choices are none, short, and long. Examples of short units are # and " where their corresponding long units are PSIG and INHG. It should be noted that the use of short units will allow you to fit more columns on a report.
COLUMN HEADERS	The *Column Headers* consists of three edit cells that allow you to enter the header text for the selected column. The entered text will be center justified and will be displayed in three rows above the selected column. Each parameter associated with a column will have an available default header.
ALARMS	The *Alarms* check box enables the highlighting of the selected column's parameters to signify alarms and failures as in the CCS log screens. The report will display an "a", "f", or "o" next to the parameter to signify an alarm, failure, or OEM condition respectfully. If the selected column's parameter does not support highlighting this check box will be shaded (disabled) to prevent use.
HEADERS	The *Headers* check box enables the displaying of the header for the selected column. It defaults to the enabled position and must be active for the selected column to contain headers.
AUTO ADJUST	The *Auto Adjust* check box enables the automatic column adjustment feature. If enabled when a new column is inserted between existing columns, the existing columns will automatically be adjusted to make room for the new column and will maintain proper spacing. It should be noted that the column heading text, which is a one line summary, will not change position automatically as will the individual column headers.

PARAMETER	DEFINITION
UPDATE	The *Update* button will refresh the custom report screen's Sample Report Output area to update any changes made to specific columns or headers. The sample area must be updated to reflect changes made in header text, header justification, parameters, etc.
NEW	The *New* command button will allow you to insert a new column before or after the currently selected column. When clicked, a dialog box like the one below will appear and allow you to select the insert before or after option. The box will also display the column number of the column that the new column will be inserted before or after. This column number defaults to the selected column, but can be changed to any of the columns in the report using the drop-down list box.
DELETE	The *Delete* button will delete the currently selected column. Once pressed **PC MONITOR** will display a dialog box asking you to confirm your request to delete the column.
DEFAULT	The *Default* command button is used to change the selected column's header back to its default header text.
PRINTER FONTS	The *Small* and *Large* font command buttons allow you to select font sizes specific to the report you are editing. The default value for the Small and Large fonts will be the values entered in Reports Setup box on the Tool screen. The Large font will be used for the header of the report and the Small font for all the remaining text in the report.
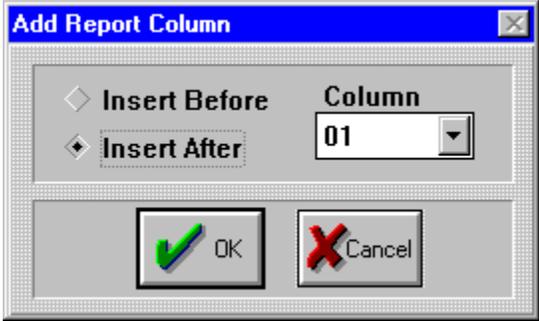
Selecting a Column

The *Custom Report* screen allows you to create or modify a report on a column by column basis. The information displayed on the screen, such as alignment, units, alarm highlighting enabled, etc., is associated with the currently selected column. Therefore, it is important to understand how to select a column.

A column can be selected by clicking the left mouse button on the desired column in the sample report display area. The column number will then change to reflect the new column selected. **PC MONITOR** also reminds you of the selection process by changing the mouse pointer to a left mouse button cursor when in the sample report output display area.

Another method of selecting a column is by choosing the desired column's number in the Column drop-down list box.

Copying a Report

Instead of creating a totally new report you may find it quicker to copy an existing report to a new report title and to modify it. To copy a report, first select it in the Title drop-down list box and then click on the Copy command button shown below.

Clicking on the Copy button will open up the following dialog box to allow you to enter the title name of the new report. The screen also asks you to confirm your request and permits you to cancel the process if desired.

Copy Report Screen

✎NOTE: *Copying an existing report to a new name does not place the new report into the list of defined reports. You must perform a save operation after making any desired changes to place the new report in the defined reports list.*

Saving a Report

Once you have made the desired modifications to an existing report or have competed the creation of a new one, you can save the report by clicking on the Save command button shown below.


Saving the report will place the report title in the list of available reports that can be printed. Once in this list, the report can either be printed automatically or generated for a specific date range of logged data.

Deleting a Report

A report can be deleted by first selecting it in the Title drop-down list box and then clicking on the Delete command button shown below.

After clicking on the Delete button **PC MONITOR** will display the following dialog box to ask you to confirm your request.
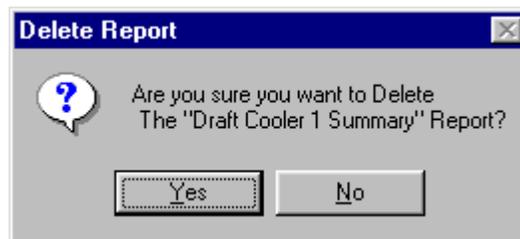
Delete Report Confirmation Screen

Editing an Existing Report

The custom reports screen allows you to edit an existing report to make changes to its current layout. Once the desired report is selected in the Title drop-down list box, you can modify the contents by adding or deleting columns, changing parameters, adding alarms, etc.

The custom reports screen works on a column by column basis. The only items on the screen that are not column specific are the Title, Report Heading, Column Heading Position and Text, and Page Length cells. All the remaining edit cells, check boxes, command buttons, etc. are used to modify the make-up of the selected column.

Modifying an existing report is therefore a matter of selecting the column you wish to change and making the desired modifications. You can also click on the New button to create a new column before or after the selected column. Once the new column is created it is automatically selected by **PC MONITOR** to allow you to assign a parameter and define its headers, unit style, alignment, etc.

You can also change the report heading and the one line column heading position and text. It should be noted that the column heading is a one line text string which runs across the top of the columns in the report and should not be confused with the individual column headers.

After completing the desired changes to a report you need to click on the Save button to save the changes to the report.

To edit an existing report

1. Select the desired report to edit from the available choices in the Title box.

2. Select the column you wish to change by clicking on it with the left mouse button.

3. Change the desired properties of the column.

-or-

Click on the New button to create a new column which will be automatically selected to allow assigning of a parameter and associated properties. When inserting new columns it is suggested that the auto adjust feature be enabled. If not enabled proper spacing between columns may not be maintained. A spacing problem would require you to select individual columns and to adjust their positions using the Position edit cell.

4. Select and change the remaining columns you wish to modify, or create and define any additional columns desired.

5. Make any desired changes to the report heading and the one line column heading position and text.

6. Click on the Save button to save the changes made to the report.

✎ **NOTE:**   *The command buttons on the screen which have an underlined letter in their name can be selected in one step. Press and hold down the keyboard's ALT key while typing the underlined letter.*

Creating a New Report

The custom reports screen allows you to create new reports that can be included into the list of reports available for printing. To create a new report you first select the -NEW- option in the Title drop-down list box. This will open a dialog box like the one below to allow you to enter the name of the new report and confirm your request.

Create New Report Screen

Once the new report name has been assigned, the reports screen will provide a clean slate to allow you to add columns and define their associated properties. Since the custom reports screen works on a column by column basis, most items on it are used to assign properties to the selected column. The only items on the screen that are not column specific are the Title, Report Heading, Column Heading Position and Text, and Page Length cells. All the remaining edit cells, check boxes, command buttons, etc. are used to modify the make-up of the selected column.

Defining items in a new report is therefore a matter of selecting the time column then using the New button to insert new columns to which you assign a parameter and associated properties. Once a new column is created it is automatically selected by **PC MONITOR** to allow you to assign a parameter and define its headers, unit style, alignment, etc. When generating a new report the date and time are automatically inserted as the first two columns. You can also define the report heading and the one line column heading position and text for the report.

After completing the report you need to click on the Save button to save the report into the list of reports available for printing.

To create a new report

1. Click on the time column to position the pointer then select the **-NEW-** option from the available choices in the **Title** box and type in a name for the report.

2. Click on the New button to insert a new column and automatically select it. When inserting new columns it is suggested that the auto adjust feature be enabled. If not enabled proper spacing between columns may not be maintain. A spacing problem would require you to select individual columns and to adjust their positions using the Position edit cell.

3. Assign a parameter to the column and define the associated column properties such as headers, unit style, position, etc.

4. Create and define any additional columns desired.

5. Define the report heading and the one line column heading position and text.

6. Click on the Save button to save the report.

✎ **NOTE:** *The command buttons on the screen which have an underlined letter in their name can be selected in one step. Press and hold down the keyboard's ALT key while typing the underlined letter. It may be quicker to modify an existing report than to create a new one from scratch.*

Report Export

Report Export allows you to export report data to a file which can then be imported into third party software such as spreadsheets for additional analysis or manipulation. Clicking on the *Export* command button located on the tools screen will open the *Report Export* screen. Please refer to the Export section of this manual for a detailed description of the function's operating procedures.

CHAPTER 7   *Graph Plotting*

The *Graph Plotting* function is a **PC MONITOR** feature that allows you to graphically represent logged data in the form of a two-dimensional line plot. The graph plot screen is accessed by clicking on the tool screen command button shown below.
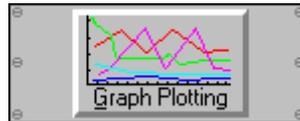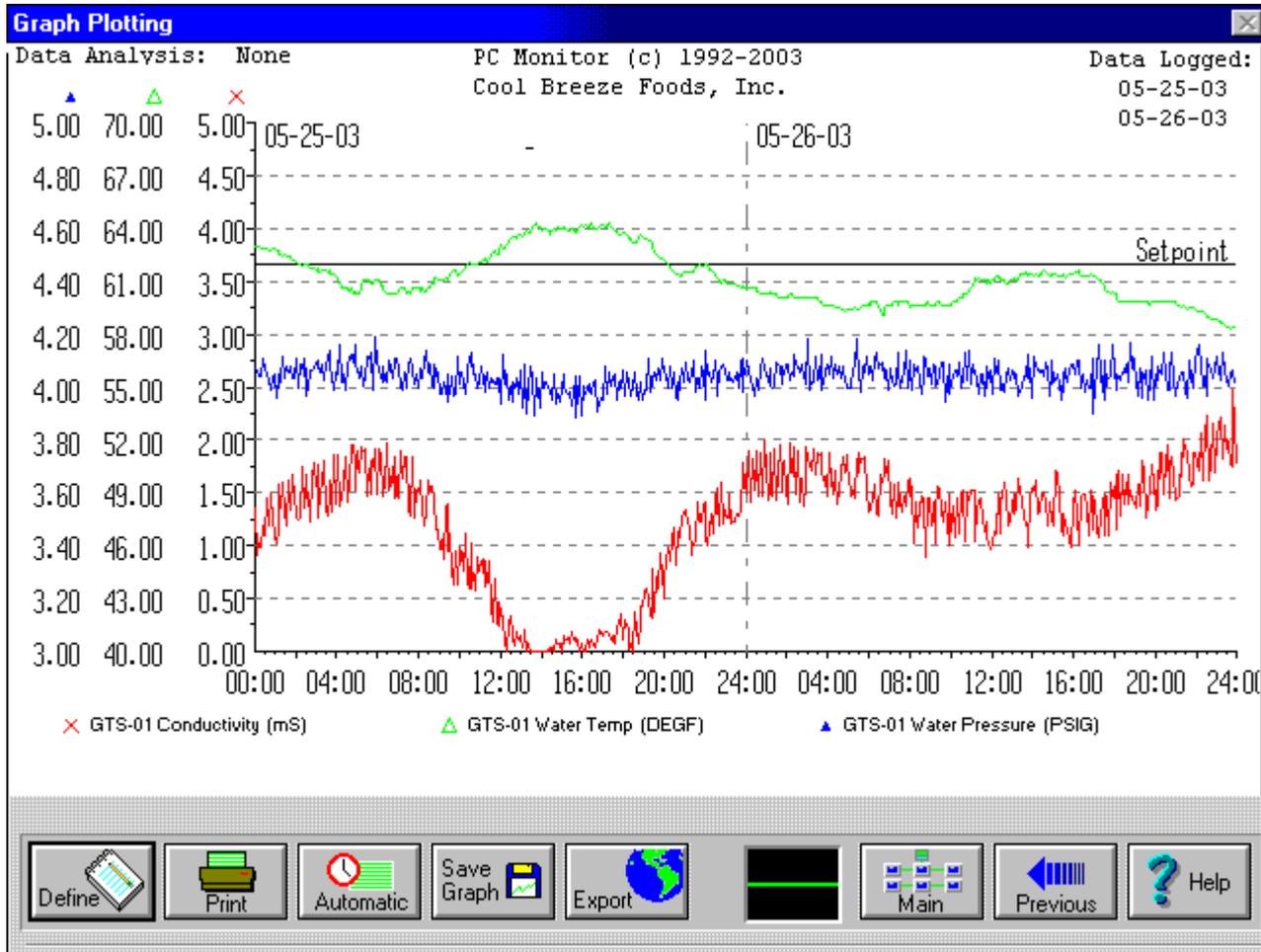

Users are given the option of selecting the type of data (Historical or Trend) to be plotted. Both types of graphs use similar screens for setting up the graph data. The main difference is that a Historical graph is plotted from System Log data stored on the PC and a Trend graph plots the data in real-time, when the PC is connected to the system.
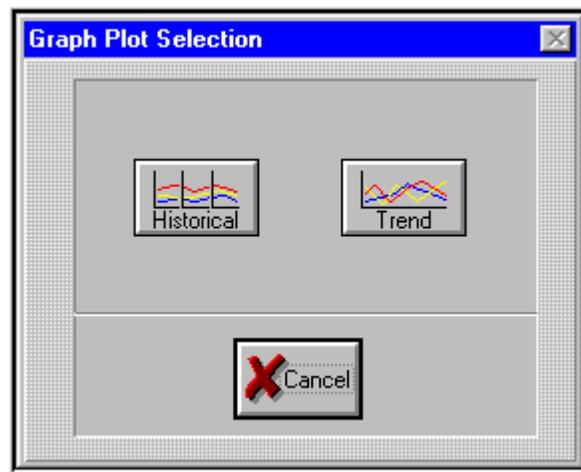
Graph Plotting Selection Screen

Anatomy of a Graph

A graph is comprised of five main parts: header information, vertical axes (1-3), horizontal axis, graphed data, and data labels and symbols. An example of a typical graph plot can be seen below. The Graph Plot Selection screen is broken up into two main areas: a display area used to show graphs and a lower tool bar area. Using the graph plot screen you will be able to define graphs of up to eight parameters for all numerical data logged by the system. When you start the function, the define graph dialog box will appear. This box allows you to define the information necessary to produce a graph and will be covered in a later section.

Sample Graph

Descriptions of the various parts of a graph plot are as follows:
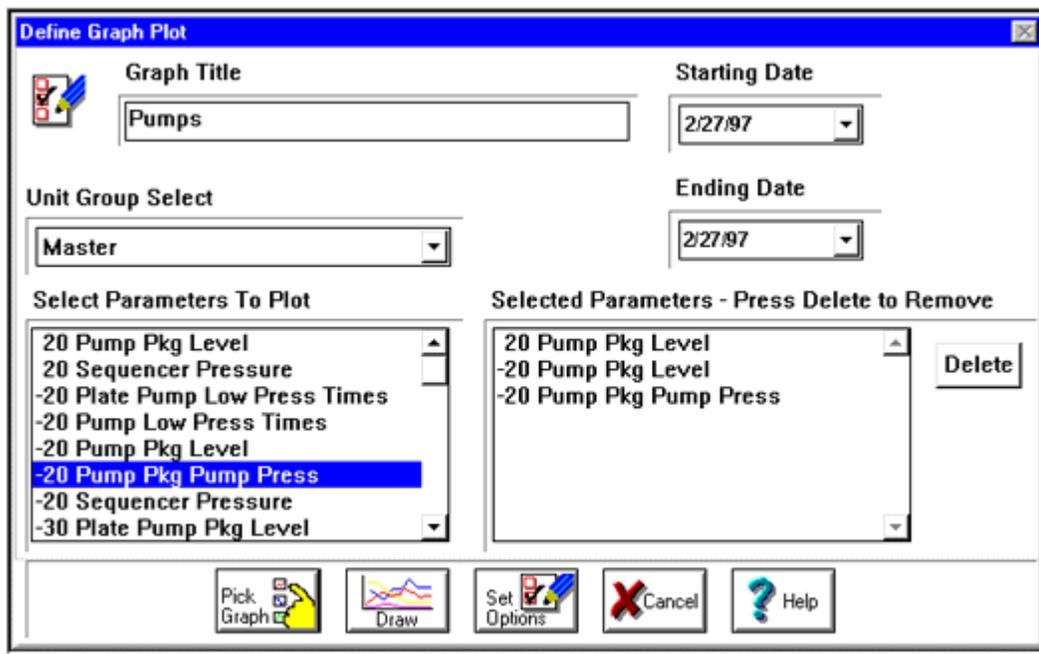
Header Information	The header consists of a title which you specify when defining the graph and the starting and ending date that the graphed data was logged.
Vertical Axes	The graph plot function can support from one to three vertical axes to allow a more detailed graph of different ranges of data. The number of axes and the data assigned to each axis is set in the graph plotting options screen.
Horizontal Axis	This axis represents one day or multiple days worth of data as a function of the starting and ending dates selected. The time scale can be shown in 12 or 24 hour time.
Graphed Data	The Graphed Data is represented as a plot of the selected data over the days identified in the date header. You are able to plot up to eight parameters at a time.
Data Labels and Symbols	Each data line has both a specific color and symbol associated with it. Each variable plotted is shown in its associated color with its corresponding symbol next to it at the bottom of the plot. The symbols are also used to show which data is on each specific vertical axis in a multi-axis plot.

Defining a Graph

The *Define Graph Plot* screen allows you to specify the title of the plot, the data to plot, and the start and end date of the data to be used in generating the plot.

✏ **NOTE:** *The Define Plot Screen for Trend data is almost identical in content to the Historical data screen except the Historical data screen includes a Starting Date and Ending Date.*

Define Graph Plot	⊠

Graph Title

    Pumps

Starting Date

    2/27/97 ▾

Unit Group Select

    Master ▾

Ending Date

    2/27/97 ▾

Select Parameters To Plot

    20 Pump Pkg Level
    20 Sequencer Pressure
    -20 Plate Pump Low Press Times
    -20 Pump Low Press Times
    -20 Pump Pkg Level
    -20 Pump Pkg Pump Press
    -20 Sequencer Pressure
    -30 Plate Pump Pkg Level

Selected Parameters - Press Delete to Remove

    20 Pump Pkg Level
    -20 Pump Pkg Level
    -20 Pump Pkg Pump Press

    Delete

Pick Graph | Draw | Set Options | Cancel | Help

Graph Definition Screen

Graph Title	The *Graph Title* edit cell is used to enter the title that will appear in the header of the plot.
Starting Date	The *Starting Date* list box contains dates for starting the Historical data plot only.
	✏ **NOTE:** *Dates are only displayed if data was downloaded for that day.*
Ending Date	The *Ending Date* list box contains dates for ending the Historical data plot only.
	✏ **NOTE:** *Dates are only displayed if data was downloaded for that day.*

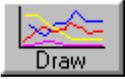|	
Unit Group Select	The *Unit Group Select* drop-down list box is used by **PC MONITOR** to allow the system log parameters to be divided into groups. For example, the parameters for one engine room may be grouped separately from another set of equipment. By using the group select, the data in the list box is changed to contain only parameters pertaining to that group. This reduces the number of items in the parameter list box making it easier to find a desired parameter. This grouping is determined when your system is configured. If no grouping was used all parameters will be in the same list and "Default" will be shown in the list box. You may select a parameter from one unit group and then change groups to use a parameter from a different group on the same plot.
Select Parameters to Plot	The *Select Parameters to Plot* list box contains the available parameters which you can plot. Clicking on a parameter with the left mouse button will select it. You may plot up to eight parameters at a time.
Selected Parameters	The parameters selected for plotting are shown in this list box.
Delete	Clicking on a parameter in the Selected Parameters list box will select it. Once selected the *Delete* command button will delete it from the list of parameters to be plotted. You may click on multiple parameter names to select more than one to delete before using the command button.

The *Define Graph Plot* screen's command buttons and indicators contained on the tool bar from left to right and their functions are as follows:

BUTTON/ INDICATOR	FUNCTION
Pick Graph Button	The *Pick Graph* button allows users to select from a list of previously defined graph formats.
Draw Button	Once you have chosen the parameters to plot, the *Draw* command button will instruct **PC MONITOR** to generate the graph.
Set Options Button	The *Set Options* button allows the user to customize the information displayed and how it is plotted on the graph.

BUTTON/ INDICATOR	FUNCTION
![Cancel button] **Cancel**	The *Cancel* button will close the define graph screen without drawing a graph. The parameters which are selected on the screen when you cancel will still be present when you open the screen back up.
![Help button] **Help**	The *Help* button provides access to **PC MONITOR**'s on-line help feature.

Picking a Graph

The *Pick Graph* option allows you to select from a list of previously defined graphs. When the Pick Graph button is selected the *Graph Plot Save Data Filename* window will display.
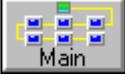

Graph Plot Save Data Filename Screen

Filename	In the *Filename* field type the name of a new graph or click on the down arrow to select one from the list a previously defined graphs.
Comments	The *Comments* text box contains comments pertaining to each graph template.

Drawing a Graph

When the *Draw* button is pressed, PC Monitor will draw the graph selected. Users can have a number of options available including Define, Print, Automatic, Save Graph, and Export.
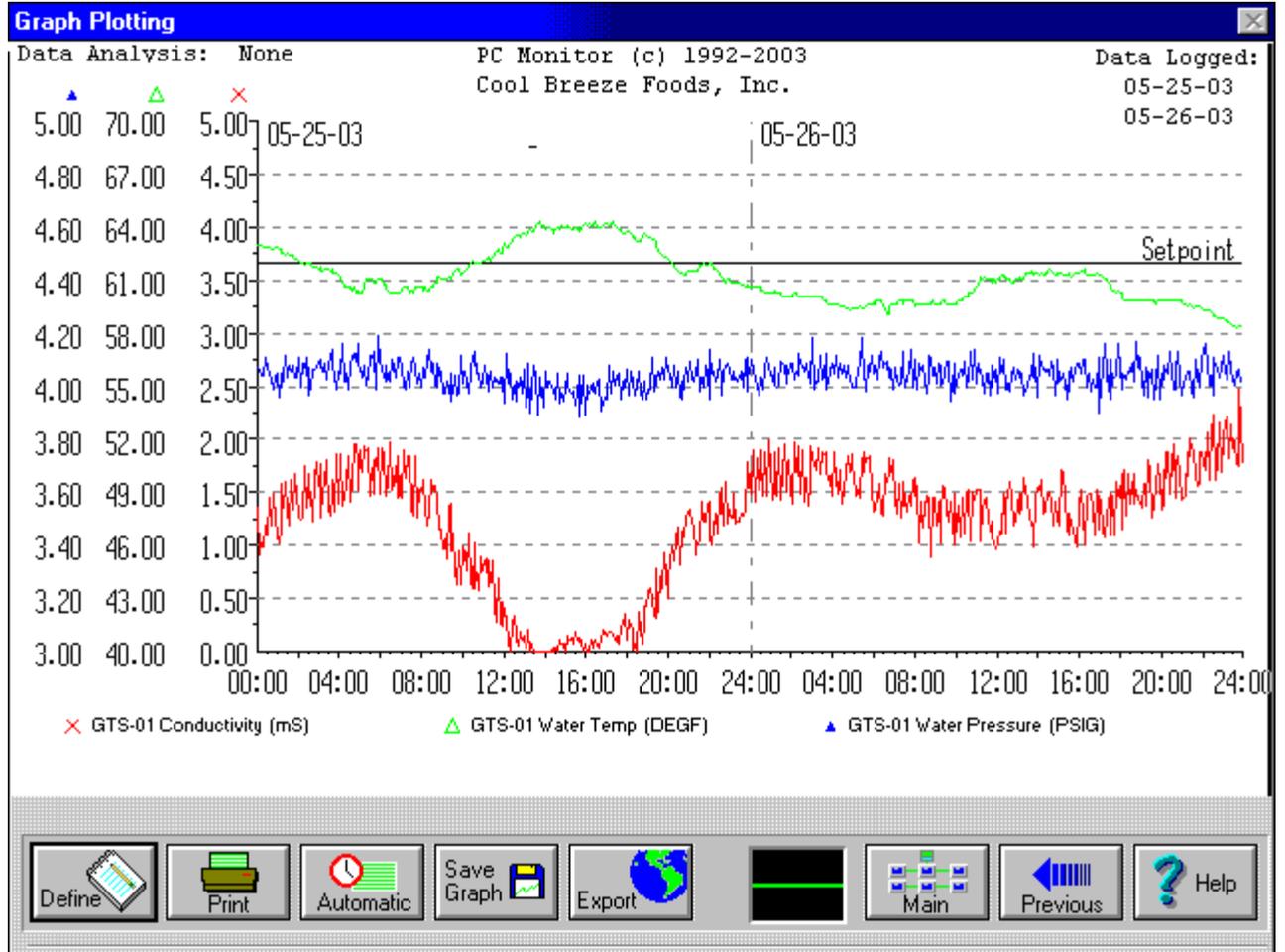

Draw Graph Screen

BUTTON / INDICATORS	FUNCTION
Define Button	The *Define* button allows you to re-define the current graph with different parameters. Users have the option of saving the new graph definition for future use.
Print Button	The *Print* button prints the currently displayed graph to the default printer.
Automatic Button	The *Automatic* button opens up the automatic graph screen which allows you to select the graphs that will be automatically printed.
Save Graph Button	The *Save Graph* button allows you to save the current graph format for future use.
Export Button	The *Export* button allows the data on a previously saved graph format to be exported to a file for use by third party software. Please refer to the Export section of this manual for a detailed description of the function's operating procedures.
Pulse Indicator	The *Pulse Indicator* shows that **PC MONITOR** is communicating with the CCS master.
Main Button	The *Main* command button allows you to quickly return to the main graphics screen.

BUTTON / INDICATORS	FUNCTION
Previous Button	The *Previous* command button will return you to the previously viewed screen.
Help Button	The *Help* button provides access to **PC MONITOR** 's on-line help feature.

Set Options

The *Set Options* function allows the user to override certain automatically selected features for the current graph.
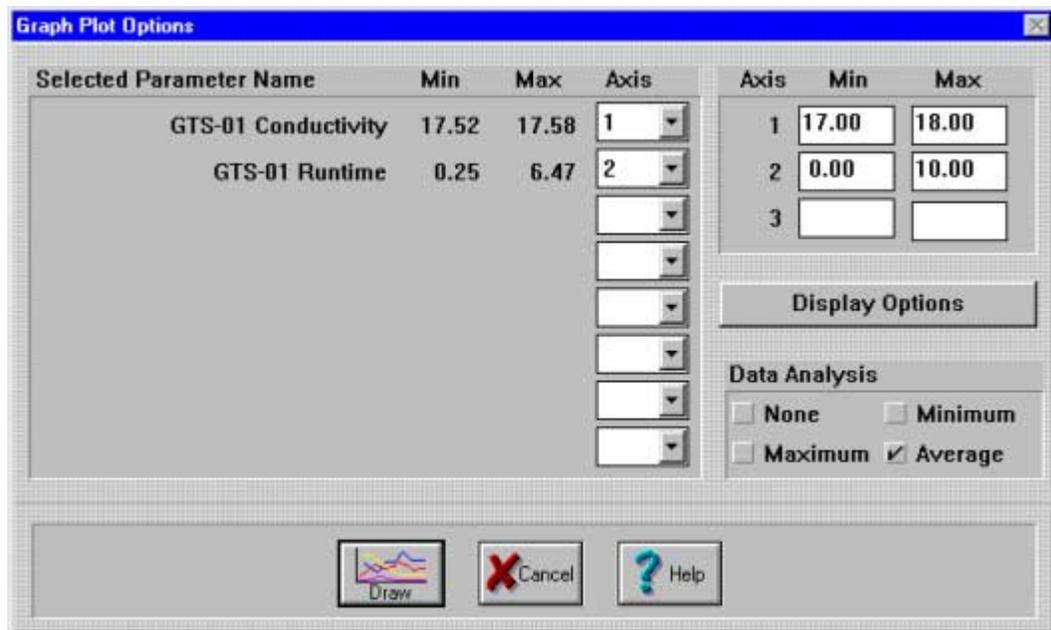
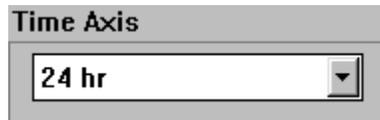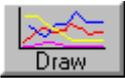|	
Selected Parameter Name	Displays the list of currently selected parameters, their minimum and maximum values for the dates selected, and the current axis assignment.
Axis	You can choose one of three different axes to assign to each of the parameters that are plotted. Once the axis is selected from the drop down menu, the Min and Max fields on the right are populated with the correct information.

Min	The minimum value assigned to the vertical axis range for each of the three axis. These assignments are made automatically when the parameter is selected but can be changed to zoom in on problem areas.
Max	The maximum value assigned to the vertical axis range for each of the three axis. These assignments are made automatically when the parameter is selected but can be changed to zoom in on problem areas.
Display Options	The *Display Options* button allows users to create multiple vertical axes, enable grids, and to use line marker symbols
Data Analysis	Allows the data for the entire graph to be pre-processed to reduce the amount of data plotted. This is especially useful for multi-day plots. Selecting NONE shows all available data. Selecting AVERAGE, MINIMUM, or MAXIMUM will filter the data for each horizontal element to select the appropriate average, minimum, or maximum volume for displaying.

> ✎ **NOTE:** *The Graph Plot Options screen for TREND is almost identical to the Graph Plot Options screen for HISTORICAL with the exception of the **Data Analysis** area. This area is replaced with **TIME AXIS** as displayed below.*

Time Axis	The Time Axis field allows the user to select the increments of time to be plotted on the graph in blocks from 12 minutes to 24 hours. When the graph is plotted to approximately 90%, the graph will shift to the left to display the next block of time.

Time Axis

24 hr	▼

BUTTON/ INDICATOR	FUNCTION
Draw Button	The *Draw* command button instructs **PC MONITOR** to draw the graph using the currently set options. When this button is clicked you will first see the original plot before the program generates the new one.
Cancel Button	The *Cancel* button will return you to the graph screen without drawing a new plot. Your selected options will still be active and present should you open back up the options screen.
Help	The *Help* button provides access to **PC MONITOR**'s on-line help feature.

Display Options

Once you have defined the parameters to be plotted and have generated a graph there are a series of options which can be used to enhance the plot. The *Graph Display Options* screen, shown below, allows you to create multiple vertical axes, to enable grids, and to use line marker symbols.
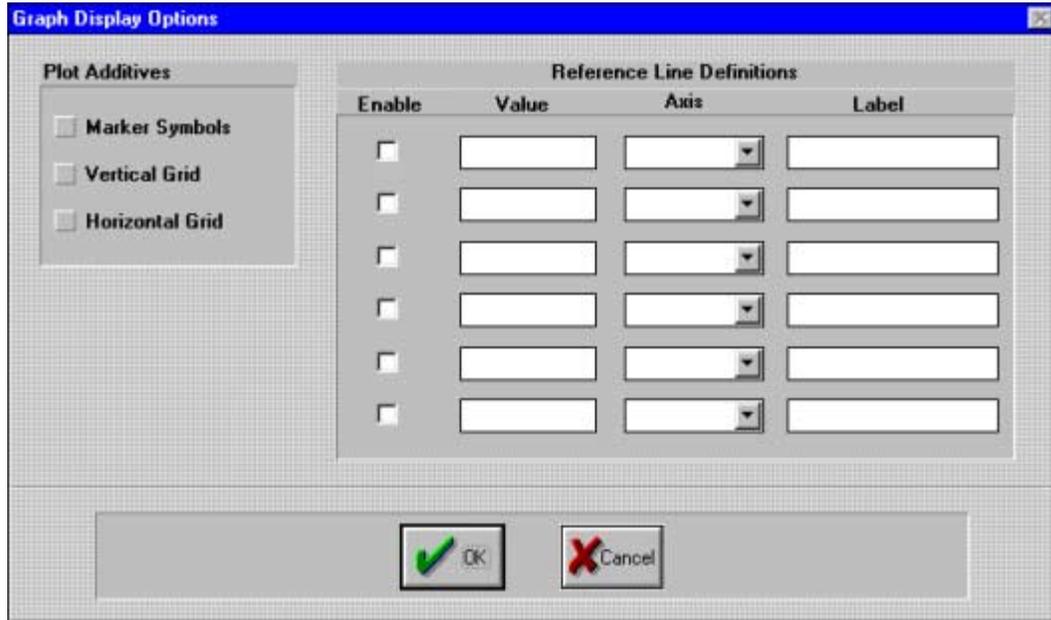
Graph Plotting Options Screen

Plot Additives	Allows the user to select additional options to enhance the graph. Users can select none or all if desired.
	Marker symbols are typically used to identify different parameters on black and white printers. **Vertical and Horizontal** grid lines are automatically placed at even intervals on the graph.
Reference Line Definitions	Up to six reference lines may be added to any graph. A reference line is a labeled horizontal line on the graph at a fixed position relative to a particular axis. These are useful markings baseline values on Trend plots or control setpoints on Historical plots.

Printing a Graph

PC MONITOR allows you to print the graph plot to the default printer by clicking on the *Print* button. **PC MONITOR** is able to automatically determine if a color printer is selected. If color is not available you may use *Marker Symbols* to allow the distinguishing of each plot line. The symbols used for each parameter are printed on the bottom of the graph as a legend. The symbols are placed at the major inflection points of each graph line and then joined together by the line. **PC MONITOR** will automatically size the printed graph plot to match your printer paper size.

Tool Bar

The *Print a Graph* screen's command buttons and indicators contained on the tool bar from left to right and their functions are as follows:

BUTTON / INDICATORS	FUNCTION
Define Button	The *Define* button opens up the define graph screen.
Print Button	The *Print* button will print the current plot on your printer using marker symbols to identify the different plot lines.
Automatic	The *Automatic* button opens up the automatic graph screen which allows you to select the graphs that will be automatically printed.
Save Graph Button	The *Save Graph* button allows you to save the current graph format for future use.
Export Button	The *Export* button allows the data on a previously saved graph format to be exported to a file for use by third party software. Please refer to the Export section of this manual for a detailed description of the function's operating procedures.
Pulse Indicator	The *Pulse Indicator* shows that **PC MONITOR** is communicating with the CCS master.
Main Button	The *Main* command button allows you to quickly return to the Main graphics screen.

BUTTON / INDICATORS	FUNCTION
Previous Button	The *Previous* command button will return you to the previously viewed screen.
Help Button	The *Help* button provides access to **PC MONITOR**'s on-line help feature.

Automatic

The *Automatic* option selects one or more graphics to be automatically printed after the first system log download of the day. The data on the graph will be from the previous day

Save Graph

The *Save Graph* option allows you to save the current graph format for future use. Users have the option of selecting a filename from a previously saved graph, or saving the current graph to a new filename.

Export

The Export function is a standard Monitor feature that allows you to export log and/or report data to a file for use by third party software. The Export function is active on all log screens and in the optional Reports tool. For more information on exporting, please refer to *Chapter 9 Export*.

The *Export* option exports *only* a previously saved graph and overrides the currently displayed graph. To export the currently displayed graph, you must first save the graph and then select **EXPORT** to display the *Graph Plot Export* screen.

Equipment Runtimes

The *Equipment Runtime* function is a **PC MONITOR** feature which allows you to view and modify equipment runtime hours. The equipment runtime screen is accessed by clicking on the tool screen command button shown below.

Equipment Runtime Button

The screen is divided into several main areas: equipment runtime listing, modify runtime, runtime download, update runtime, average runtime, and a tool bar. See the following example.

Using the equipment runtime screen you are able to view the runtime hours of various equipment controlled by the CCS, to download current runtime data, and to modify equipment runtime hours.

Equipment Runtime Main Screen

|	
Name	The *Name* column displays the name of the equipment being monitored.
Runtime	The *Runtime* column displays the actual runtime for that piece of equipment in minutes.
Average	The *Average* column displays the average runtime per day, calculated each time runtimes are downloaded.
Modify Runtime	The *Modify Runtime* field allows the user to select a piece of equipment from the list and change it's runtime. The *Change* button accepts the change made in the Runtime field. The *Clear* button clears the changes made in the Runtime field.
Runtime Download	The *Runtime Download* field allows the user to schedule a time for the download to begin, or to request an immediate download using the *Download Now* button.
Update Runtime	The *Update Runtime* options allow the user to save the current configuration to a file the PC, or restore the runtimes from the saved file.
Average Runtime	The *Average Runtime* options allow the user to select whether or not average runtimes are updated automatically or manually.
Reset	The *Reset* button only works when **MANUAL** is selected and will reset the average to zero.

Equipment Runtime Listing

You may view the runtimes of various equipment controlled by the CCS in the runtime listing section of the screen. This list of equipment runtimes has been customized for your CCS system. Scroll bars are provided if more data is present than can be viewed at one time.

Runtime Downloads

There are two methods of performing an equipment runtime download. You may schedule a time for the download to begin, or you may request an immediate download using the corresponding command button. To edit the current download time, select a field (hours, minutes, or AM/PM indicator), and use the scroll arrow to adjust the value. To request an immediate download, click on the *Download Now* button in the Runtime Download area. If the request for an immediate download is successful, a download progress box will appear. The *Download Progress Box* will display a horizontal bar which will dynamically fill from the left to indicate how much of the task is complete. The progress box contains the Abort command button

to allow you to stop the task before it is complete if you do not want to wait. An example of the *Download Progress Box* is shown below.
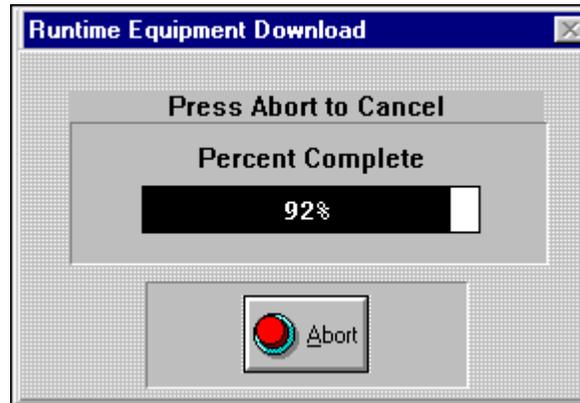
Equipment Runtime Download Progress Meter

✎ **NOTE:** *In order for* **PC MONITOR** *to perform an equipment runtime download it must be communicating with the CCS.*

Modifying Runtimes

PC MONITOR allows you to modify or clear the runtime hour values of any equipment controlled by the CCS. First select the value you wish to change from the runtime list on the left side of the screen by clicking on it with the mouse. The runtime hours of the selected signal will appear in the runtime edit cell and may be edited using standard Windows' editing commands.

If you wish the runtime value cleared, simply press the corresponding command button. If you wish to change the value to the new one entered in the edit cell, simply press the Change command button.

✎ **NOTE:** *As soon as you clear or change a runtime hour value the new information will immediately be transmitted to the CCS.*

Export

The *Export* option allows the user to export the information to a file for use with third party software. For more information on exporting, please refer to *Chapter 9 Export.*

Tool Bar

The equipment runtime screen's tool bar contains a set of command buttons and system status indicators. The command buttons and indicators contained on the screen's tool bar from left to right and their functions are as follows:

BUTTON / INDICATORS	FUNCTION
Print Button	This button prints the currently displayed report.
Export Button	The *Export* button exports the current information to a file for use with a third party software.
Pulse Indicator	The pulse indicator shows that **PC MONITOR** is communicating with the CCS master.
Main Button	This command button allows you to quickly return to the main graphics screen.
Previous Button	This command button will return you to the previously viewed screen.
Help Button	This button provides access to **PC MONITOR**'s on-line help feature.

Export

The *Export* function is a standard **PC MONITOR** feature that allows you to export log and/or report data to a file for use by third party software. The *Export* function is active on all log screens, in the *Reports* tool, graphics screens, and on the runtime screen.

Log Export

Log Export allows you to export log, Trend graph, or runtime data to a file which can then be imported into third party software such as spreadsheets for additional analysis or manipulation. The Export function can be used to export data from all standard logs such as OP or Trend logs. Clicking on the *Export* command button located on the selected log screen will open the *Export Entry* screen.

Export Entry

The *Export Entry* screen is a dialog box which allows you to enter a filename to export the data to. This file can be utilized independently of **PC MONITOR** by third party software.

Export Entry Screen

Enter Filename	This field is a combo box consisting of an edit cell and a drop-down list box. You can enter a new filename or select an existing one to export the log data to. The file will be saved to the export directory under your job name's directory tree (C:\MMPC*JOBNAME*\EXPORT\<filename>.TXT).
OK	If this command button is clicked **PC MONITOR** will export the data to the specified file. The file will then be saved to the export directory under your job name's directory tree (C:\MMPC*JOBNAME*\EXPORT\<filename>.TXT).
Cancel	Clicking on this command button exits the *Export Entry* screen without exporting any data.
Setup	Clicking on this button will open the *Export Setup* screen and allow you to select the components and format of the data being exported. Export setup will be covered later in this section.

Report Export

Report Export allows you to export report data to a file which can then be imported into third party software such as spreadsheets for additional analysis or manipulation. Clicking on the *Export* command button located on the reports screen will open the *Report Export* screen.

The *Report Export* screen is a dialog box which allows you to select a report, a starting and ending date for logged data and a filename for the report data to be exported to. This file can then be utilized independently of **PC MONITOR** by third party software.

Report Export Screen

TERM	DEFINITION
Report Name	Choose which pre-defined report you want to export using the drop-down list box.
Starting Date	Select the starting date for the report from the available logged data using the drop-down list box.
Ending Date	Select the ending date for the report from the available logged data using the drop-down list box.
Export Filename	This field is a combo box consisting of an edit cell and a drop-down list box. You can enter a new filename or select an existing one to export the report data to. The default filename is export. The file will be saved to the export directory under your job name's directory tree (C:\MMPC*JOB-NAME*\EXPORT\<filename>.TXT).
OK	Clicking this button will export the selected report using the defined date range of logged data. If you have entered an ending date that is earlier than the starting date **PC MONITOR** will open a message box to inform you of the problem.
Cancel	Clicking on this button exits the Report Export screen without exporting report data to a file and returns you to the Reports screen.
Setup	Clicking on this button will open the *Export Setup* screen and allow you to select the components and format of reports to be exported.

Historical Graph Export

PC MONITOR allows the user to export Historical graphed data to a TEXT file for use with third party software.

✎ **NOTE:** *Only information from a SAVED graph can be exported. Be sure to save your graph before attempting to export the information.*
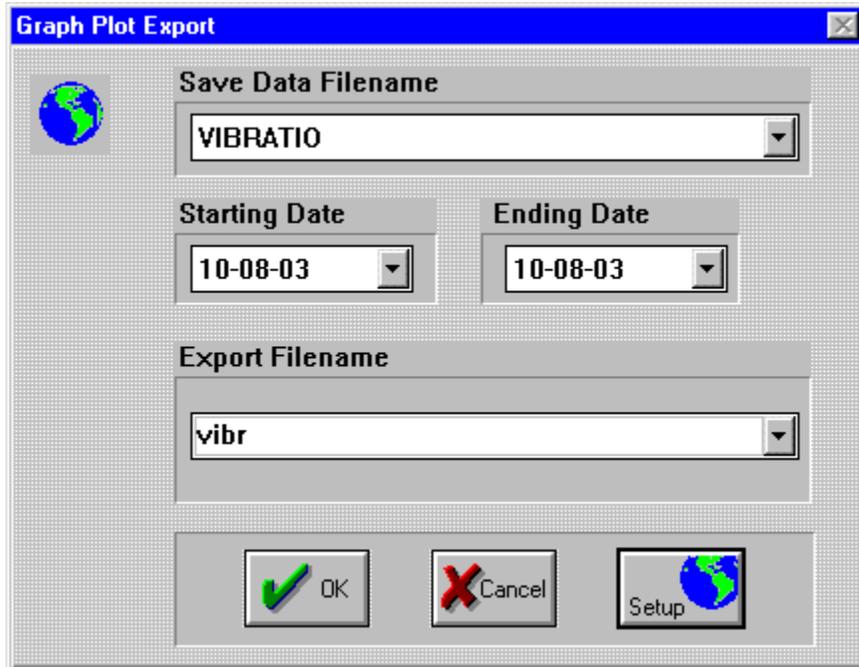
Trend Data Export

Exporting Trend data is almost identical to exporting Historical data with the exception that the user need only enter a filename for the exported data.
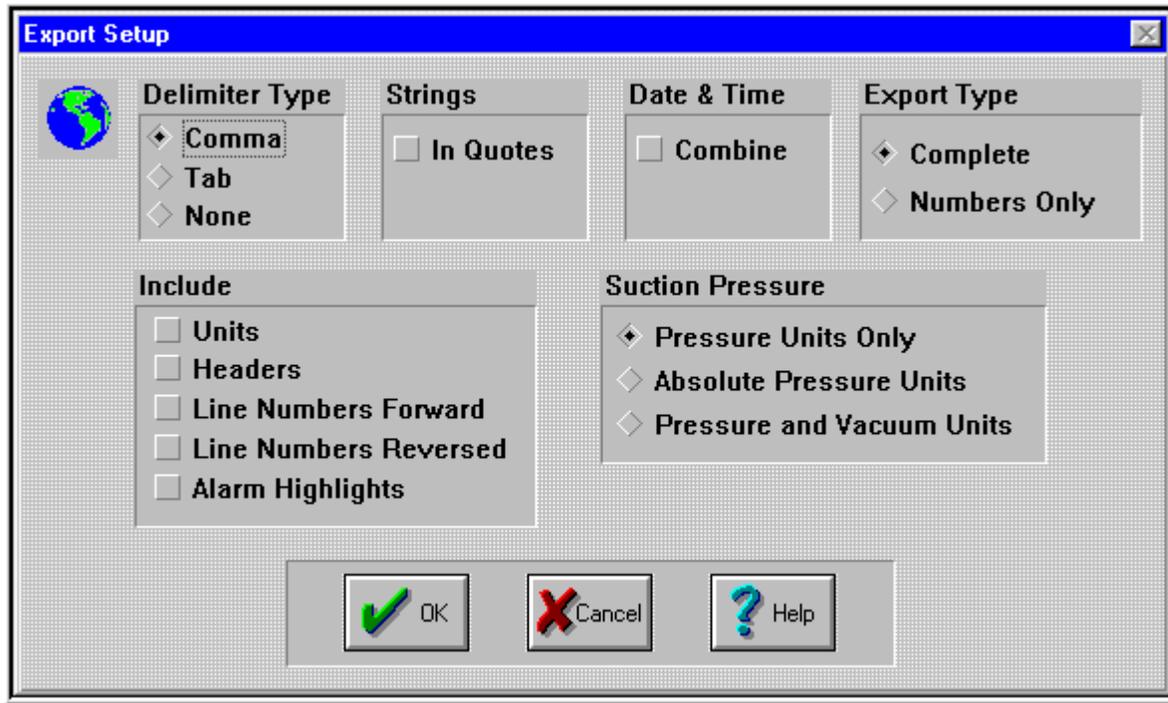

Export Setup

Clicking on the *Export Setup* command button will open the *Export Setup* screen.

The *Export Setup* screen shown below is a dialog box which allows you to select the format and types of data to be included in the file that will be exported.

Export Setup Screen

TERM	DEFINITION
Delimiter Type	The *Delimiter Type* button allows you to choose the type of data separator to be used to delimit data fields in the exported file.
Strings	The *Strings* check box allows you to have quotation marks placed around string data being exported, such as "Running".
Date & Time	The *Date and Time* field allows the user to select combining these two fields into a single field. Some spreadsheet programs prefer this method for graphing data on a time axis.
Export Type	The *Export Type* option button allows you to choose the type of data to be placed in the export file. Complete will save both strings and numerical data. Numbers only will save only the numerical data.

TERM	DEFINITION
Include	The *Include* check boxes allow you to choose what information to include in the file other than the raw data: *Units* - Includes the engineering units for each analog value, such as DEGF, PSIG, etc. *Headers* - Includes a header field which describes each data field in the file. *Line Numbers Forward* - Includes the line numbers in the file starting from 0 and incrementing upward. *Line numbers Reverse* - Line numbers count down from the top until the last line is 0. *Alarm Highlights* - Includes a lower case 'a' for alarm or 'f' for failure next to any analog value exported which was in the alarm or failure mode.
Suction Pressure	The *Suction Pressure* option button allows you to choose what units will be used for suction pressure: Pressure Units Only (PSIG), Absolute Pressure Units (PSIA), or Pressure and Vacuum Units (PSIG/ INHG).
OK	If this command button is clicked Export Setup will apply the selected parameters and exit the Export Setup screen.
Cancel	Clicking on this command button exits the Export Setup screen without applying the setup parameters entered and returns you to the Report Export screen.
Help	Clicking on this command button will activate **PC MONITOR**'s on-line help feature.

Maintenance Manager

The M&M Maintenance Manager™ is an optional program which is accessed by clicking on the tool screen command button shown below.

Maintenance Manager is integrated with **PC MONITOR** to provide you with the ability to generate and schedule maintenance plans. The program provides the ability to have multiple plans, track past repair histories, generate work orders, and print reports, as well as providing many other features. Maintenance Manager's extensive capabilities will help you reduce plant operating costs, lower resource requirements, and provide a method of forecasting future maintenance requirements.

If you have purchased the Maintenance Manager option please refer to the *M&M Refrigeration Maintenance Manager User's Manual* for a detailed description of its operating procedures. If you have not purchased the program and wish to do so, please contact your M&M Refrigeration sales representative.