DL75

FLOWINSPECTOR™

Software Guide for the DL75 Data Logger System

Version 1.7

SeaMetrics

DL75

FLOWINSPECTOR™

Software Guide for the DL75 Data Logger System

FlowInspector™
Laptop Software
Version 1.7

ARCHIVED (2/01/08)

SeaMetrics

June, 2004

COPYRIGHT AND TRADEMARK INFORMATION

TABLE OF CONTENTS

The FlowInspector Version 1.7 software is designed as part of the SeaMetrics DL75 Datalogger system. This software is used to set up the Datalogger and to download data files from it. It can then be used to view, graph, chart, and print the data in several formats.

FlowInspector Version 1.7 software allows you to do all of the following:

■ Set up the Datalogger by selecting measurement intervals, meter factor (K-factor), and stop/rollover when full

■ Name the logger and identify the file

■ Download data from the logger

■ Choose flow time and volume units

■ Display flow data in graph format

■ Display and manipulate previously-collected flow data files stored on the hard drive

■ Zoom to graph smaller time segments with greater clarity

■ Show maximum, minimum, and average flow rates for any selected time period

■ Show daily flow totals in tabular form

■ Export data in text file (.txt) and spreadsheet (.xls) formats

■ Print data reports

HARDWARE REQUIREMENTS

FLOWINSPECTOR REQUIRES A PC-COMPATIBLE COMPUTER
WITH:

- Windows 98, NT, 2000, or XP

- CD-ROM drive

- 800 x 600 or better screen resolution (recommended)

- Serial connection port or USB/serial adapter

- SeaMetrics DC3 data cable

To install FlowInspector:

1. Close all other programs running on your computer.

2. Put the CD-ROM in your drive

3. If your computer is not set for autoloading, open the CD drive and run setup.exe

4. When FlowInspector is finished loading, click Next.

5. Fill in the User Information. Use the serial number from the CD case. Click Next.

6. Follow the directions to accept or to change the installation directory location.

7. Select the Setup Type, which is normally Typical.

8. Follow the instructions to select the Program Folder.

9. Click OK when message regarding Palm utilities is displayed (not needed for v.1.7).

10. Click Finish to complete.

MAIN SCREEN LAYOUT

To open FlowInspector, double click on the icon on your computer's desktop or in the programs listed in your Start menu. When it loads, you will see a graphic screen like the one shown below.

• **Menu bar**
  (File, Show, View, Help)

• **Tool bar**
  (commonly-used functions)

• **Time bar**
  (for setting the period for analysis)

• **Grid**
  (displays graphic information in selected time period)

• **Status bar**
  (shows current status)
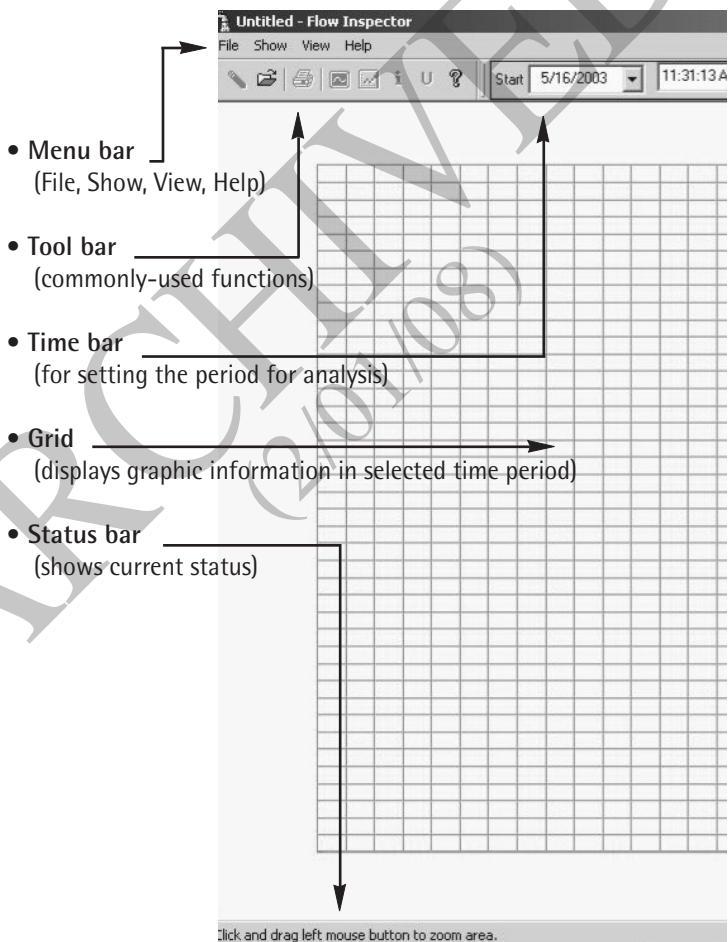
LOGGER SETUP

> **IMPORTANT:** If the Data Logger has been previously in use, you must download any data you wish to save before proceeding to change set-up parameters. When you click on the Start New Session button at the end of the logger setup procedures described below, all previously stored data will be erased.

First connect the data cable between the COM1 serial port of the computer and the logger, using SeaMetrics cable DC3. The serial connector end goes to the computer, and the three-pin end goes into the matching black socket on the DL75. Remove the protective cover to insert the connector. (Note: A USB/serial adapter can be used with the DC3 cable when no serial port is available on your computer.)

Once the cable is connected, click on File to bring up the FlowInspector main screen. Then click on Setup Datalogger to bring up the datalogger setup box shown below.

Start Date / Start Time: These are the date and time that the logger was initialized, based on the real time clock of the computer used. At the end of the set up procedure below, these fields will be updated to reflect current date & time.

K-factor: This is the number of pulses per gallon that the meter produces. Depending on which SeaMetrics flow meter you are using, the K-factor can be found either on the meter fitting, in the K-factor table in the instruction manual, or using the K-factor calculator on the SeaMetrics website (www.seametrics.com). Enter the K-factor into the Data Logger set-up screen. [**NOTE:** If you are calculating your own K-factor, be sure to use pulses per gallon, as this is the standard for all meters. It is still possible to process the data in other units on the computer.]

Datalogger Number: This is your numerical identifier for the Datalogger. Assign any number you choose, up to six digits.

ID: This is a name or installation location you choose to help in identification at a later time (for instance, "Pump Station 3").

Cycle: Choose the frequency of recording (in seconds), from 15 to 240. Shorter times provide a smoother flow curve but shorten the number of days until the logger memory is full.

See the table below for the maximum number of days that the logger can hold at each cycle time setting.

Data in Storage (in Days)	Cycle Time (in Seconds)
11	15
22	30
45	60
90	120
180	240

If there is a flow peak in the middle of a cycle time, its maximum flow will not be recorded as such, since it will be averaged into the reading for the period. Note however that the total will be accurate for any cycle time, since every input pulse is included in the count.

Stop when Full: Check this box if you wish the DL75 to stop reading when its memory is full. Do not check the box if you wish the logger to over-write the oldest data when its memory becomes full. (In the latter case, the running total from the beginning of the session will still remain correct even if data is overwritten.)

Start New Session: Clicking this button will save your chosen settings and end logger setup. **CAUTION! Clicking this button will erase all previous data in the logger, reset the totalizer, and begin an entirely new session.** Be sure you have downloaded any stored data you wish to save.

**OK:** Click OK to exit <u>without</u> saving changes.

DOWNLOADING FROM THE LOGGER

Connect the data cable from the computer to the logger. Bring up the FlowInspector main screen and click on File, then Download from Datalogger. When the data has been transferred, it will immediately show as a flow rate graph on the grid pattern.

Choosing Units

From the main screen, click on Show, then Units. The box below will come up. The top row indicates volume units (left to right: milliliters, liters, gallons, imperial gallons, cubic feet, cubic meters, million gallons, and acre feet. The bottom row indicates time units (left to right: seconds, minutes, hours, days).
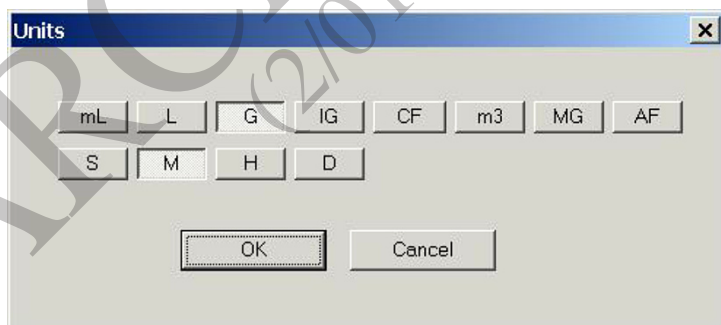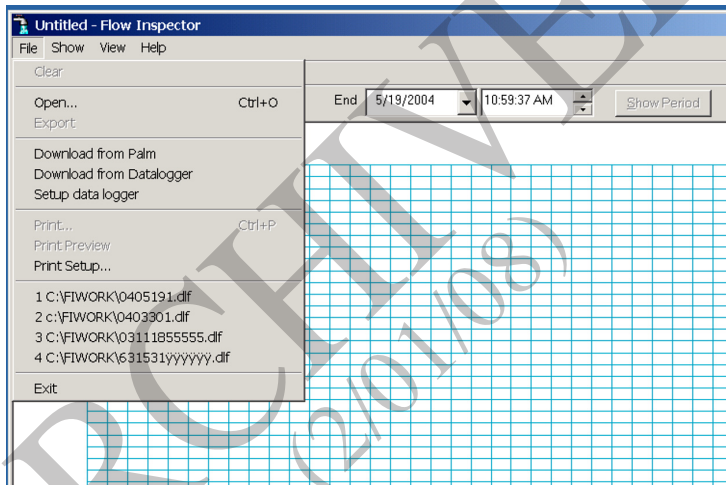

Choose the desired volume unit, then the desired time unit and click OK. These choices can be changed at any time with the same logger data. All graphs and tables will display in the selected units.

SELECTING THE FILE TO VIEW

From the main screen, click on File. Next click on Open, and select file. (File names= year/month/day/logger number)

VIEWING THE ENTIRE FILE

The file will appear as a graph on the main page. This is a graph of the entire period that the file includes, scaled to fit the main page grid. If the time period is long, the graph will have a spiky appearance that makes it difficult to use without scaling down to a shorter time period. The next section explains how to choose any specific portion of the graph to study more closely.
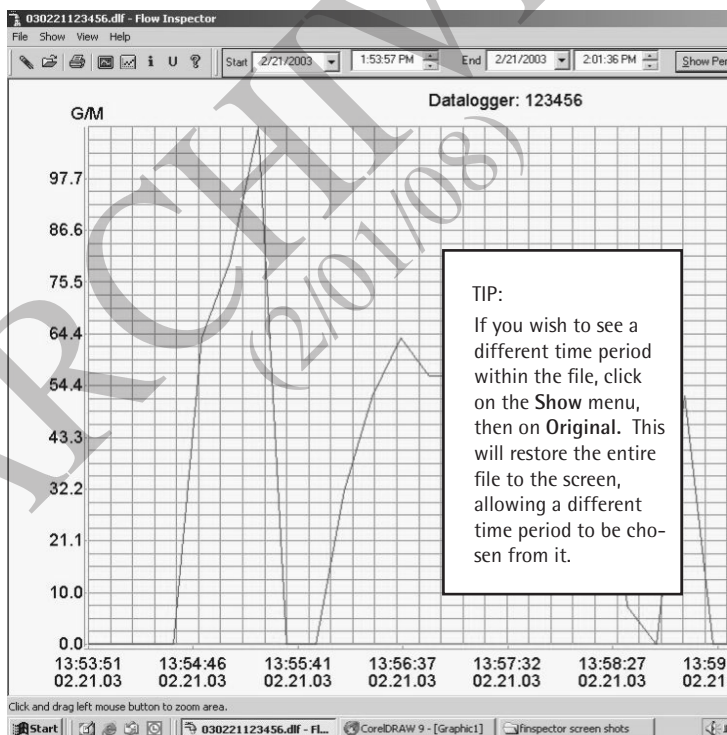
SELECTING A TIME PERIOD

Select by Zoom

The simplest and most intuitve way to select a time period is by using the zoom feature. Pick the approximate start date and time desired, then click at that point on the line at the very bottom of the main grid page. When you do this, a magnifying glass icon should appear. If you hold down the left mouse key and drag to the right, a blue line will appear. Drag the end of this line to your desired end point and release. The time period selected will match the blue line, and it will expand to fill the entire grid page. You can repeat this process to zoom in to shorter and shorter time periods. [NOTE: To restore the full time period, click on the Show menu, then Original.]
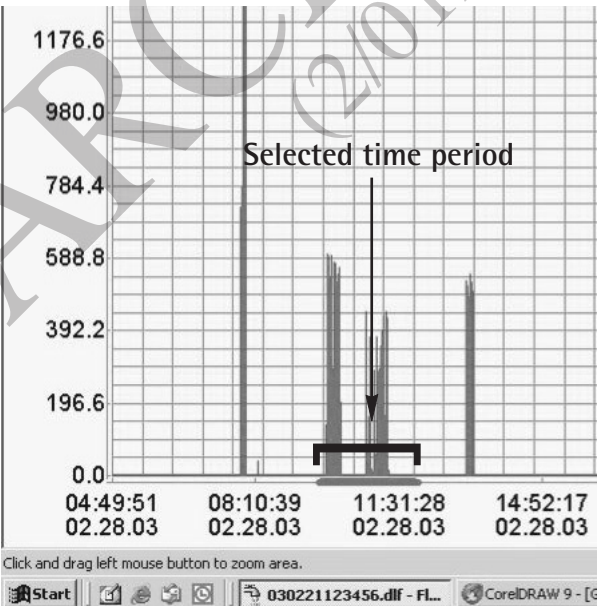
Select by Date Entry

This is the preferred method if the desired period is known exactly.
Find the time bar at the top of the main grid. (See the "Main Screen
Layout" illustraton on page 4 if you have trouble finding it). Enter
the Start date and time and the End date and time in the appro-
priate boxes. Then click on the **Show Period** button. The selected
period will immediately expand to fill the main page grid.

More Information

To see more detailed numerical information on the selected period
than is shown on the graph, click **Show** and **More Info.** This brings
up a box (see diagram below) that has maximum, minimum,
average, and total for the period, as well as a table of the rate
values of each reading in the period.
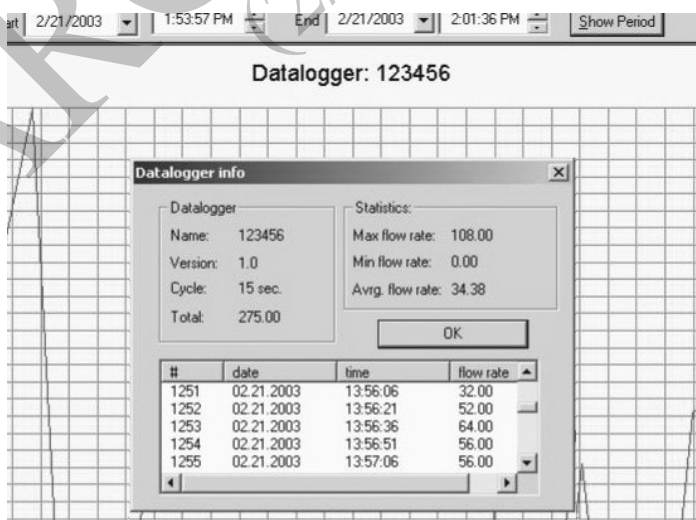
VIEWING THE SELECTED DATA

To see daily totals for the selected period, click **Show** and then **Day Report.** This brings up a box that shows daily totals and maximum daily flow rate in table format. You may adjust the "From" and "To" dates to view only the records you are interested in.
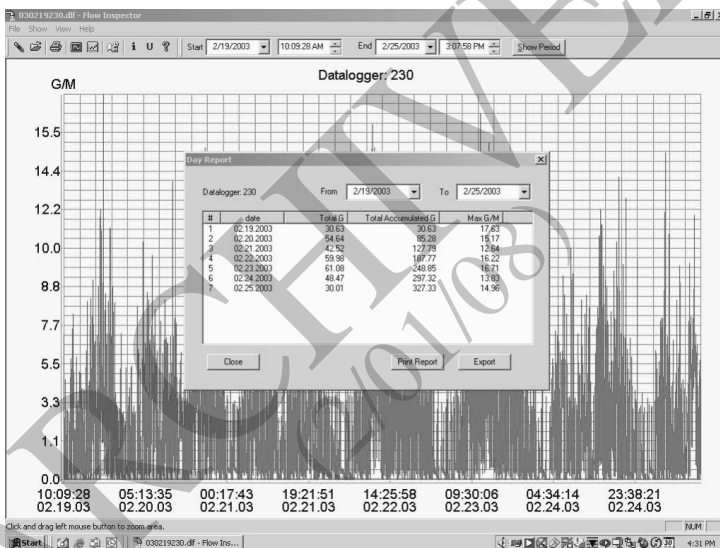

This report can be easily printed by clicking on the Print Report button on the box. [NOTE: If text prints off the page, check your printer settings.]

EXPORTING DATA TO SPREADSHEET

Sometimes it is desirable to create a spreadsheet using the raw
flow readings. this allows a wide variety of custom manipulation of
the data. You may export the data in your choice of two formats:
Excel spreadsheet or comma delimited text files (that can then be
converted to an Excel spreadsheet). Exporting to Excel can take up
to ten minutes or more as large amounts of data are organized into
spreadsheet format. Thus, for those familiar with importing comma
delimited files into Excel, this method is preferable because of its
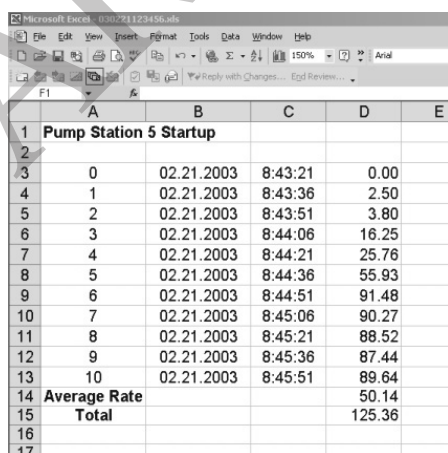significantly faster rate of transfer.

Begin either process by clicking on Export in the Export Day Report
screen. the following screen will appear:
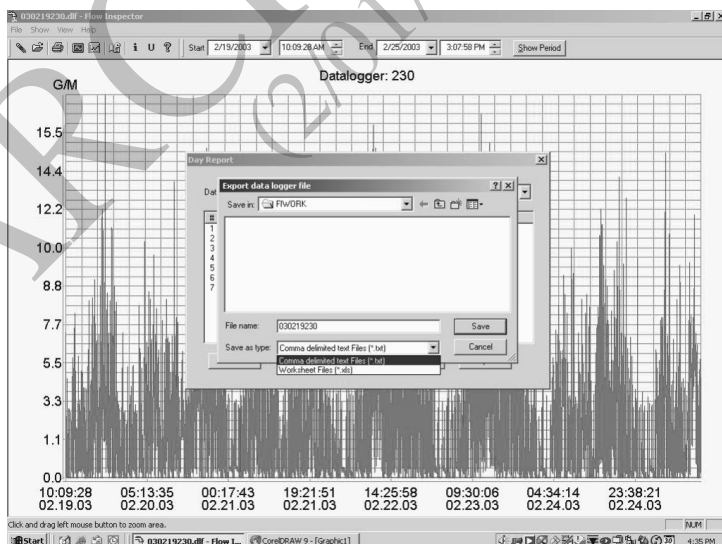
For Comma Delimited Export: From the Day Report screen, click on Export. Select the Save in location, then under Save as type, select Comma delimited text files (*.txt). Click Save. The experienced Excel user can then import the resulting file into Excel.

For Excel Spreadsheet Export: From the Day Report screen, click on Export. Select the Save in location, then under Save as type, select the Worksheet Files (*.xls). Click Save. The Save process may take several minutes, depending on the size of your data file. Once complete, you may go to the Save location and open the spreadsheet in Excel.

The Excel spreadsheet will automatically format in columns. All of the normal spreadsheet functions can be used on this data, such as custom averaging or oddtime totalization (average flow rate and multiply by the time span). The illustration below shows a small spreadsheet created from exported data.
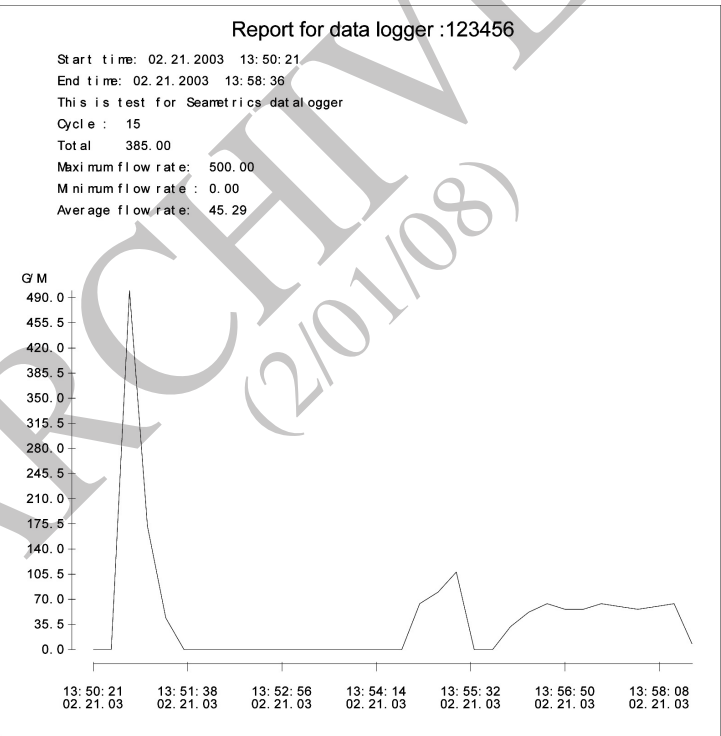
	A	B	C	D	E
1	Pump Station 5 Startup				
2					
3	0	02.21.2003	8:43:21	0.00	
4	1	02.21.2003	8:43:36	2.50	
5	2	02.21.2003	8:43:51	3.80	
6	3	02.21.2003	8:44:06	16.25	
7	4	02.21.2003	8:44:21	25.76	
8	5	02.21.2003	8:44:36	55.93	
9	6	02.21.2003	8:44:51	91.48	
10	7	02.21.2003	8:45:06	90.27	
11	8	02.21.2003	8:45:21	88.52	
12	9	02.21.2003	8:45:36	87.44	
13	10	02.21.2003	8:45:51	89.64	
14	Average Rate			50.14	
15	Total			125.36	
16					
17					

PRINTING THE DATA

To print out a flow graph, click **File** and then **Print** or **Print Preview,** if you wish to see what the graph will look like before printing it. In addition to the graph, FlowInspector prints out the start and end of the time period, the logger designation, the cycle length, total flow, maximum, minimum, and average (see below).

Report for data logger :123456

```
Start time: 02.21.2003  13:50:21
End time: 02.21.2003  13:58:36
This is test for Seametrics datalogger
Cycle :   15
Total     385.00
Maximum flow rate:   500.00
Minimum flow rate :  0.00
Average flow rate:   45.29
```

G/M

Value
490.0
455.5
420.0
385.5
350.0
315.5
280.0
245.5
210.0
175.5
140.0
105.5
70.0
35.5
0.0

| 13:50:21 | 13:51:38 | 13:52:56 | 13:54:14 | 13:55:32 | 13:56:50 | 13:58:08 |
| 02.21.03 | 02.21.03 | 02.21.03 | 02.21.03 | 02.21.03 | 02.21.03 | 02.21.03 |

ARCHIVED
(2/01/08)

SeaMetrics