

DataTrac[®]
Software for *rocketium*

Cat. No. 877-90

Operating Instructions

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Form 37721 Rev 1403

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Indicates a premier feature of the DataTrac Software



Indicates a reminder or note



Indicates a warning

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Introduction — DataTrac for Pocket Pump® Software Cat. No. 877-90

Features

- Program a sampling operation from a PC
- Calibrate pump flow to a primary standard
- Display the operating state including constant flow or constant pressure, temperature, run time, and battery status of the connected pump
- Create and save a pump program without a pump connected to a PC
- Program up to 14 sampling sequences, each with different flow rates
- Download pump run time data and history to a PC
- Document sampling history using the sample setup feature
- Print a history file containing pump run time data
- Print a worker exposure profile containing pump run time data and history

DataTrac System Requirements

- Hard drive with a minimum of 20 MB free disc space
- CD-ROM drive
- Available USB port for use with SKC USB DataTrac adapter cable
- Mouse
- Microsoft Windows® XP or higher, including Windows 7 (64 bit)

DataTrac Components

- DataTrac Software and instructions on CD-ROM
- DataTrac adapter cable

DataTrac Setup

DataTrac Setup

Installing DataTrac Software

Installation of New Software

1. Close all applications.
2. Insert DataTrac Software CD into CD-ROM drive. *The CD is set up to autoplay. If it does not autoplay on your PC, go to Step 2a.*
 - a. Click Start button on tool bar.
 - b. Click on My Computer. (Note: In some cases, the My Computer icon may be on the desktop; double-click the icon to open.)
 - c. Double-click CD Drive.
3. The InstallShield (IS) Welcome window will display.
 - a. Click Next.
4. The IS License Agreement window will display.
 - a. Select *I accept the terms . . .* to continue installation. If you do not accept the terms, the installation will not continue.
 - b. Click Next.
5. The IS Customer Information window will display.
 - a. Enter User Name and Organization.
 - b. Under *Install this application for:* select *Anyone who uses this computer (all users)* or *Only for me ()*.
 - c. Click Next.
6. The IS Ready to Install the Program window will display.
 - a. To install software in folder displayed, click Next.
7. The IS Installing DataTrac for Pocket Pump window will display. Installation may take several minutes. **Do not press any keys during installation.**
8. The IS Wizard Completed window will display, indicating successful installation.
 - a. Click Finish to exit the IS Wizard.



If installation is unsuccessful, an error box will display indicating that installation was not successful and that the user should perform the installation procedure again. Repeat installation.



Upon successful installation, a shortcut to PocketPump.exe will be installed automatically on the PC desktop (see right).



If changes to settings are desired after installation, perform Steps 1 through 4, Installation of Software Update. The IS Program Maintenance window will display. Select Modify to change settings.

Installation of Software Update (previous version exists on PC)

1. Close all applications.
2. Insert DataTrac Software CD into CD-ROM drive. *The CD is set up to autoplay. If it does not autoplay on your PC, go to Step 2a.*
 - a. Click Start button on tool bar.
 - b. Click on My Computer.
 - c. Double-click CD Drive.
3. The IS Welcome window will display.
 - a. Click Next.

4. The IS Program Maintenance window will display. Three options will appear:
 - **Modify** - used to change settings after installation
 - **Repair** - used to update previously installed software
 - **Remove** - used to remove the previously installed version of the software from the hard drive (*SKC recommended*).
 - a. Click Remove.
 - b. Click Next.
 - c. The IS Remove the Program window will display.
 - d. Click Remove.
 - e. The IS Uninstalling DataTrac for Pocket Pump window will display.
 - f. The IS Wizard Completed window will display, indicating successful removal of the existing software.
 - g. Click Finish to exit the IS Wizard.
5. Follow instructions for Installation of New Software.



Complete DataTrac Software features are only available when an active sample pump is connected to the PC (see Connecting the Pump to a PC). The SKC DataTrac Pump Manager window may be accessed without a pump connected to the PC; however, only limited features will be available (see Connecting the Pump to a PC, Connection Error Box, Figure 2B).

Connecting the Pump to a PC (Figure 1)

USB port on PC: Use the supplied adapter cable to connect the pump to the PC.

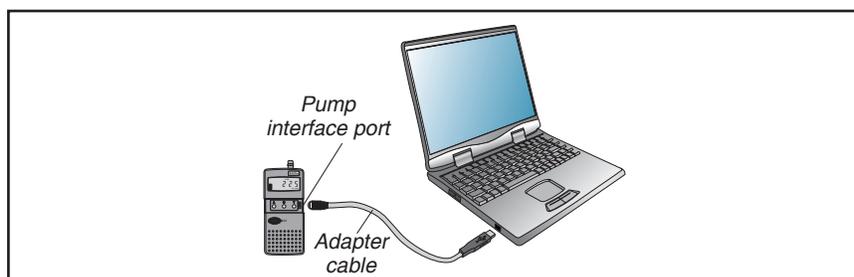


Figure 1. Hardware Setup



DataTrac has limited use without an active Pocket Pump connected to the PC, however, a program may be set up and saved to a PC without a Pocket Pump connected to the PC.

First Time Connection

1. Connect the pump to a PC using the DataTrac adapter cable.
 - a. If a **Found New Hardware Wizard** window displays during connection, follow this procedure:
 - i. Ensure the wizard wants to install software for "USB Serial Port."
 1. If the wizard wants to install any other software, cancel the wizard, and connect the adapter cable to a different USB port.
 - ii. Select Install the software automatically (Recommended).
 - iii. Click Next.
 - iv. The installing USB Serial Port window will display. Installation may take several minutes. **Do not press any keys during installation.**
 - v. The Completing the Found New Hardware Wizard window will display, indicating a successful installation.
 - vi. Click Finish to close the wizard.
2. Activate the pump LCD by pressing any button on the pump keypad.
3. Launch DataTrac Software on the PC by double-clicking the Pocket Pump shortcut icon on the PC desktop.
4. The Pocket Pump Connection window will display (Figure 2).
 - a. Click Connect to Pump



DataTrac Setup

- If connection is successful, the Pocket Pump Connection window will display a shaking hands icon (Figure 2A). Proceed to Step 6. If connection is unsuccessful, an error window will display (see box and Figure 2B on page 5).



Figure 2. Connection window



Figure 2A. Successful pump-PC communication

Successive Connections

- Connect the pump to a PC using the DataTrac adapter cable.
- Activate the pump LCD by pressing any button on the pump keypad.
- Launch DataTrac Software on the PC by double-clicking the Pocket Pump shortcut icon on the PC desktop.
- The Pocket Pump connection window will display (Figure 2).
 - Click Connect to Pump.
- The Pocket Pump Connection window will display a shaking hands icon indicating a successful connection (Figure 2A). Proceed to Step 6.

Connection Error Box

If an error box displays (Figure 2B), follow this procedure:

- Ensure pump LCD is activated. See Step 2, Connecting the Pump to a PC.
- Check cable/adapter connections and click Retry. If the error box displays again, go to Step c.
- Ensure the COM ports for the adapter cable are numbered between 1 and 9. See changing the COM Port box below.



Another option in the error box is Ignore. Clicking Ignore opens the SKC DataTrac Pump Manager window but only allows limited access to software features.

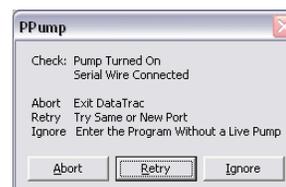


Figure 2B. Connection error box

Changing the COM Port

To change the COM port:

- Ensure DataTrac adapter cable is connected to a USB port.
- Click Start menu.
- Right click on My Computer.
- Select Manage.
- Select Device Manager.
- Expand the **Ports (COM & LPT)** menu.
- Double-click to select USB Serial Port (COM10 or similar).
- Select Port Settings.
- Click on Advanced.
- Select a COM port between 5 and 9 from the COM Port Number dropdown menu.
- Click OK to close.
- Follow instructions for Connecting the Pump to a PC (see page 3).



COM Port Window

- Ensure the correct date and time are set on the PC.



The pump will not start and stop programmed runs on the desired dates and times if the correct date and time are not set on the PC connected to the pump.

- DataTrac Software will load and display the SKC DataTrac Pump Manager window (Figure 3).

SKC DataTrac Pump Manager Window

The SKC DataTrac Pump Manager window (Figure 3) is the first window that opens in DataTrac. All other windows are accessible from this main window.



Figure 3. SKC DataTrac Pump Manager Window

SKC DataTrac Pump Manager Window Menus

File Menu

Exit.....exits the program and returns to Windows

View Menu

Pump Scheduleropens the SKC Pump Scheduler window
Sample Sheet.....opens the SKC Sample Sheet Setup window
Reportloads a report file (.rpt) previously saved to a PC
Pump Historyopens the SKC Pump History window
Archive Historyloads a history file (.hst) previously saved to a PC
Real Time Monitoropens the SKC Real Time Monitor window

Tools Menu

Clear History.....clears the pump history
Clear Schedule.....clears the programmed pump schedule
Intermittent
Sampling.....allows connected pump to be set to run at selected on/off intervals for a selected total run time



Intermittent Sampling can only be used while the pump is connected to the PC.

About Menudisplays the DataTrac Software version number, pump firmware revision number, and pump serial number

SKC Real Time Monitor Window

SKC Real Time Monitor Window

The SKC Real Time Monitor window (Figure 4) directly controls the pump, allows calibration of flow rate, displays a real time readout of pump operations, and displays the connected pump's serial number.

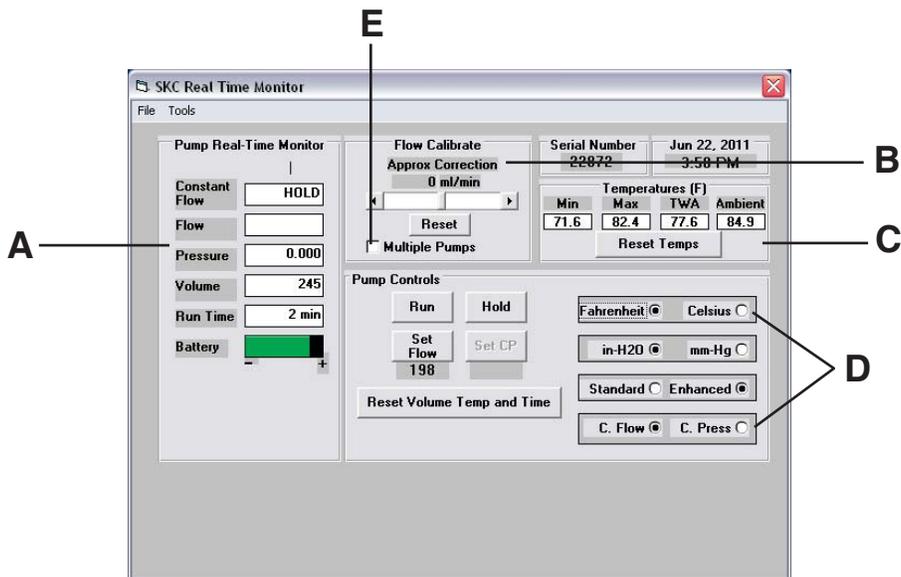


Figure 4. Real Time Monitor Window

- A. Real Time Monitor Display (see Figure 5)
- B. Flow Calibrate (see Figure 6)
- C. Temperature Display (see Figure 7)
- D. Pump Control Buttons (see Figure 8)
- E. Multiple Pumps Checkbox (see Figure 6A)

SKC Real Time Monitor Menus

File Menu

Exit.....returns to the SKC DataTrac Pump Manager window

Tools Menu

Clear Schedule.....clears the programmed pump schedule
Clear History.....clears the pump history

Real Time Monitor Display

The Real Time Monitor display (Figure 5) shows the operating status of the connected pump.

Monitor Display	Cell Readout
Mode	RUN: pump in run state (Constant Flow or Constant Pressure)
Flow	current flow rate in mL/min
Pressure	back pressure in inches (ins) H ₂ O, or millimeters (mm) Hg
Volume	volume of air pumped in mL
Run Time	total run time of pump
Battery icon	graphically displays battery life. The battery life is indicated by a light colored bar with low (-) charge indicated on the left side and full (+) charge indicated on the right side. A battery with a full charge is displayed by the length of this light colored bar. A long light colored bar (closer to the + end) represents a battery near a full charge. A short light colored bar (closer to the - end) represents a battery near depletion. A dead battery is displayed as a solid black bar

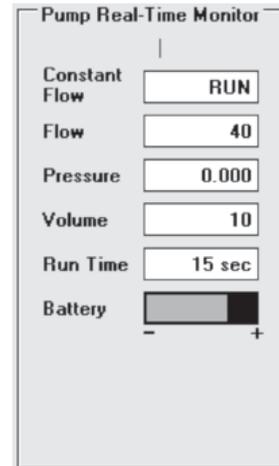


Figure 5. Real Time Monitor Display



The data in the cells is updated every 5 seconds. If pump operation is changed, the cells will display the previous values for up to 5 seconds before they are updated.

SKC Real Time Monitor Window

Flow Calibrate

The Flow Calibrate buttons (Figure 6) allow calibration of the flow rate displayed on the pump LCD to the flow rate displayed on a primary standard calibrator.

The Approx Correction (approximate correction) is the difference between the flow rate displayed on the pump and the flow rate displayed on the calibrator. When a pump is connected to a calibrator the flow rate is determined by the calibrator display and not the pump display.

Adjusting the Flow Correction

To adjust the approximate correction rate, click and hold the sliding button, then move the button to the left (decreases correction) to adjust flow when the calibrator display is higher than the pump flow rate display or to the right (increases correction) to adjust flow when the calibrator display is lower than the pump flow rate display. The range of correction is ± 20 ml/min. An alternate method is to click the left and right arrow buttons to move the sliding button. The value changes as the button slides left or right.

The pump should be calibrated before each sample run. Once calibrated, all volume displays will be accurate for that flow rate. DataTrac will always display the last approximate correction value to which the connected pump has been set. Changing the flow setting on the pump clears the correction value (sets it to 0.0).



When calibrating, the flow rate displayed on the calibrator changes; the flow rate displayed on the pump LCD does not change.

Reset Button

To reset the correction value to 0.0 mL/min, click once on the Reset button.

Multiple Pumps Checkbox



Turn off Comm Checking before setting up multiple pumps. See Comm Checking Buttons on page 15.

If you wish to perform flow calibration, reset volume temperature and time, or change parameter display scales for multiple pumps, click the Multiple Pumps checkbox in the Flow Calibrate section of the Real Time Monitor window.

Once checked, a separate window will open (Figure 6A). Set parameters as desired for one pump, disconnect the interface cable from the pump, and insert the cable plug into the interface port on another Pocket Pump. Once all pumps are set up, click the Multiple Pumps checkbox to deselect this option. You will be returned to the Real Time Monitor window.

Using Flow Calibrate

Set the pump to the desired flow rate.

Connect the inlet port of the pump to a primary standard calibrator and read the flow on the calibrator display.

Set the approximate correction as needed by clicking and holding the sliding button and moving it left to decrease correction or right to increase correction and recalibrate. The flow rate that is displayed on the calibrator should change as result of this operation.

Example: The desired flow rate of the pump is 150 mL/min. Set the pump to 150 mL/min. If the calibrator reading is 157 mL/min, move the sliding button to the left to adjust the approximate correction to -7 mL/min and recalibrate. Repeat as necessary until the flow rate displayed on the calibrator is within the required tolerance.

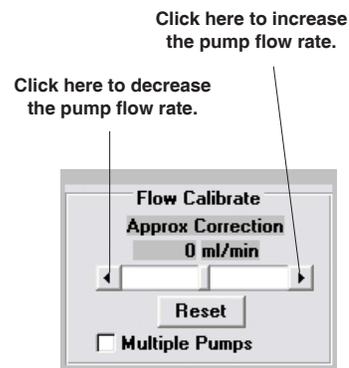


Figure 6. Flow Calibrate

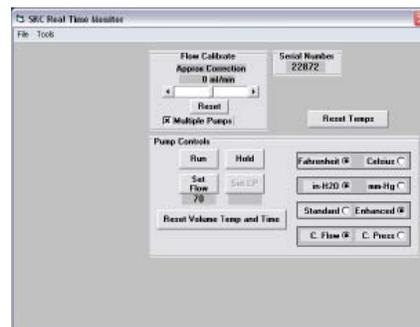


Figure 6A. Multiple Pumps Checkbox

Temperatures Display

The Temperatures display (Figure 7) shows the temperature data of the air entering the connected Pocket Pump.

Temperatures Display	Cell Readout
Min	minimum air temperature during the program run
Max.....	maximum air temperature during the program run
TWA.....	time-weighted average of all air temperatures
Ambient.....	current air temperature

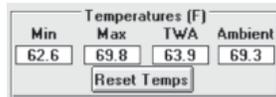


Figure 7. Temperatures Display



The Min, Max, and TWA are calculated from the temperatures measured during the total run time of the pump. Unless reset, the temperature data will remain in memory and will be included in other Min, Max, and TWA calculations.

Reset Temps

To reset the minimum and maximum temperatures to ambient temperature and to reset the TWA, click once on the Reset Temps button.



Before clicking the Reset Temps or the Reset Volume Temp and Time button, place the pump in Hold, otherwise the TWA temperature may be erratic for the first minute.

Pump Controls Buttons

The Pump Controls buttons (Figure 8) directly control the connected pump.

Control	Function
Run	places the pump in Run
Hold	places the pump in Hold
Set Flow	opens the Set Flow window (Figure 16). Only selectable when in Constant Flow mode; the current flow rate is displayed beneath the button
Set CP	opens the Constant Pressure window (Figure 17). Only selectable when in Constant Pressure mode; the current back pressure is displayed beneath the button



Figure 8. Pump Controls Buttons

Reset Volume Temp and Time.....	clears the accumulated volume, temperature, and run time
Fahrenheit	selects the Fahrenheit temperature scale
Celsius.....	selects the Celsius temperature scale
in H ₂ O	selects the inches H ₂ O pressure units
mm Hg.....	selects the millimeters Hg pressure units
Standard	selects the standard display mode on the pump LCD (flow rate, time, and volume)
Enhanced.....	selects the enhanced display mode on the pump LCD (flow rate, time, volume, temperature, and pressure)
C. Flow.....	selects Constant Flow mode; switching from Constant Pressure to Constant Flow mode resets the Real Time Monitor display (Figure 5)
C. Press	selects Constant Pressure mode; switching from Constant Flow to Constant Pressure mode resets the Real Time Monitor display (Figure 5)

SKC Pump Scheduler Window

SKC Pump Scheduler Window

The SKC Pump Scheduler window (Figure 9) is the DataTrac programming window. In this window, programs can be created, sent to a pump, saved to a PC, loaded from a PC or a pump, and printed.

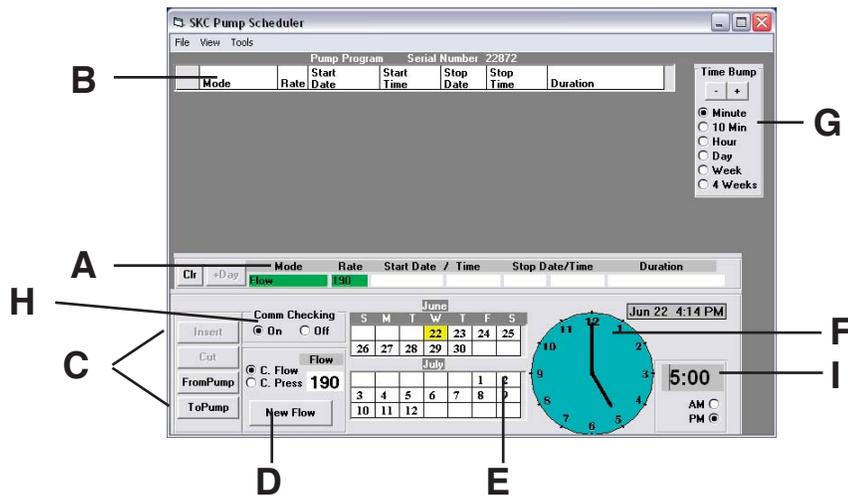


Figure 9. Pump Scheduler Window

- A. Program Edit Bar (see Figure 10)
- B. Pump Program Scheduler (see Figure 11)
- C. Programming Buttons (see Figure 12)
- D. Flow and Pressure Buttons (see Figure 15)
- E. Calendar (see Figure 18)
- F. Clock (see Figure 19)
- G. Time Bump Buttons (see Figure 24)
- H. Comm Checking Buttons (see Figure 25)
- I. Digital Time Display (see Figure 22)

Pump Scheduler Menus

File Menu

- Open.....opens a pump program previously stored to a PC
- Savesaves a pump program (.pgm) to a PC
- Print..... prints the pump program schedule displayed on the screen
- Exit.....exits the Pump Scheduler window and returns to the SKC DataTrac Pump Manager window

View Menu

- Pump Settings.....opens the SKC Pump Program Settings window
- Clock Resolutionsets the clock resolution

Tools Menu

- Clear History.....clears the pump history
- Clear Schedule.....clears the programmed pump schedule

Program Edit Bar

The Program Edit Bar (Figure 10) sets a pump program. A program is set by entering the value for each sampling parameter, including Mode, Rate, Start Date/Time, Stop Date/Time, and Duration, in the cells of the Program Edit Bar.



Figure 10. Program Edit Bar

A pump program contains the following sampling parameters:

- | Parameter | Value |
|------------------|--|
| Mode | Constant Flow or Constant Pressure |
| Rate..... | flow rate in mL/min or back pressure in inches of water (H ₂ O) |
| Start Date..... | starting date of the program |
| Start Time | starting time of the program |
| Stop Date | stopping date of the program |
| Stop Time | stopping time of the program |
| Duration | total run time of the program |

To program the above parameters into the cells of the Program Edit Bar, click the various control buttons (Figure 9, C through G) that select the value of each parameter, then click the appropriate cell.

Pump Program Scheduler

The Pump Program Scheduler (Figure 11) contains the list of the pump programs (or pump program schedules) set in the Program Edit Bar. The pump is programmed for a sampling operation by sending this list of programs to the pump's memory. The maximum number of programs that can be contained within the list at any given time is 14.

Pump Program							
	Mode	Rate	Start Date	Start Time	Stop Date	Stop Time	Duration
1	Flow	100	Jul 4 2011	8:00 AM	Jul 4	4:00 PM	8 Hr

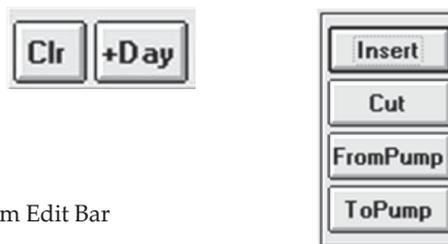
Figure 11. Pump Program Scheduler Containing 1 Program

SKC Pump Scheduler Window

Programming Buttons

The Programming buttons (Figure 12) are used to erase a program from the Program Edit Bar, insert programs into the Pump Program Scheduler, write programs to the pump, and read programs from the pump.

Figure 12. Programming Buttons



Button	Function
Clr	erases the program in the Program Edit Bar
+Day	adds one day to the program dates in the Program Edit Bar
Insert	places the program displayed in the Program Edit Bar into the Pump Program Scheduler
Cut	clears the selected (highlighted) program in the Pump Program Scheduler and places it in the Program Edit Bar
FromPump	reads the program stored in the pump and displays it in the Pump Program Scheduler
ToPump	writes the program displayed in the Pump Program Scheduler to the pump

Insert Button

To insert the completed program into the Pump Program Scheduler (Figure 11), click the Insert button (Figure 12). The Pump Program Scheduler can hold up to 14 programs.

Cut Button

To clear the selected (highlighted) program from the Pump Program Scheduler and place it into the Program Edit Bar for editing, click once on the Cut button (Figure 12). A program may also be cleared by clicking twice on the program number or the line number to the left of the mode column of the Pump Program Scheduler (Figure 11).

ToPump Button

To write the Pump Program Schedule to the pump, click once on the ToPump button (Figure 12) and a DataTrac dialog box will appear (Figure 13).



Before sending a program to the pump by clicking the ToPump button, it is important to set the Run Time Options (see SKC Pump Program Settings window on page 16) and clear the history by selecting Clear History from the Tools menu in the SKC Pump Scheduler window.

Click once on the OK button to send the program to the pump. A Program Loaded dialog box (Figure 14) will appear on the screen to verify the operation.

Writing a program to the pump will cause the **PROG** icon to appear on the pump LCD, which will remain active until all programs are completed. If **User Lock Out** has been selected in the Pump Program Settings window, (see page 16), the PROG icon will remain active after all programs have been completed.

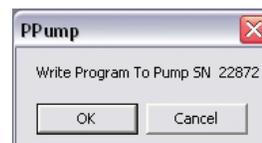


Figure 13. Dialog Box

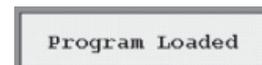


Figure 14. Dialog Box



Once the pump has been programmed and enters Sleep mode, it is best to leave it alone until the program has been run. Each time Sleep mode is interrupted, all subsequent start times may be offset by up to one minute.

Edit a Program

To edit a program displayed in the Pump Program Scheduler, click twice on it. This will remove it from the Pump Program Scheduler and place it in the Program Edit Bar. Any program already in the Program Edit Bar will be erased.

FromPump Button

To display a Pump Program Schedule from a previously programmed pump, click once on the FromPump button (Figure 12).

Time Bump Buttons

To increase or decrease **all** start and stop times of the programs in the Pump Program Scheduler, click once on the Time Bump buttons (Figure 24).

Save a Program

To save the Pump Program Scheduler as a program file to a PC, select the Save command from the File menu.

The default extension .pgm is used to indicate Pump Scheduler files.

Open Program

To open a previously stored program, select the Open command from the File menu.

Print Program

To print the Pump Program Scheduler displayed on the screen, select the Print command from the File menu.

Flow and Pressure Buttons

The C. Flow and C. Press buttons (Figure 15) select pump mode (Constant Flow or Constant Pressure). The New Flow and New Pressure buttons set pump flow and pressure rate (button label changes to New Pressure when C. Press is selected).



Figure 15. Flow and Pressure Buttons

Buttons	Function
C. Flow	selects Constant Flow mode and enters Flow in the Mode cell of the Program Edit Bar
C. Press	selects Constant Pressure mode and enters Pressure in the Mode cell of the Program Edit Bar
New Flow	opens the Set Flow window (Figure 16). This option is only available when Constant Flow mode is selected.
New Pressure	opens the Constant Pressure window (Figure 17). This option is only available when Constant Pressure mode is selected.

Set Flow Window

The Set Flow window (Figure 16) allows the user to select the flow rate using the numbered flow buttons or using the down and up buttons. This window is only available when the pump is in Constant Flow mode.

Set Flow Rate

To set the flow rate, click once on the desired flow rate button. The new flow rate will appear in the display cell.

Up and Down

To decrease or increase the displayed rate, click the down and up buttons.

Enter Flow Rate

To enter the displayed flow rate into the Rate cell of the Program Edit Bar, click once on the OK button.

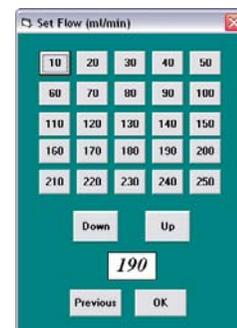


Figure 16. Set Flow Window

SKC Pump Scheduler Window

Constant Pressure Window

The Set Constant Pressure window (Figure 17) allows the user to select the constant pressure using the numbered pressure buttons. This window is only available when the pump is in Constant Pressure mode.

Set Constant Pressure

To set the constant pressure, click once on the desired constant pressure button. The new constant pressure will appear in the display cell.

Enter Constant Pressure

To enter the displayed constant pressure into the Rate cell of the Program Edit Bar, click once on the OK button.

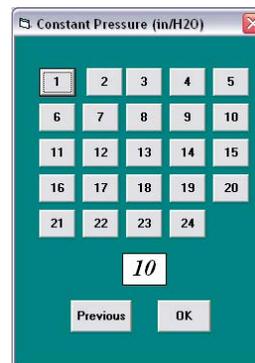


Figure 17. Constant Pressure Window

Calendar

The Calendar (Figure 18) shows the 21-day time interval over which the pump may be programmed. The Calendar allows the user to select the Start and Stop Dates of the pump programs.

Selecting a Date

To select a date, click once on the date in the calendar, and then click once on the Start or Stop Date cell in the Program Edit Bar.

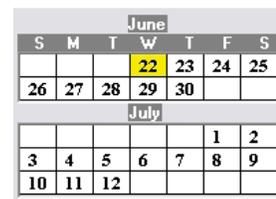


Figure 18. Calendar

Clock

The Clock (Figure 19) consists of a clock face, a digital display corresponding to the time on the clock face, AM and PM buttons, and the current date and time. The Clock allows the user to select the start and stop times for pump programs by clicking on the perimeter of the clock face and the AM or PM button. The clock face perimeter is divided into 10, 15, and 30-minute and 1-hour intervals depending on the selected clock resolution (see Clock Resolution below).

Selecting Time

To select the start or stop times, choose the clock resolution (see Clock Resolution below), click once on the clock face perimeter, click the AM or PM button, and then click once on the Start or Stop time cell in the Program Edit Bar.

Example: To set the time to 4:15 PM, first select 15 minutes from the View menu, Clock Resolution command (Figure 21), click on the clock perimeter at 4:15 (Figure 20), and click the PM button.



Figure 19. Clock



Click here
Figure 20. Select 4:15

Clock Resolution

To change the Clock Resolution or time intervals (10, 15, or 30 minutes or 1 hour), go to the View menu and select the Clock Resolution command (Figure 21).

Digital Time Display

The digital time display (Figure 22) may also be used to select the time, especially outside the clock resolution settings. Click twice on the time display to highlight it (Figure 23), then key in the desired time (including the colon). One or more numbers may be selected individually by clicking and dragging over the time display. Click once on the AM or PM button, and then click the appropriate time cell in the Program Edit Bar.

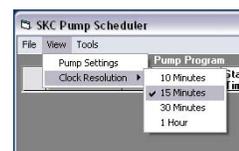


Figure 21. Clock Resolution

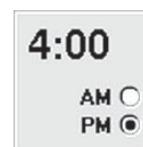


Figure 22. Digital Time Display



Figure 23. Select Time Display

Time Bump Buttons

The Time Bump buttons (Figure 24) add/subtract the selected time intervals to/from **all** program Start and Stop times in the Pump Program Scheduler.

Time Interval

To select the time interval, click once on a time interval button.

Minus Button

To subtract the interval from **all** programs, click once on the - button.

Plus Button

To add the interval to **all** programs, click once on the + button.

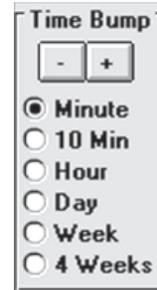


Figure 24.
Time Bump Buttons

Comm Checking Buttons

Attention! If programming more than one pump, turn Comm (Communication) Checking off by clicking once on the Off button.

The Comm Checking buttons (Figure 25) turn the communication checking function on or off. Comm Checking monitors the interface cable connection with the pump. The default value is On. If the interface cable becomes detached, an error message will display (Figure 26). Reconnect the pump and click once on Retry.



Turn Comm Checking off by clicking the Off button when programming multiple pumps. This will eliminate the error message that displays each time the pump is disconnected.

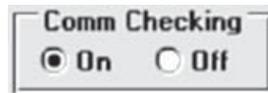


Figure 25. Comm Checking Button



Figure 26.
Error Message



When Comm Checking is turned off, the pump will enter Sleep mode five minutes after the last interaction between the PC and the pump.

SKC Pump Program Settings Window

SKC Pump Program Settings Window

The SKC Pump Program Settings window (Figure 27) allows the user to select run time options. The run time options include User Lock Out, Temperature units (F or C), Pressure units (inches H₂O or mm Hg), Reset Volume/Time, Reset Minimum and Maximum temperatures, and Clear History. The run time options take effect when the pump program is sent to the pump from the Pump Program Scheduler window.

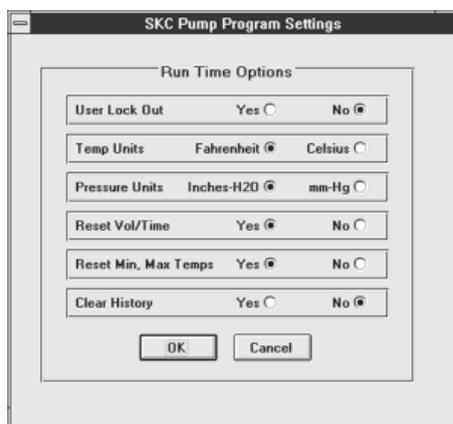


Figure 27. SKC Pump Program Settings Window Showing Default Settings

Attention! All activated options will take effect when a schedule from the Pump Program Scheduler (Figure 11) is sent to the pump by clicking the ToPump button (Figure 12).

Buttons

Functions

User Lock Out.....click once on YES to activate or NO to deactivate; User Lock Out will prevent any one from altering pump operating parameters even if the security code is entered on the pump keypad, however, the operator will be able to scroll through the data display. *Default is NO.*

Temp Units.....click once to select Fahrenheit or Celsius scale. *Default is Fahrenheit.*

Pressure Units.....click once to select inches H₂O or mm Hg scale. *Default is inches H₂O.*

Reset Vol/Time.....click once on YES to activate or NO to deactivate; YES will reset the volume pumped and time duration to zero (0). *Default is YES.*

Reset Min, Max Tempsclick once on YES to activate or NO to deactivate; YES will reset the minimum and maximum temperatures to zero (0). *Default is YES.*

Clear History.....click once on YES to activate or NO to deactivate; YES will reset pump history. In general, it is good practice to clear the history before running a new schedule. *Default is NO.*

To set the values and return to the SKC Pump Scheduler window, click once on the OK button. Create a schedule and send it to the pump by clicking the ToPump button (Figure 12).

Example Program

This example program demonstrates how to use the Pump Program Scheduler window to set a program.

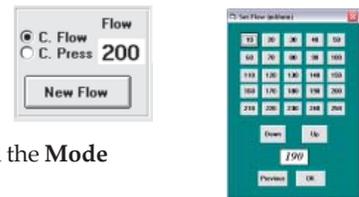
A sampling operation requires the pump to sample at a constant flow of 100 mL/min from 8:00 AM to 4:00 PM daily for one work week. Enter the parameters as follows:

Clear Previous History/Schedule

In the SKC Pump Scheduler window, go to the Tools menu and select **Clear History** (if desired); this will erase the history from the history display and the pump's memory. Go to the Tools menu and select **Clear Schedule** (if desired). This will erase the contents of the Pump Program Scheduler displayed on the PC screen and in the connected pump's memory.

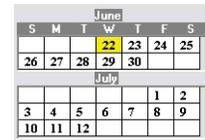
Set the flow rate

Click once on the **C. Flow** button and then click once on the **New Flow** button. The Set Flow window will open. Click once on the **100** button then click once on **OK**. Click once on the **Rate** cell in the Program Edit Bar. Flow and 100 will appear in the **Mode** and **Rate** cells in the Program Edit Bar.



Set the start/stop date

Click once on any Monday in the **Calendar**. The data is highlighted. Click once on the **Start Date** cell in the Program Edit Bar. The date will appear in the cell. Click once on the **Stop Date** cell to enter the same date into the cell.



Set the start time

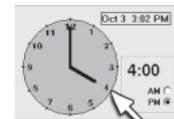
Click once on the **Clock** at 8. The clock hands will point to 8:00 and 8:00 will appear in the digital display next to the Clock. Click once on the **AM** button, and then click once on the **Start Time** cell of the Program Edit Bar; 8:00 AM will appear in the cell.



Click here

Set the stop time

Click once on the **Clock** at 4. The clock hands will point at 4:00 and 4:00 will appear in the digital display next to the Clock. Click once on the **PM** button, and then click once on the **Stop Time** cell of the Program Edit Bar; 4:00 PM will appear in the cell.



Click here

The **Duration** cell will display 8 Hr, which is the length of the programmed operation.

Clr	+Day	Mode	Rate	Start Date / Time	Stop Date/Time	Duration
		Flow	100	Jul 4 2011 8:00 AM	Jul 4 4:00 PM	8 Hr

The completed program in the Program Edit Bar

Insert the program into the Pump Program Scheduler

Click once on the **Insert** button. The program will appear in the Pump Program Scheduler. The program is still displayed in the Program Edit Bar. The Pump Program Scheduler contains a program, which tells the pump to run at a constant flow of 100 mL/min from 8:00 AM to 4:00 PM on Monday. The same operating parameters must be entered for each day of the week.

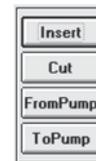


Pump Program							
	Mode	Rate	Start Date	Start Time	Stop Date	Stop Time	Duration
1	Flow	100	Jul 4 2011	8:00 AM	Jul 4	4:00 PM	8 Hr

Example Program

Add extra days to the program schedule

Click once on the **+Day** button. This will add 1 day to the Start Date and Stop Date in the Program Edit Bar. Click once on **Insert** to place the program into the Pump Program Scheduler.



Clr	+Day	Mode	Rate	Start Date / Time	Stop Date/Time	Duration
		Flow	100	Jul 5 2011 8:00 AM	Jul 5 4:00 PM	8 Hr

Repeat the procedure to add an additional day to the Pump Program Scheduler until each day of the week has been entered.

Pump Program Serial Number 22872							
	Mode	Rate	Start Date	Start Time	Stop Date	Stop Time	Duration
1	Flow	100	Jul 4 2011	8:00 AM	Jul 4	4:00 PM	8 Hr
2	Flow	100	Jul 5 2011	8:00 AM	Jul 5	4:00 PM	8 Hr
3	Flow	100	Jul 6 2011	8:00 AM	Jul 6	4:00 PM	8 Hr
4	Flow	100	Jul 7 2011	8:00 AM	Jul 7	4:00 PM	8 Hr
5	Flow	100	Jul 8 2011	8:00 AM	Jul 8	4:00 PM	8 Hr

Set the desired Run Time Options

Go to the View menu and select **Pump Settings**. Click on the desired options (*see page 16*).

Write the program to the pump

Click once on the **ToPump** button. DataTrac will write all steps contained in the Pump Program Scheduler to the pump.



Save the pump program to a PC

Go to the File menu and select the Save command. The program displayed in the Pump Program Scheduler will be saved as a program file (.pgm). Programs may be saved for future use or editing.

Print the pump program

Go to the File menu and select the **Print** command. The contents of the Pump Program Scheduler will print.

SKC Pump History Window

The SKC Pump History window (Figure 28) displays the record of all operations performed by the pump. Up to 50 histories may be stored in pump memory. This window also allows the user to save pump history to a PC or to print the history.

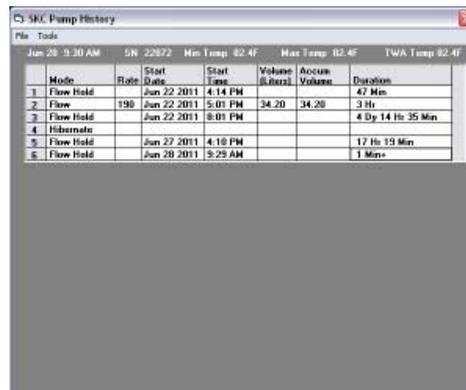


Figure 28. SKC Pump History Window

SKC Pump History Menus

File Menu

- Savesaves a history file (.hst) to a PC
- Print.....prints the current history
- Exitexits the SKC pump history window and returns to the SKC DataTrac Pump Manager window

Tools Menu

- Clear
- Historyclears the pump history displayed on screen and in the pump

Save Pump History

To save a pump history to a PC, go to the File menu and select the Save command. The pump history will save to a PC as a history file (.hst).



The default extension .hst is used to indicate pump history files.

Print Pump History

To print the pump history file displayed on screen, go to the File menu and select the Print command.

Clear Pump History

To clear the pump history, go to the Tools menu and select the Clear History command.

Example of a Pocket Pump History File:

SKC Pump History
 SN 22872
 Tuesday, June 28, 2011
 10:39 AM
 Min Temp 82.4F
 Max Temp 82.4F
 TWA Temp 82.4F
 No Flow Correction

Mode	Value	Start	Volume Liters	Accum Volume	Duration
Flow	Hold	Wed Jun 22 2011 4:14 PM			47 Min
Flow	190	Wed Jun 22 2011 5:01 PM	34.20	34.20	3 Hr
Flow	Hold	Wed Jun 22 2011 8:01 PM			4 Dy 14 Hr 35 Min
Hibernate					
Flow	Hold	Mon Jun 27 2011 4:11 PM			17 Hr 19 Min
Flow	Hold	Tue Jun 28 2011 9:30 AM			1 Hr 9 Min+

SKC Pump History Window

History Display

The SKC Pump History display (Figure 29) shows the record or history of all operations performed by the pump.

A history will remain on screen and in the pump memory until it is cleared. A history includes the following data:

Readout	State of the Pump
Flow.....	pump in constant flow
CP	pump in constant back pressure
Hold	pump in hold
Flow Fault.....	flow fault occurred while in constant flow
CP Flow Fault	flow fault occurred while in constant back pressure
Fault	fault of unknown origin
Low Battery	battery depleted
Hibernate.....	a low power state that activates after the pump has been in hold for 24 hours. <i>See explanation of hibernate on page 25.</i>
Rate.....	flow rate in mL/min or the back pressure in inches H ₂ O or mm Hg
Start Date.....	starting date of the program
Start Time	starting time of the program
Volume (Liters)	flow rate multiplied by the duration
Accum Volume	sum of all previous volumes (liters)
Duration	total run time of the program

Mode	Rate	Start Date	Start Time	Volume (Liters)	Accum Volume	Duration
1 Flow Hold		Jun 22 2011	4:14 PM			47 Min
2 Flow	190	Jun 22 2011	5:01 PM	34.20	34.20	3 Hr
3 Flow Hold		Jun 22 2011	8:01 PM			4 Dp 14 Hr 35 Min
4 Hibernate						
5 Flow Hold		Jun 27 2011	4:10 PM			17 Hr 19 Min
6 Flow Hold		Jun 29 2011	9:29 AM			1 Min

Figure 29. History Display



A discrepancy may occur between the pump display and the history during flow fault. After a flow fault, the pump will enter Hold mode and will attempt to restart every 5 minutes. If the fault has not been corrected within 15 seconds, the pump will return to Hold mode. The volume of air pumped during attempted restarts will appear on the pump LCD, which updates every second, but will not appear in the history.

SKC Pump Archive History Window

The SKC Pump Archive History window loads and displays a pump history file (.hst) saved to a PC. This window is empty until a history file is opened from the File menu.

Pump Archive History Menus

File Menu

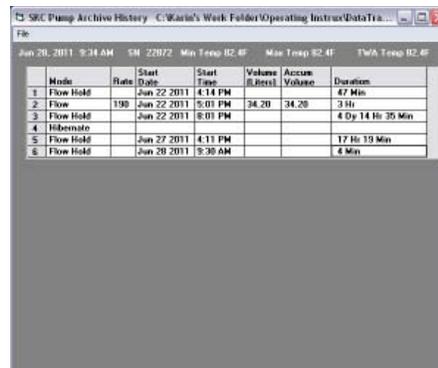
- Open.....opens a saved history file (.hst)
- Print.....prints the displayed history file
- Exit.....returns to the SKC DataTrac Pump Manager window

Open a History

To open a history file, go to the File menu and select the Open command.

Print a History File

To print a history file, go to the File menu and select the Print command.



The screenshot shows a window titled "SKC Pump Archive History" with a file path "C:\Waria's Work Folder\Operating Instruc>DataTrac...". The window displays a table with the following data:

Mode	Rate	Start Date	Start Time	Volume (liters)	Accum Volume	Duration
1	Flow Hold	Jun 22 2011	4:14 PM			47 Min
2	Flow	190	Jun 22 2011 5:01 PM	34.20	34.20	3 Hr
3	Flow Hold	Jun 22 2011	8:01 PM			4 Ds 14 Hr 35 Min
4	Hibernate					
5	Flow Hold	Jun 27 2011	4:11 PM			17 Hr 19 Min
6	Flow Hold	Jun 28 2011	9:30 AM			4 Min

Figure 30. SKC Pump Archive History

Reports

Reports

DataTrac allows reports and worker exposure profiles (combined snapshots and history files) to be printed as reports from the SKC Sample Sheet Setup window (Figure 31).

SKC Sample Sheet Setup Window

The SKC Sample Sheet Setup window (Figure 31) saves setup data pertaining to the sample run. All data displayed on the screen may be printed or saved as a setup file or user selected data may be saved as a template file.

Figure 31. SKC Sample Sheet Setup Window

SKC Sample Sheet Setup Menus

File menu

- Newclears all data cells in the Sample Sheet Setup window
- Load Setuploads a setup file (.stp)
- Load Template...loads a template file (.tpl)
- Save Setupsaves a setup file
- Save Template....saves a template file
- Print.....prints the current sample sheet data displayed on screen
- Exit.....exits the SKC Sample Sheet Setup window and returns to the SKC DataTrac Pump Manager window

Option Menu

- Merge Pumpwrites the pump history from the connected pump to the displayed sample sheet and creates a worker exposure profile (.rpt)
- Merge File.....writes the pump history from a previously stored history file (.hst) to the displayed sample sheet, and creates a worker exposure profile (.rpt)

Setup Files

The SKC Sample Sheet Setup window contains a list of information (in data cells) which will be printed in a report. The Sample Sheet Setup window can be saved to a PC as a setup file (.stp). A setup file consists of all the information contained in all data cells.

Enter Data Into Sample Sheet

To enter the information into the data cells, first click once on the cell then type the data using a keyboard.

Save Setup File

To save all entered data, go to the File menu and select the Save Setup command. The Save Setup command saves all data as a setup file (.stp).



The default extension .stp is used to indicate a pump setup file.

Template Files

The SKC Sample Sheet Setup window may also be saved to a PC as a template file (.tpl). A template file reduces the need to repeatedly type data that rarely changes. A template file contains only the information included in the data cells that have an active checkbox (the small square button before the data cell as shown in Figure 32). To activate a checkbox, click once on it.

<input type="checkbox"/> Worker (last name)	Smith	<input type="checkbox"/> first	Jo
<input type="checkbox"/> Sampling Site	Unit A		
<input checked="" type="checkbox"/> Sample Media	Charcoal Tube		
<input checked="" type="checkbox"/> Method Followed	OSHA 7		

Figure 32. Close-up of the SKC Sample Sheet Setup Window Showing Active Checkboxes

Save Template

To save only the information contained in data cells with active checkboxes, go to the File menu and select the Save Template command. The Save Template command saves the checked data as a template file.



The default extension .tpl is used to indicate a pump template file.

Print Sample Setup

To print the sample setup displayed on the screen, go to the File menu and select the Print command.

Worker Exposure Profile

A worker exposure profile contains the setup file (sample sheet) and a pump history. A worker exposure profile may be created using the connected pump history or using a history file (.hst) saved to a PC.

Worker Exposure Profile created with Pump History

To create a worker exposure profile containing the sample sheet displayed on the screen and the history of the connected pump, go to the Options menu and select the Merge Pump command. The worker exposure profile will be saved to a PC as a .rpt file and will also appear on screen.

Worker Exposure Profile created with History File

To create a worker exposure profile containing the sample sheet displayed on the screen and a history file (.hst) saved to a PC, go to the Options menu and select the Merge File command. The worker exposure profile will be saved to a PC as a .rpt file and will appear on screen.



The default extension .rpt is used to indicate a pump worker exposure profile file.

Print Worker Exposure Profile

To print the worker exposure profile displayed on screen, go to the File menu and select the Print command. See page 24 for an example Pocket Pump worker exposure profile.

Reports

Example of a Pocket Pump Worker Exposure File:

Worker Exposure Profile

File Name: c:\karin's work folder\operating instrux\datatrac for pocket pump\sample report 4.rpt

Date Printed: Tue Jun 28, 2011 2:17:44 PM

SN 22872

Min Temp 82.4F

Max Temp 82.4F

TWA Temp 82.4F

Worker (last name) Smith
Worker (first name) John
Worker ID 219
Sampling Site Unit 1
Sample Media Charcoal Sorbent Tube
Sample ID 18744
Method Followed OSHA 7
Chemicals of Interest Benzene
Job Description Maintenance
Pre-Sample Calibrator SN 24230
Post-Sample Calibrator SN 24235

Environmental Conditions

Humidity 30
Atm. Pressure 30.12

Analysis

Date Sent To Lab 29 June 2011
Date Returned From Lab 1 July 2011
Results 0.5 ppm
Analyzed By Sally Jones

Sampled By Mark Rose Date: 29 June 2011
Audited By Tina Rogers Date: 1 July 2011

COMMENTS:

Replaced valves in AM. Cleaned lines in PM.

Pump History Report

Mode	Value	Start	Volume Liters	Accum Volume	Duration
-----	-----	-----	-----	-----	-----
Flow Hold		Wed Jun 22 2011 4:14 PM			47 Min
Flow Hold		Wed Jun 22 2011 4:14 PM			47 Min
Flow Hold		Wed Jun 22 2011 4:14 PM			47 Min
Flow	190	Wed Jun 22 2011 5:01 PM	34.20	34.20	3 Hr
Flow Hold		Wed Jun 22 2011 8:01 PM			4 Dy 14 Hr 35 Min
Hibernate					
Flow Hold		Mon Jun 27 2011 4:11 PM			17 Hr 19 Min
Flow Hold		Tue Jun 28 2011 9:30 AM			4 Min

Power User Hints



Warning: The following notes are for users with thorough knowledge of DOS and Windows software. Users must use extreme caution when altering .ini files.

Hibernate and Battery Life Information

The Pocket Pump features automatic powerdown (Sleep) mode after 5 minutes in Hold. In Sleep mode the pump and the display are off, however, the internal circuitry is still operating.

This function allows the internal computer to keep track of time. Although the other electronic circuits within the pump are turned off, the microprocessor draws a significant amount of power from the battery.

If the pump is programmed with a running schedule, the pump will Sleep between the time it is programmed and the time it is due to run. This will maintain the starting time information.

The pump is required to keep track of time, via an internal timer, to preserve the recording of operations in the history. After programs in the Pump Program Scheduler have been completed, the pump will enter Hold mode and the internal timer will retain time for 24 hours. After 24 hours, the timing mechanism will stop to preserve battery life. The timing history up to this point is retained and the pump enters a low power state (Hibernate) to conserve battery life.

9 Oct 7:00 AM Pump Programmed Sleep Mode	9 Oct 9:00 AM Program Running Run Mode	9 Oct 10:00 AM Program Ends Sleep Mode	10 Oct 10:00 AM after 24 hours Hibernate
---	---	---	---

A fully charged and programmed pump will last for approximately 6 days in Sleep mode before the low battery detection will switch it to the Hibernate state. (A program waiting to run will prevent the pump from entering the Hibernate state until the low battery condition forces the pump into Hibernate). Although DataTrac will allow the pump to be programmed up to 21 days in the future, it is advisable to load the program as close as possible to the program start time. It is also important to download the pump history to a PC as soon as possible after sampling.

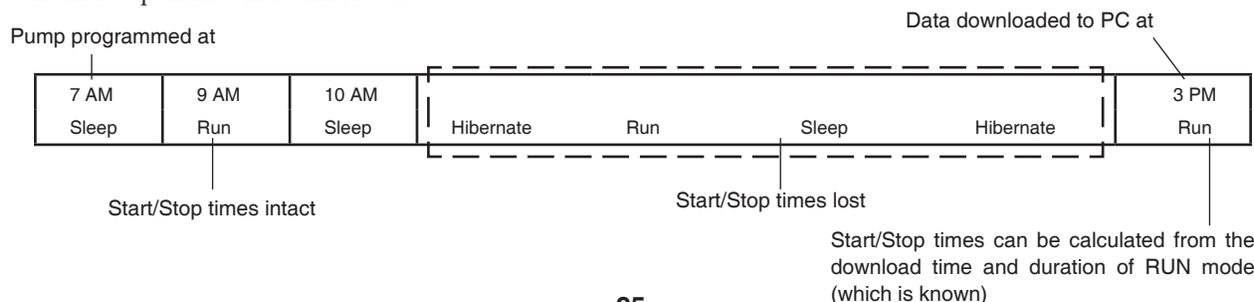
History and Hibernate

The History shows the state of the pump at any instant including Run, Hold, Sleep, Hibernate, Low Battery Hold, and Flow Fault. All these states have a time of day associated with them, so that a correctly timed history may be produced.

When a pump is programmed, a time reference is loaded into the pump from the PC. When a history is read from the pump, the time reference is compared with the current time on the PC to ensure the history timing is consistent.

If a Hibernate state has occurred in the history, the time reference of the pump state before the Hibernate will be determined from the starting time reference and the time reference of the pump state after the Hibernate will be determined from the current PC time at download.

If more than one Hibernate state has occurred, there will be running sequences that are bounded at their start and finish by Hibernate states. These sequences will contain valid timing intervals; but when the PC reads the history, the actual start and stop times will be unknown.



Power User Hints

“.ini” Files



Warning: The following notes are for users with thorough knowledge of DOS and Windows software. Users must use extreme caution when altering .ini files.

An .ini File (C:\Windows\PPump.ini) contains a list of commands that apply to the program sequence. All commands become effective when the program is sent to the pump by clicking the ToPump button (*Figure 12*). The .ini file may be edited using Windows Notepad or a similar editor. Commands are not case sensitive.

The PPump.ini File contains:

```
UserLockOut=N
TempUnits=F
PressureUnits=inches water
ResetVolTime=n
ResetTemps=n
ClearHistory=n
HistorySeparator=9
ScheduleStart=6:45 AM
DefaultDir=
port=2
startups=33
lastused=Oct 20 2010 12:17:45 PM
firstused=Sep 11 2010 9:12:54 AM
```

Definitions

UserLockOut (Y or N) — Y means user can only view pump parameters by pressing the middle button (star). N means user may access all functions, such as changing flow rate and placing pump in Hold.

TempUnits (F or C) — Shows the selected temperature scale (F for Fahrenheit or C for Celsius). Only applicable when running in the enhanced mode

PressureUnits (inches water or mm mercury) — shows the selected pressure units. Only the first letter (i or m) is used, but the word may be spelled out for clarity.

ResetVolTime (Y or N) — Y resets volume and run time to zero.

ResetTemps (Y or N) — Y resets Min Temp, Max Temp, and TWA Temp to zero.

ClearHistory (Y or N) — Y clears all history in the pump's memory.

HistorySeparator (0 to 255) — The ASCII value used to separate columns in the stored history files. This is only needed if history data is to be loaded into another program, i.e. a spreadsheet. The default is 9, which is the Tab character.

ScheduleStart (h:mm AM/PM i.e., 6:45 AM, 11:30 PM) — When a program schedule has been completed, it resides in the PC memory, however, once it has expired, it has an invalid start time associated with it. The next time the SKC Pump Scheduler window is opened, the message “No Program Schedule. Load Expired Schedule In Arbitrary Time Frame?” will appear. If the user responds with a “Yes,” then it will reload the schedule to start the next day at the time specified. The relative start times and stop times will remain consistent with the expired program.

DefaultDir — This can be any legal directory name. This is the default directory which appears in the dialog box whenever saving or loading a file from any window.

port (1 to 10) — The serial port that the pump will use to communicate with the PC. Once the user selects a port that works, the port number will be written automatically.

startups (number) — Counts how many times the program has been run

lastused (date) — The last time DataTrac was run

firstused (date) — The first time DataTrac was run

Transferring History Files into Spreadsheets

The history files (.hst) may be transferred into a spreadsheet or other application. A typical history file is shown below.

```
HISTORY FILE
1000
SN 1788
34975.431632
Min Temp 75.2F
Max Temp 100.4F
TWA Temp 84.4F
9
8
0      141      34992.625694      34992.648611      -1
0      0        34992.588194      34992.625694      -1
8      5        34992.552778      34992.588194      -1
0      0        34992.517361      34992.552778      -1
0      75       34992.501389      34992.517361      -1
0      0        34992.473611      34992.501389      -1
0      180      34992.447917      34992.473611      -1
0      0        34992.379167      34992.447917      -1
```

Following is an explanation of each line of the history file.

Line 1: HISTORY FILE (file type identifier)

Line 2: 1000 (Software revision number)

Line 3: SN 1788 (Serial number of the pump)

Line 4: 34975.431632 (Time and date that the file was stored. *See Decoding Time Fields on page 28*)

Line 5, 6, 7: The Minimum, Maximum, and time-weighted average of the data while the pump was running (Min, Max, and TWA temp are not updated when the pump is in HOLD)

Line 8: 9 (The ASCII value of the character used as the column separator, the default is TAB)

Line 9: 8 (The number of periods in history)

Lines 10 to 17: A breakdown of each history period ordered from most recent to oldest. Each line of the history is decoded as follows:

Column 1: Mode of Pump including the following values

0	Constant Flow mode
8	Constant Pressure mode
16	Flow Fault while in Constant Flow
24	Flow Fault while in Constant Pressure
32	Hibernate (<i>see explanation of hibernate, page 25</i>)
64	Low battery fault

Column 2: Rate of Constant Flow or Constant Pressure value. Whether the value represents Constant Flow or Constant Pressure depends on the value in column 1

Column 3: Start Date/Time. Description of decoding method explained in decoding time fields below

Column 4: Stop Date/Time. Description of decoding method explained in decoding time fields below

Column 5: Valid (-1) or Invalid (0) Time Period. Under certain conditions (such as Hibernate or low battery fault) the pump will lose its ability to accurately tell time. When this happens, Column 5 will be flagged with a zero. Even though the Start Time and Stop Time cannot be relied upon, the amount of time the pump spent running in Constant Flow can still be determined by subtracting the Start Time from the Stop Time.

Power User Hints

Decoding Time Fields

Time fields are based on a simple mathematical relationship. The number represents the time that has elapsed since midnight December 30, 1899, in days. For example:

<i>Time Value</i>	<i>Represents</i>	
0.25	Dec 30, 1899	6:00 AM
0.75	Dec 30, 1899	6:00 PM
1.5	Dec 31, 1899	Noon
365.25	Dec 30, 1900	6:00 AM
35065.625	Jan 1, 1996	3:00 PM

The integer portion of the number represents the number of days that have elapsed since December 30, 1899. The fractional portion is the fractional part of a day (0 is midnight, 0.5 is noon and 0.9999884 is one second before midnight).

This is a time format used in several applications. For example, if these numbers are imported into Excel for Windows they can be directly converted into time and date with the sequence:

Format, Cell, Modify, Number, Date, m/d/yy h:mm. (**Note:** The column width will have to be adjusted to display the Day and Date correctly.)

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