2.0 HARDWARE CONNECTIONS FOR SIMPLE START-UP

The hardware configuration shown here is the most straightforward. It incorporates a single or dual compressor chiller control panel, the Data Logging Interface (supplied by Carrier), and the personal computer as shown in Figure 2.1.

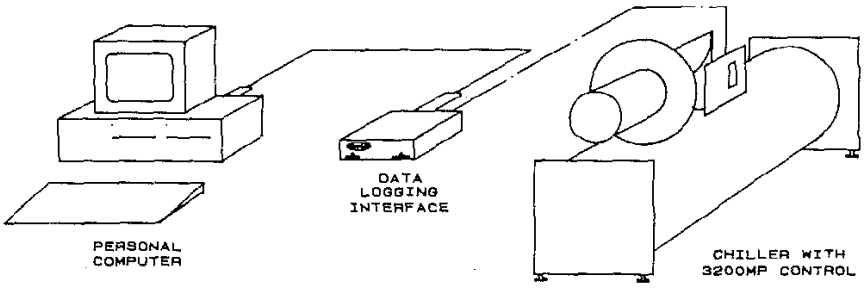

FIGURE 2.1

The chiller control panel is connected to the Data Logging Interface by shielded two conductor cable (UL style 2094) as shown in Figure 2.2. The connections to the control panel are made on the low voltage field wiring terminal strip. The positive (+) wire should be connected to terminal 28, and the negative (-) wire to terminal 29. The shield should be connected to terminal 7.

The other end of the shielded two conductor cable should be connected to the Data Logging Interface, at the back of the interface by means of screw terminals. Make certain that the proper connections are made (+ to +, - to -). **NOTE:** DO NOT connect the shield wire to the GND terminal on the Data Logging Interface.

Also shown in Figure 2.2 is the connection between the personal computer and the Data Logging Interface. This connection is made using the communications cable supplied by Carrier. The connection at the computer is made to the serial communications card. The serial communications card should be installed in your personal computer as indicated in the manufacturer's instructions.

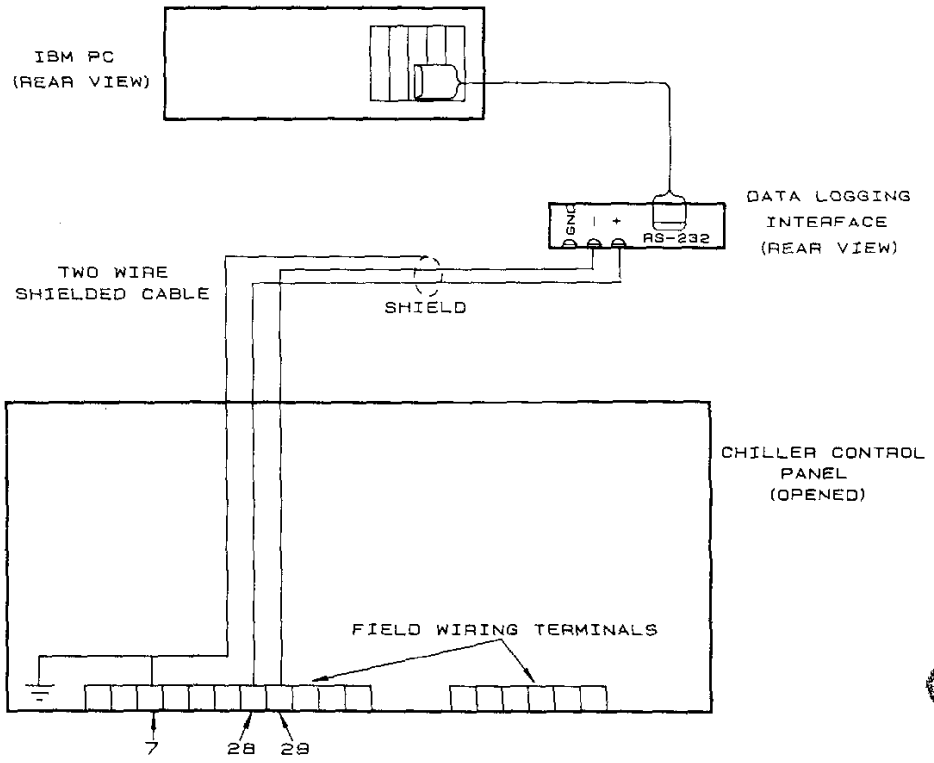

FIGURE 2.2

3.0 THE FIRST TIME YOU RUN THIS PROGRAM

In order to begin using this program, there are two short procedures you must follow in order to create a working disk that is customized to your installation. *After these procedures are done, they need not be repeated unless the working disk is lost or damaged.* If these procedures have already been done, skip ahead to Section 4.0.

NOTE: Throughout this document, [ENTER] refers to the key labeled [↵] on the IBM PC keyboard. This key is in the same position as the carriage return normally is on an electric typewriter. On other computer keyboards, it may be labeled [↵], [ENTER], or [RETURN].

3.1 CREATING A WORKING DISK

This procedure requires the computer disks shown in Figure 3.1. The first disk is the MS-DOS disk supplied with your computer. The second disk is the program disk sent with the Data Logging package. The third disk is a blank disk that will become the working disk you use to run the program.

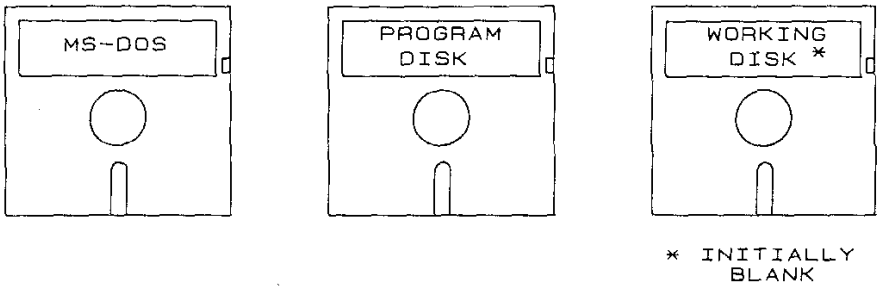

FIGURE 3.1

Once these three disks have been gathered, proceed with the following sequence:

Step 1 — Turn the computer off (the switch is usually on the right hand side of the computer near the back, and is normally labeled '1' for on and '0' for off).

Step 2 — As shown in Figure 3.2, place the MS-DOS disk in drive A (usually the left drive, or the top drive if the drives are stacked). Close the drive by closing the lever on the front in such a manner that the disk cannot be removed from the drive.

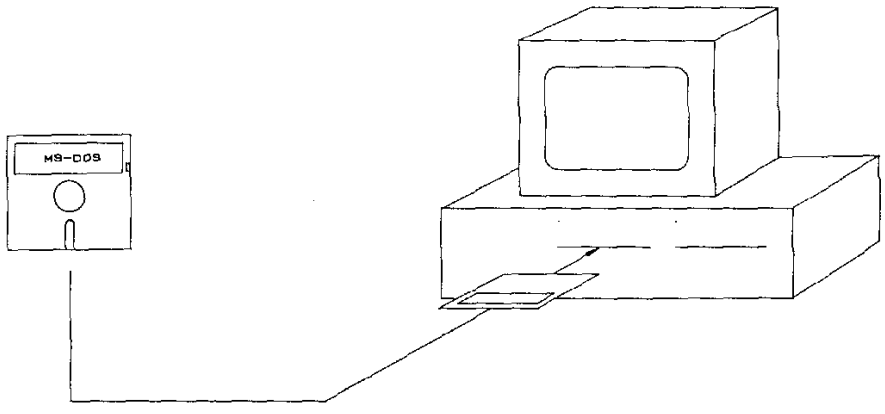

FIGURE 3.2

Step 3 — Turn the computer on. The hardware clock on the communications card may require that the correct time and date be assigned to it. Do this using the instructions supplied with the communications card.

Step 4 — At this point, the computer should have an A> prompt. If not, see the troubleshooting chart at the end of this document, and try the above procedure again.

Step 5 — At the A> prompt type FORMAT B:/S and press the [ENTER] key. The computer will respond with the following prompt:

Insert new diskette for drive B:
and strike [ENTER] when ready

Step 6 — As shown in Figure 3.3, leave the DOS disk in drive A, and place the blank working disk in drive B. Close drive B.

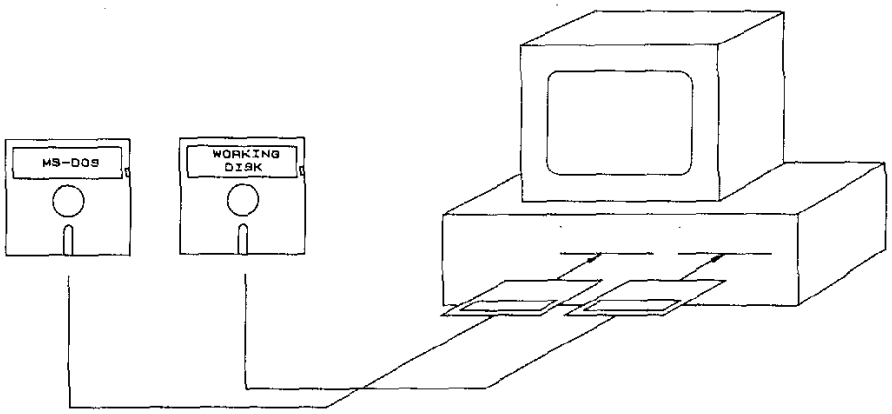

FIGURE 3.3

Step 7 — Press the [ENTER] key. The computer will respond with the message "Formatting...".

Step 8 — When the format has been successfully completed, the computer will respond with the message "Format complete. System transferred", followed by the prompt "Format Another (Y/N)?".

Step 9 — Type an [N] and press the [ENTER] key. The computer should respond with the A> prompt.

The disk has now been formatted with the system added to it. If the messages you got were different from those shown here and the disk was not formatted, see the troubleshooting chart at the end of this document for assistance.

Step 10 — Remove the DOS disk from drive A.

Step 11 — Insert the Program Disk supplied with the Data Logging package into drive A (see Figure 3.4). Close drive A. Leave the newly formatted disk in drive B.

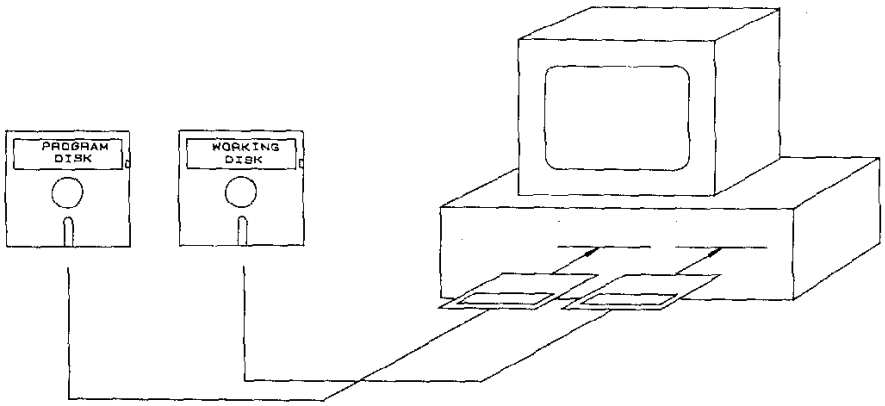

FIGURE 3.4

Step 12 — At the A> prompt, type COPY A:*.* B: and press [ENTER]. The computer will respond by listing each program copied to the new working disk in drive B. When complete it will print the number of files copied, and then the A> prompt.

Step 13 — Remove the new working disk from drive B and label it with a felt-tip pen. This disk will be used to run the program.

Step 14 — Remove the program disk from drive A and store it in a safe place. DO NOT USE THIS DISK TO RUN THE PROGRAM.

The working disk has now been created. This procedure will NOT have to be done again unless the working disk is lost or damaged.

Before you can run Data Logging for the first time, there is one more procedure that must be done. This procedure will configure the communications port for your particular chiller installation. Section 3.2 describes this procedure for one chiller. For more advanced installations, refer to Section 6.

3.2 ESTABLISHING YOUR COMMUNICATIONS PORT CONFIGURATION

Before the Data Logging program can be run, you must tell the program how your communications port is configured. This section will show you how to establish a one-chiller configuration.

NOTE: *This need only be done once. After performing this procedure one time, you may go directly into Data Logging.* See Sections 4 and 5.

Step 1 — At the A> prompt, insert the working disk in drive A (see Figure 3.5).

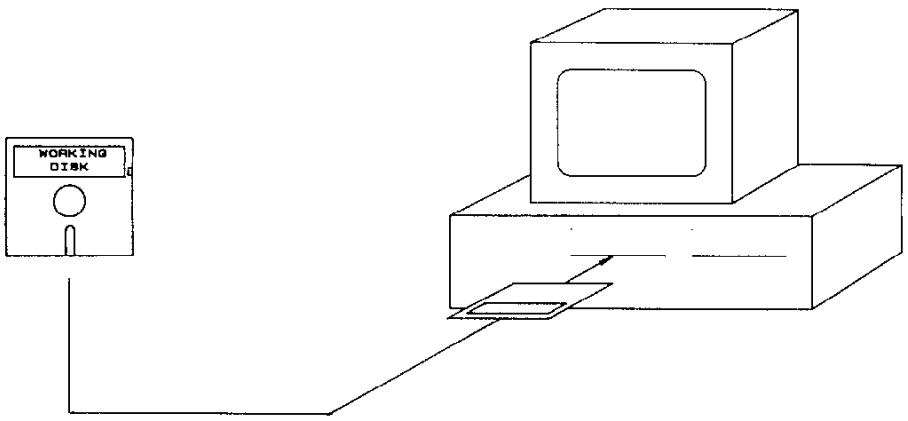

FIGURE 3.5

Step 2 — Type CONFIG and press the [ENTER] key. The screen will first identify the program as the Configuration program. After a few seconds, the screen will change to the following:

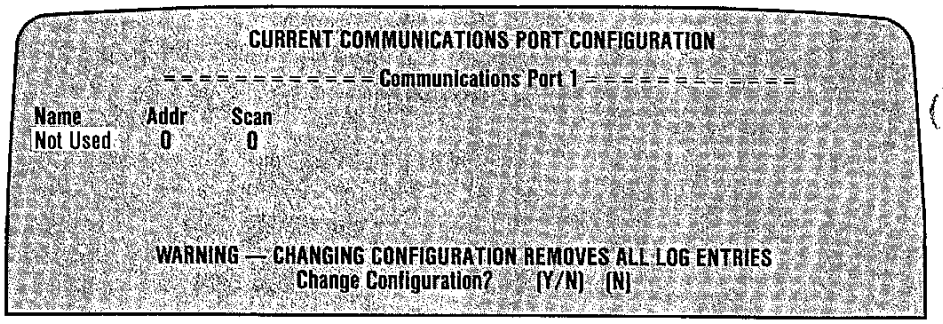

FIGURE 3.6

Step 3 — The bottom of the screen has the question "Change Configuration? (Y/N)". We will answer yes to this question by pressing [Y] .

Step 4 — Now note that the "Not Used" identifier is highlighted. The program is prompting you to describe the chiller with up to 12 characters. This feature is especially useful when there are many chillers to be logged. In this example, we will name the chiller "CHILLER 1" by typing CHILLER 1 and pressing [ENTER] . Note that the area that had said "Not Used" now has the name "CHILLER 1".

If a mistake is made typing in the requested information, corrections can be made easily. If the [ENTER] key has not yet been pressed, use the backspace key to erase the letters and then re-type the name. If the [ENTER] key has been pressed, press the up or down arrow key until the information to be corrected is highlighted. Re-type the information and press [ENTER] .

If the entire chiller section (description, address, and scan number) is to be deleted, press the [F9] key when the chiller name is highlighted. If at any point you don't know what to do, just press the [F1] key for HELP.

Step 5 — Once the chiller name is accepted, the program highlights the "Addr" area and prompts you for the bus address of the chiller. This is also referred to as the Controller Identification Number. The address was set using the DIP switches on the chiller control panel when the chiller was installed. Specifically, DIP switch bank number 2 (switches 1, 2, and 3) is where the address is set. Refer to the chiller Start-up, Operation and Maintenance Instructions if you don't know what this address is. In this example, an address of "2" will be used, so we will type a 2 and press the [ENTER] key.

Step 6 — If there was more than one chiller in your configuration, the chillers would be logged in the order that is specified by the "Scan" number. We only have one chiller in this example, so set this number to "1" by typing [1] and pressing the [ENTER] key. The screen should now appear as follows:

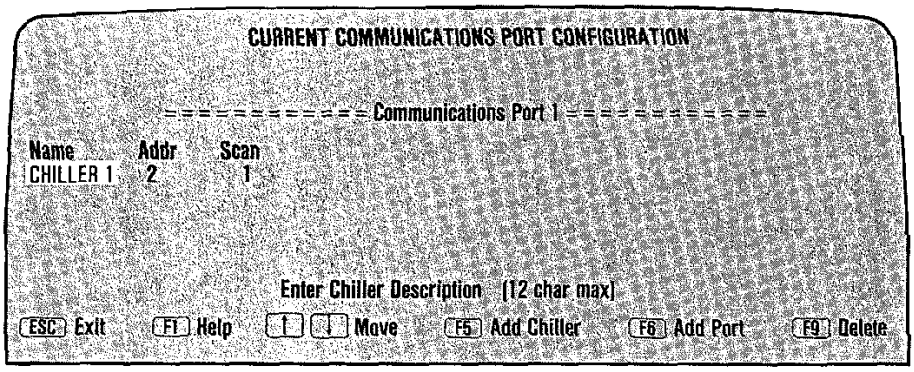

FIGURE 3.7

Step 7 — If all the information for the chiller is correct, press the [ESC] key to exit the configuration input mode.

Step 8 — The bottom of the screen will ask "All done (Y/N)", and we will answer yes by pressing a [Y] .

Step 9 — You have completed the communications configuration for a one chiller setup. *This will not need to be done again, as it is stored on the working disk and will be used each time the Data Logging program is started.*

The screen should now indicate that the Data Logging program is beginning, and after a few seconds, the Data Logging main menu should appear.

4.0 SIMPLE DATA LOGGING FOR ONE CHILLER

The following section will illustrate how to use the working disk to begin Data Logging on a simple, one chiller set up. It is assumed that the procedures in Section 3, making a working disk and establishing a communications port configuration, have been done. If not, please refer to Section 3. For more advanced Data Logging, refer to Section 5.

Step 1 — Turn the computer off.

Step 2 — Insert the working disk in drive A. Close the drive.

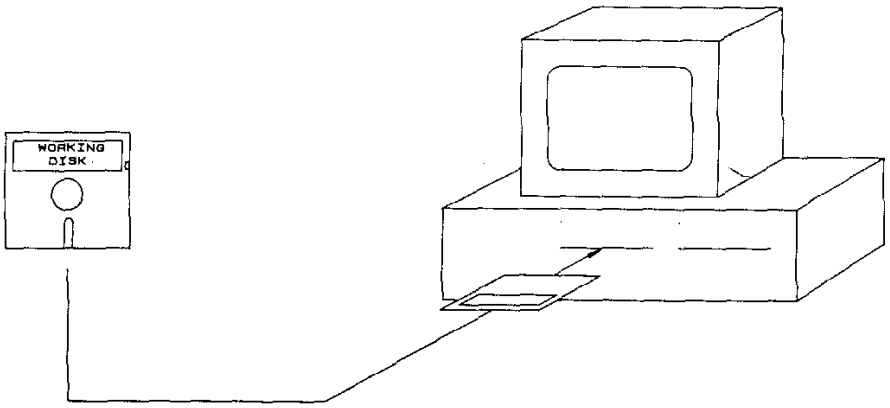

FIGURE 4.1

Step 3 — Turn the computer on.

Step 4 — The MAIN MENU should appear on the screen (Figure 4.2).

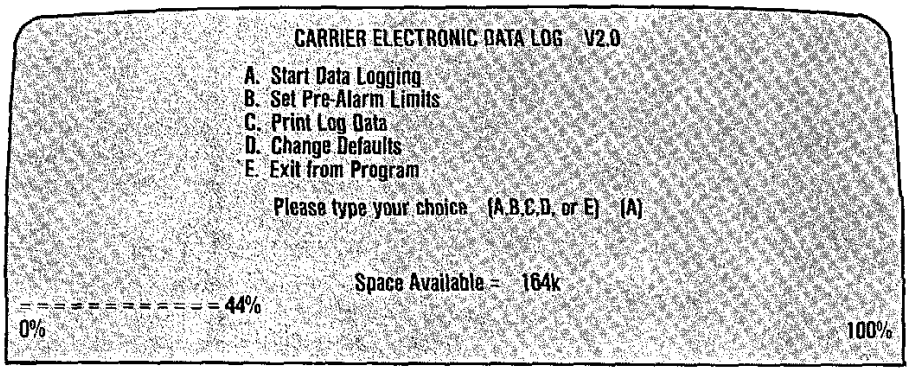

FIGURE 4.2

Step 5 — With the main menu showing, press the A to start Data Logging. You will be asked what the desired data logging interval should be. This is the length of time between each log entry. For this simplified example, type 30 and press the [ENTER] key to set the interval to 30 minutes. You will then be asked if previously stored data should be erased. Answer no to this question by pressing the [N] key. The screen in Figure 4.3 should now appear:

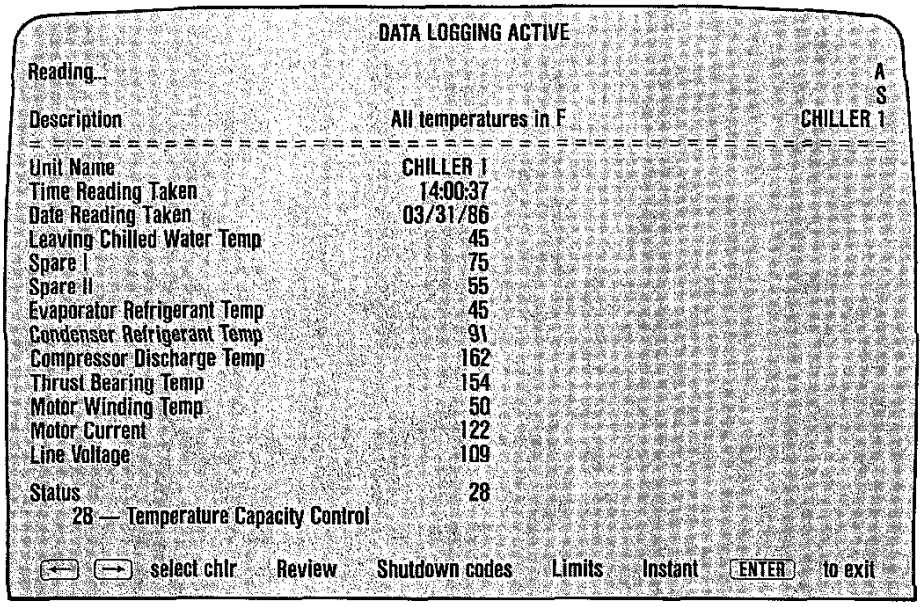

FIGURE 4.3

Step 6 — This screen will be updated every minute. To stop Data Logging and return to the main menu, just press [ENTER] . The other capabilities within Data Logging (Instant read, Review data, review Limits, and review Shutdown codes) are described in the next section. If you did not get any data on the screen, please see the troubleshooting chart in Section 7.

Step 7 — Once back at the main menu, the data gathered can be printed out to provide a hard copy of the performance. To do this, select option C from the main menu by pressing the [C] key.

Step 8 — When prompted "Print All entries?" answer yes by pressing the [Y] key. Then align the printer to the top of the page and start the printout by pressing the [Y] key. When the printing is complete, you will be returned to the main menu.

Step 9 — When Data Logging is finished, you can return to DOS by pressing the [E] key when the main menu is on the screen. The screen will then show the A> prompt. If you wish to turn off the computer, remove any disks that may be in the disk drives and simply turn off the power switch near the back of the computer. The screen and printer may also be turned off.

This ends the simplified start-up. For more detailed explanations of the various functions available, please see Section 5.

5.0 DATA LOGGING PROGRAM OPERATION

The previous sections were intended to get the Data Logging program running in the shortest period of time possible. Much of the detail regarding what you were doing was intentionally left out to avoid confusion. This section will contain the detail that was omitted, which will allow you to fully utilize the program. The structure of this section follows the structure of the main menu. Each menu selection is described in the order that it appears in the menu.

Figure 5.1 is a diagram of the main menu and the one sub-menu available. To select a function in the main menu, type the key that accompanies the function. To return from the sub-menu to the main menu, just press the [ENTER] key.

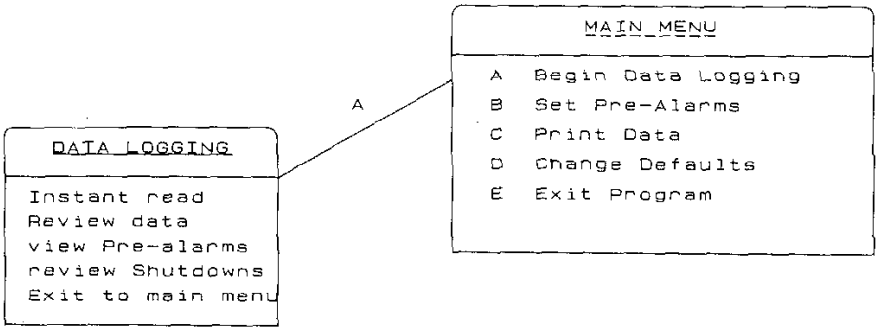

FIGURE 5.1

The main menu is shown in Figure 5.2.

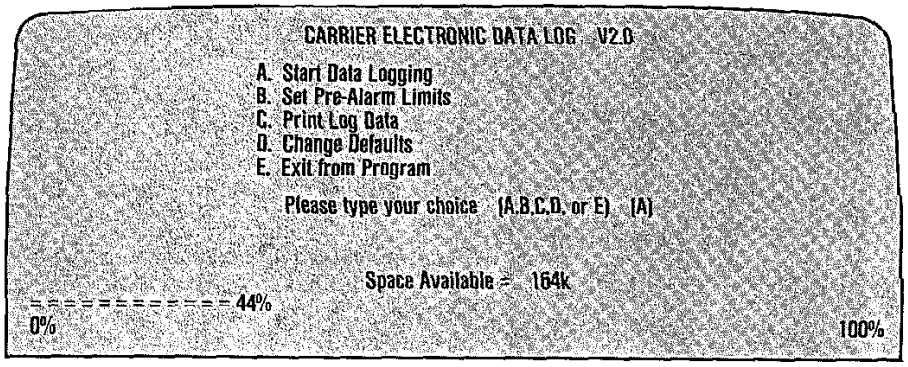

FIGURE 5.2

At the bottom of the main menu is a diagram that displays the amount of storage available for new data log entries on your current disk drive (or directory if you have specified one). As the storage approaches 0% available, you should print the data log on the printer and start a new log. A new log can be started by answering yes to the "Erase previously stored data?" question asked when Data Logging is begun.

5.1 START DATA LOGGING

Menu option A will start the Data Logging process. You will first be asked what the logging interval (period between each entry stored on the disk) should be.

FIGURE 5.3

NOTE: Regardless of the interval, a log entry will be made when any of the following conditions occur:

A. A pre-alarm limit is exceeded.
B. The chiller starts.
C. The chiller stops.
D. The chiller has a safety limit shutdown (the next two updates will be stored in the log).

In an effort to conserve disk space, there will be no log entries made when the chiller is off.

You will then be asked if you want to erase previously stored data. If you answer yes to this question, you will erase whatever data has been logged previously. This will free up the disk storage that was occupied by the data log. If you answer no, the new log entries will be added to the end of the existing log file on the disk.

FIGURE 5.4

Typically, you would only elect to erase the previous data right after you have printed the log on the printer. **NOTE:** *Erasing the log will erase data for ALL the chillers in your installation.* Therefore, be sure to print data for all of the chillers before erasing the file.

If you are unsure whether or not to erase the data, just press [N] . You may then start Data Logging and use the Review Log function (Section 5.1.5) to see what the old data was. At that point you can judge whether or not you want to erase it the next time you start Data Logging.

After answering that question, Data Logging will start. Figure 5.5 shows the screen you will see. The screen will be automatically updated every 60 seconds with chiller operating parameters, and the information will be stored based on the logging interval specified. If any parameter is out of the pre-alarm settings, the background color will change and the parameter out of range will blink. If there is only one chiller, the one minute updates will scroll from left to right, and the four most recent will be on the screen. If there are multiple chillers, the chillers will scroll from left to right as they are read, with the last 4 chillers remaining on the screen.

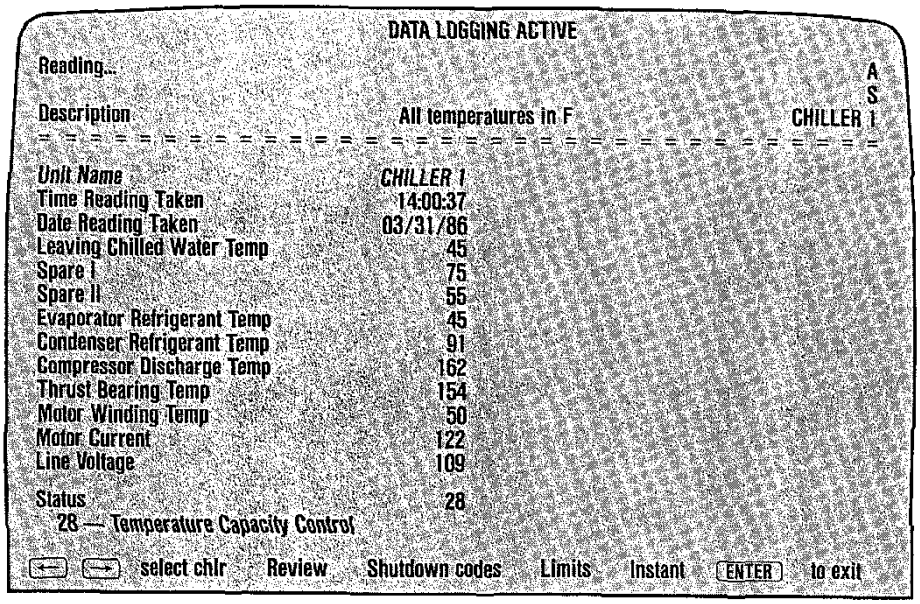

FIGURE 5.5

Note the bottom line of the screen. This is a sub-menu that allows you to perform several functions from within the Data Logging program. You can take instant readings on a chiller, review previous log entries, review the last 5 safety shutdown codes, and review the current pre-alarm limits. You can also change the "selected" chiller when there are multiple chillers. In this case, the above functions will be based on the selected chiller. The following sections describe these functions in detail. These functions are available by pressing the highlighted key on the menu line. They are not available, however, when "Reading..." appears in the upper left-hand corner of the screen.

5.1.1 CHANGE SELECTED CHILLER (LEFT AND RIGHT ARROW KEYS)

By pressing the left and right arrow keys, you can select the chiller that the following features will use. This is only valid for multiple chiller installations. The line of status indicators will have an S under the "Selected" chiller. By pressing the arrow keys, the 'S' will move to the next chiller. The name of the selected chiller will also appear just below the status line to indicate more clearly which chiller is selected.

When any of the following functions are performed, the information presented will refer to the selected chiller.