

VALEPORT LIMITED

DataLog Express

Operation Manual

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Valeport Limited,
St Peters Quay,
Totnes,
Devon, TQ9 5EW,
UK

Tel: +44 (0)1803 869292
Fax: +44 (0)1803 869293
e-mail: sales@valeport.co.uk
Web: www.valeport.co.uk

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1 INTRODUCTION

This manual covers the operation of Valeport's DataLog Express software, supplied with the following Valeport products:

- miniSVP
- miniCTD
- miniTIDE
- MIDAS SVP
- Monitor SVP
- MIDAS CTD
- Monitor CTD
- MIDAS SVX2
- MIDAS WLR
- MIDAS ECM (Basic unit with optional C,T,P or SV sensors only)

The software is also backwards compatible with older products from the same family:

- Model 650 Mk2 SVP
- Model 606 CTD
- Model SVXtra Combined SVP/CTD
- MIDAS SVX Combined SVP/CTD
- Model 808_400 Current Meter (Basic unit with optional C,T,P or SV sensors only)

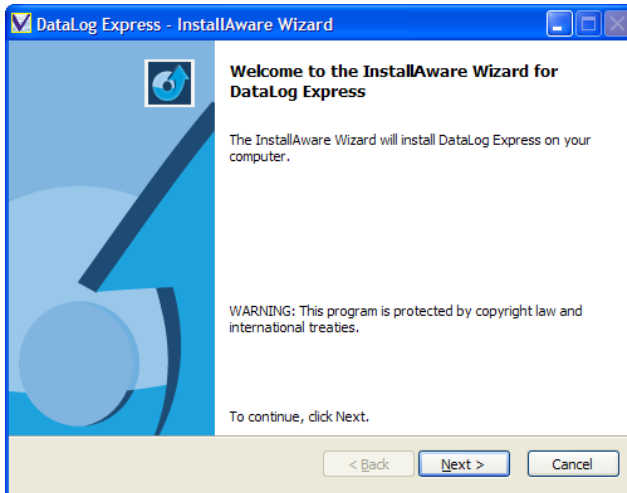
The software allows setup of the instrument sampling regime, extraction of recorded data, and display of both real time and recorded data in a selection of formats.

The MIDAS and Monitor instruments listed above belong to Valeport's "400 series" range of products, which have a wide variety of sampling regimes and allow the user to adjust data formats and sensor calibration functions. However, the majority of users of these instruments (and all users of the "mini" range) will not require these features; DataLog Express has been written with this in mind, providing a simple interface with such complex features hidden from view. Expert users who wish to explore the functionality of their product in full, or users of MIDAS CTD+, complex MIDAS ECM systems or MIDAS 400 loggers, should instead use the DataLog 400 program available from our website.

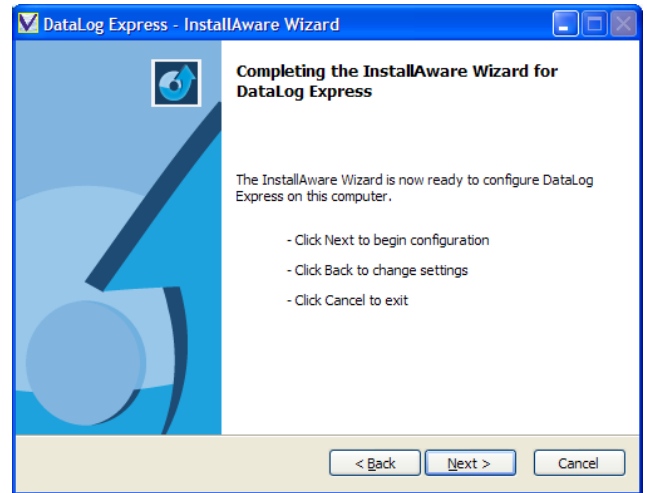
DataLog Express is supplied on a single CDROM with the instrument. Whilst all new instruments are shipped with the latest version of this software, shipping / warehousing delays, or sourcing the instrument through a 3rd party, may result in a newer edition of the software being available. It is worth checking the support pages of our website to confirm that you have the latest version of the software before using it.

2 INSTALLATION

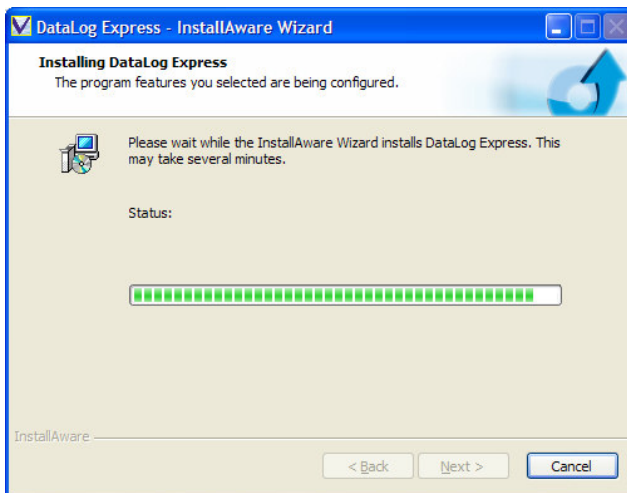
To install DataLog Express, run “setup.exe” from the installation CDROM, or from the “DataLog_Express_install” directory if you have downloaded the software. The installation wizard will appear as below:



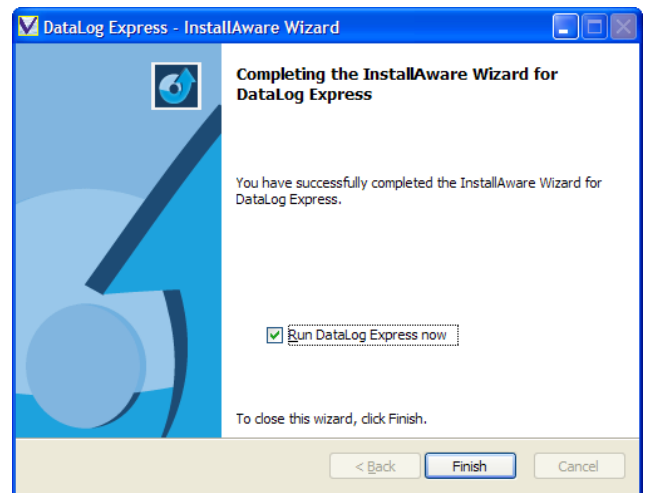
Click “Next”.




Click “Next” again.



Wait while the software installs.



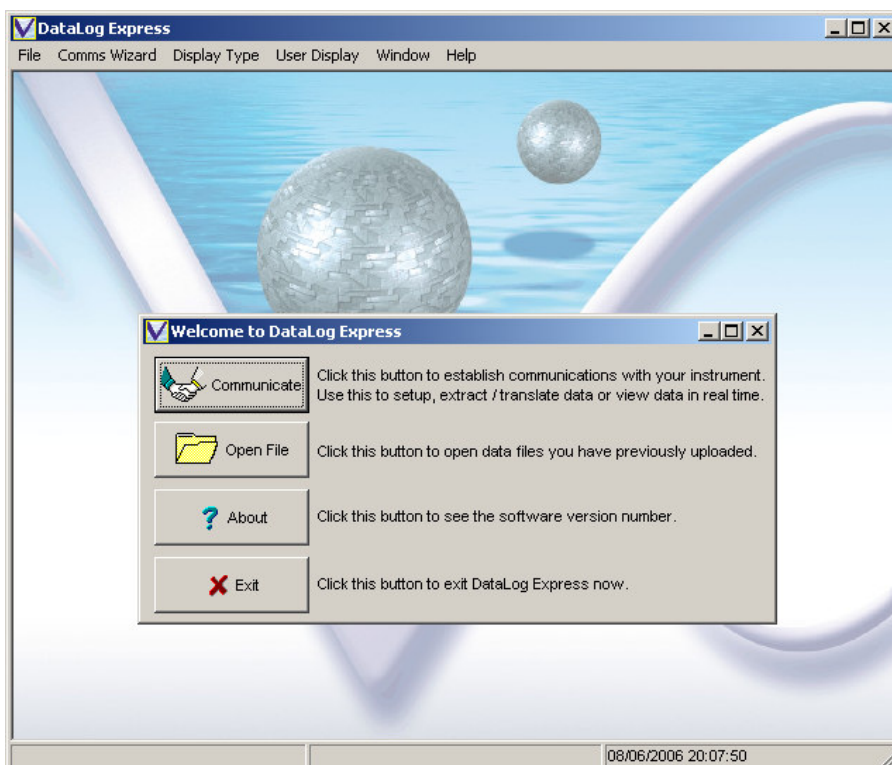
Click Finish to complete the installation.
No PC restart is necessary.

Once installed, DataLog Express may be run by clicking the  icon on your desktop. Note that a second utility program will also be installed with a similar icon, called "Sea Water Calculations". This program allows the user to verify the calculation of Salinity, Density, Depth and Sound Speed values using industry standard equations, and is described in full in Section 9 of this manual.

3 CONNECTING TO THE INSTRUMENT

When you run DataLog Express, or click "Comms Wizard", on the menu bar, this screen will appear:

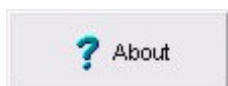
There are 4 buttons available, the function of each is described on screen and below.



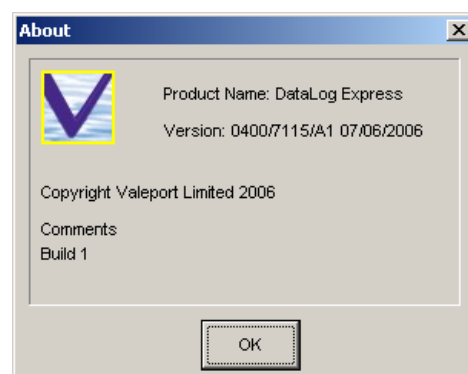
The Communicate button allows you to talk to the instrument for the purposes of setting it up or extracting recorded data files to PC. These functions are described in detail in Sections 3, 4 & 5.



The Open File button allows you to open data that you have previously uploaded from the instrument; this data may then be viewed using a variety of display functions, as described in Section 7.



The About button displays the current version number of the software. Valeport support staff may ask you for this number if you have a technical problem.



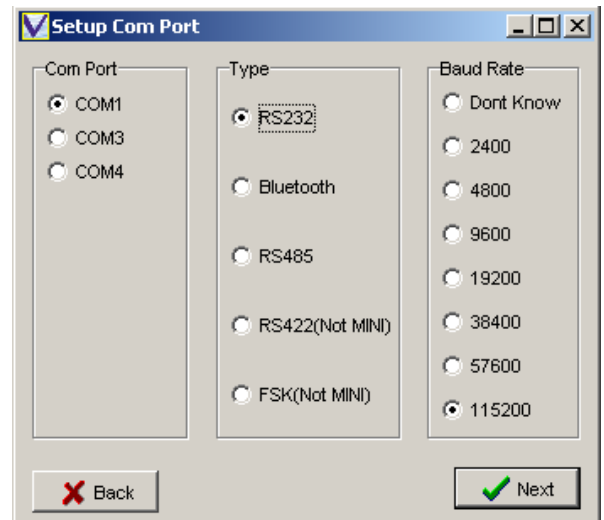
Exit closes down the DataLog Express program.

3.1 ESTABLISHING COMMUNICATIONS

Click the Communicate button on the Welcome screen to begin the process of connecting to the instrument. This screen will be shown:

The **Com Port** box on the left will list all the Com Ports fitted to your PC. Choose the port that you wish to use to communicate with the instrument.

The **Type** box in the centre of the screen lists the available communications options:



RS232 This standard format is always available, and allows communications direct with PC. Use the standard 3m Y lead between instrument and PC for this method. The vast majority of applications will use this method - unless you have a specific adapter for one of the other modes, use RS232.

Bluetooth Valeport offers a Bluetooth communications adapter allowing wireless communications with the PC. *Defaults to 57600 baud.*

RS485 Allows communications over long cable lengths (up to 1000m minimum). It requires a special adapter and additionally you must set the instrument to operate in this mode. The procedure for this is to FIRST use the Y lead only to connect the instrument to the PC. Select RS485 in the Type box, and click Next. The software will communicate with the instrument, and will then set it to RS485 mode. When communications have been established, simply exchange the Y lead for the RS485 adapter, and continue as normal.

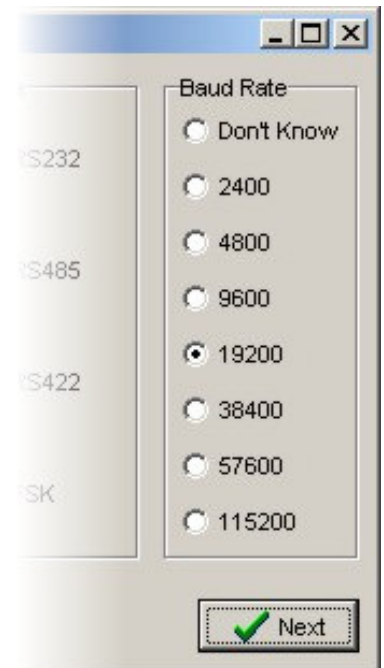
RS422 Like RS485, this is a robust, long cable method, and will operate over cables up to 1500m in length. It also requires a special adapter; follow the instructions given above for RS485 mode, but select RS422 instead,

FSK This is a 2-wire communications method, available as an option on MIDAS units only. It will transmit data from and power to the instrument over cable lengths up to 6km (depending on cable specification), but requires an additional circuit to be fitted to the MIDAS instrument, as well as an adapter at the top end. Check this box only if you have FSK fitted (*38400 baud only*).

Note that RS422 and FSK communications are not available for the "mini" series.

Baud rate is the speed at which the PC and the instrument communicate. Instruments will always leave the factory set to 19200 baud, which works reliably with RS232 over cable lengths up to 50m. A higher rate may be appropriate if uploading large data files over the 3m Y lead, or a lower rate if you are using RS232 communications over longer cables (200m max). See Section 3.2 for details on how to change the baud rate.

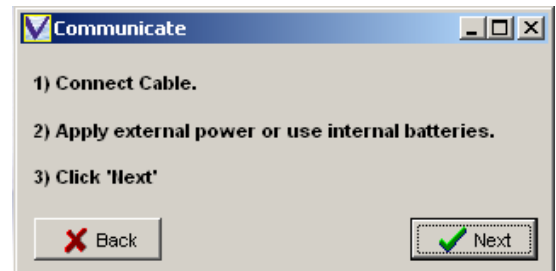
If you do not know the baud rate of your instrument, or communications cannot be established at the baud rate you thought the instrument was set to, select "Don't Know", and DataLog Express will find the current baud rate of the instrument.



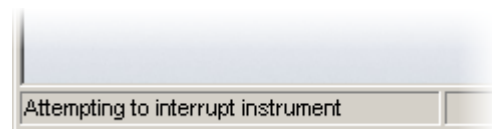
Note that if you using FSK or Bluetooth communications adapters, the baud rate will be fixed to a default value (Bluetooth 57600, FSK 38400).

When you have chosen the correct Comm Port, Type and Baud Rate, click Next. The following screen will appear.

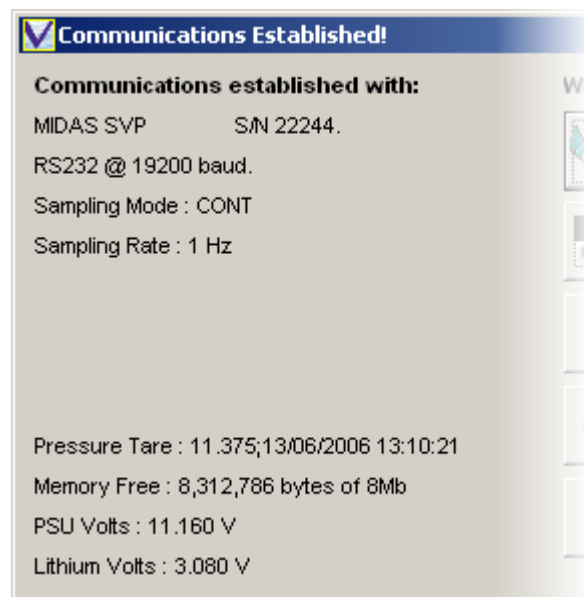
Follow the instructions, and Click Next.



The software will indicate what it is doing in the bottom left hand corner of the screen:



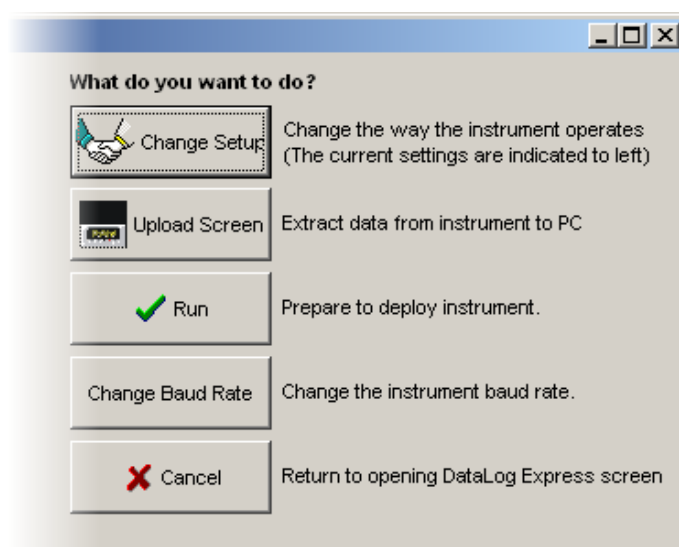
After the "Attempting to interrupt instrument" message (illustrated on previous page), the software will send a series of commands and queries to the instrument to establish what type of device it is, what its current settings are, and what data it holds in memory. When all the required information has been collected, a screen will be displayed summarising the instrument status:



In the example shown, the device is a MIDAS SVP, Serial Number 22244. Communications have been established using RS232 at a baud rate of 19200. The sampling setup is given (refer to Section 3.3.1), together with the value and date of the last pressure tare (Section 3.3.8), the amount of empty memory, and the status of both the power source (this refers to the battery pack if running on batteries, or the external power supply if not) and the backup Lithium battery (400 series instrument only, not "mini" range).

During the interrogation the software may encounter an unexpected setting or value for a particular parameter. The unexpected value MAY be indicative of an underlying problem, and a warning will be displayed. An example may be that the instrument date/time is unacceptably different from the PC date/time. This MAY be caused by a flat backup battery. Although it may be possible to correct the symptom of the problem (e.g. by resetting the clock), there may be other consequences that prevent the instrument from running properly. It is advisable to take note of the error, and contact Valeport for further advice.

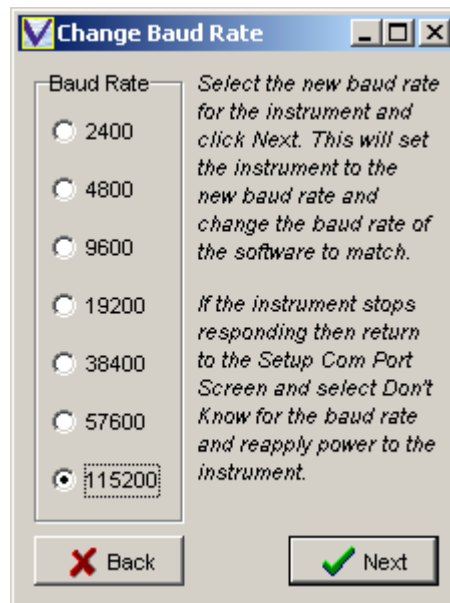
Having established communications, you are presented with 5 options:



- | | |
|------------------|--|
| Change Setup | Click this button to change the way that the instrument samples data, and to adjust basic parameters such as the date and time. If you are not sure how the device has been setup, you should use this function to check it before deployment. See Section 3.3 for details of the Setup procedure. |
| Upload Screen | If you have just deployed the device and wish to recover the data it has logged, use the Upload Screen button. This also allows you to erase the memory. See Section 5 for further details. |
| Run | This button will set the device into Run mode using the current settings. It will begin to log and output data according to the sampling scenario you have set. See Section 4 for further details. |
| Change Baud Rate | Having established communications at a particular baud rate, you may wish to change this to suit your particular requirements. For example, a higher baud rate may be suitable for extracting large amounts of data, or a lower rate for using longer cable lengths. See Section 3.2. |
| Cancel | This button will close communications and return you to the opening screen. |

3.2 CHANGING BAUD RATE

The following screen will appear when you click this button. Simply select the new required baud rate, and Click OK. The software will first set the instrument to this rate, and will then adjust the PC Communications Port to the same rate, and try to re-establish communications.

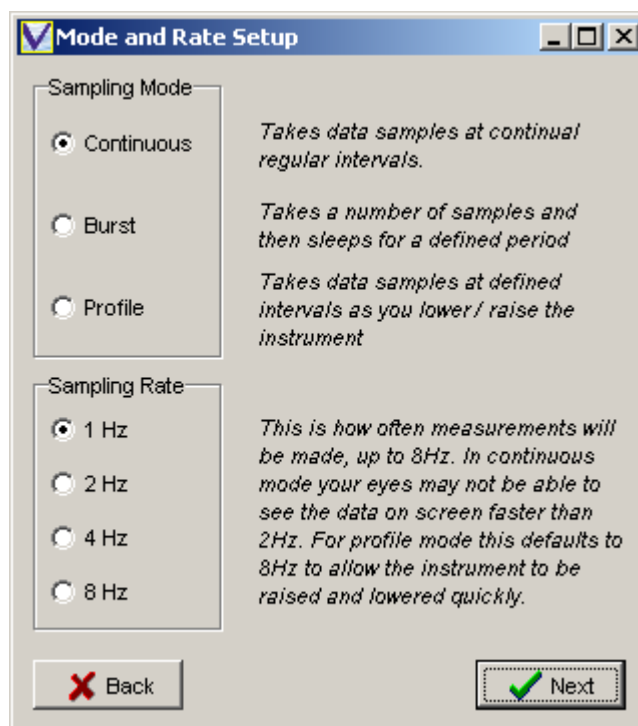


Note that if you select an inappropriately high rate (e.g. 115200 with a cable longer than 3m), it may not be possible to re-establish communications. If this happens, please remove power from the instrument (or disconnect the cable from the instrument), and return to the beginning of the program. Select "Don't Know" for the baud rate, and then follow the instructions. During the first 15 seconds after switch-on, the instrument will perform an autobaud function that allows it to communicate with the PC at the fastest rate it can reliably achieve.

3.3 CHANGING SETUP

3.3.1 SAMPLING MODE & RATE

DataLog Express allows you to set the instrument to work in one of three operating modes, and at a choice of sampling rates.



3.3.1.1 SAMPLING MODE

Continuous Mode The instrument will simply take readings at regular intervals until it is stopped. It is ideal for ship-borne applications where a regular data output is required – an example may be where it is mounted close to a multi-beam transducer and the data is used to allow continual correction for beam angle.

miniTIDE runs at maximum 2Hz

Burst Mode The instrument will take a set of readings, then “sleep” for a defined period of time before waking up and repeating the process. This type of use is ideal for longer term deployments in a fixed position, since it conserves battery and memory usage.

Not available on miniSVP or miniCTD

Profile Mode This mode sets the instrument to take readings at fixed depth intervals as it is lowered and raised through the water column.

Not available on miniTIDE

3.3.1.2 SAMPLING RATE

The instrument will produce a set of readings a number of times per second, from once to eight times. There are a few important points to note about the Sampling Rate:

- 1) The sampling is synchronised, so data is taken from all fitted sensors at exactly the same instant. There is no variation in data quality between 1Hz and 8Hz sampling, just in the volume of data.
- 2) Running in continuous mode, there is a limit to how fast your eyes can cope with data updating on screen – it may not always be a good idea to run at 8Hz.
- 3) The sampling rate doesn't affect the power consumption, so if you are using burst mode, do not worry about running at 8Hz rather than 1Hz. The important thing is how long the instrument is on for, not how fast it is sampling.
- 4) Profile Mode always defaults to 8Hz – this is how often it will read the pressure sensor data to check whether it has reached the next depth at which take a measurement. In free-fall, the probe will travel at about 2m/s, so at 8Hz it should be able to get profile readings at around 0.25m intervals. Bear this in mind when setting up the Profile.
- 5) miniTIDE will only sample at 1 or 2 Hz in Continuous mode

Once the Sampling Mode and Rate have been set, click “Next”. The sequence of subsequent screens depends on the sample mode selected:

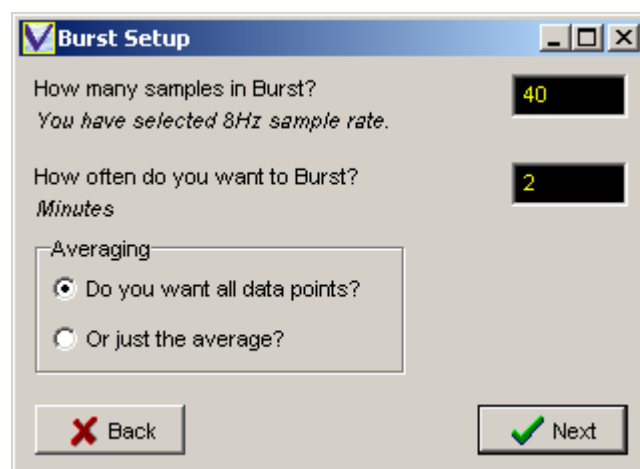
Continuous	<i>Set Time, Set Units, Site Information, PressureTare</i>
Burst	<i>Set Burst Pattern, Set Time, Set Units, Site Information, PressureTare</i>
Profile	<i>Set Time, Set Units, Set Profile Pattern, Site Information, PressureTare</i>

3.3.2 BURST SETUP

3.3.2.1 MIDAS & MONITOR INSTRUMENTS

The basic pattern of Burst Sampling is to measure a number of data points, then sleep for a while to conserve power, then wake up and repeat the cycle.

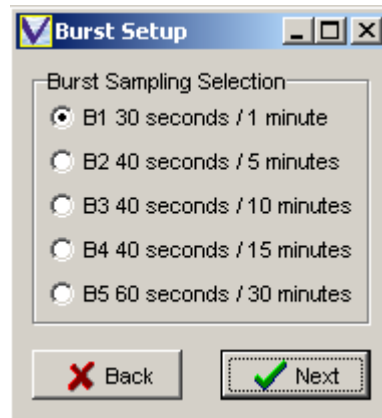
There are 4 values to be set for this mode, which together define this sequence.



- 1) How fast the instrument samples. This has already been set on the previous page, and in the example above is 8Hz (i.e. 8 sets of data per second). If you wish to change this, click “Back” to return to the previous screen, and select the required rate.
- 2) How many samples (lines of data) you want the instrument to measure in its Burst. In the example, 40 lines of data has been entered. Running at 8Hz, this will mean sampling data for 5 seconds.
- 3) How long you want between the start of each Burst. In this example, 2 minutes has been set for this value. After the 5 seconds of sampling, the instrument will therefore sleep for a further 1 minute 55 seconds, before waking up and repeating the pattern. Data would therefore be recorded at 2 minute intervals.
- 4) Data Averaging. There are two options here – the instrument can be set to record (and output) all the measured data points as they are taken (i.e. 40 lines of data over a 5 second period), or the instrument can take an average value of the readings and just record that. This method obviously greatly reduces the memory usage of the instrument. Note that if the Average value is recorded, then the Standard Deviation of the measurements is also recorded, which may be used as indicator of data quality.

3.3.2.2 MINITIDE

The basic pattern of Burst Sampling is to measure a number of data points, then sleep for a while to conserve power, then wake up and repeat the cycle. The miniTIDE features 5 pre-programmed Burst patterns, as indicated:



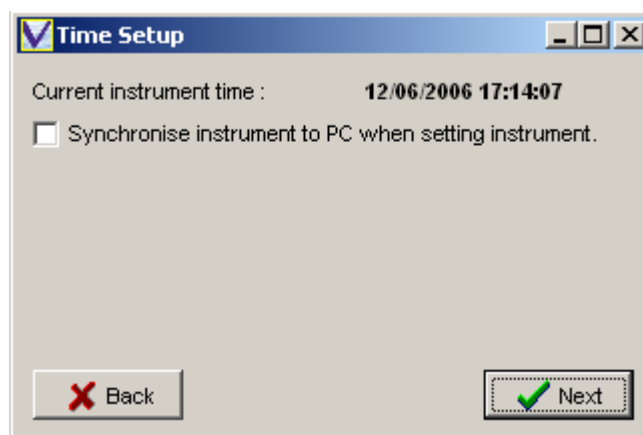
For example, pattern B4 indicates that the instrument will sample data for 40 seconds, then enter a sleep mode. This pattern is repeated every 15 minutes, so the sleep period will last for 14 minutes 20 seconds. At the end of each sample period, the data will be averaged and logged / output.

Note that although the miniTIDE is fitted with a sufficiently large memory that it is unlikely it will ever be filled, the choice of Burst pattern will significantly affect the possible length of deployment by affecting the battery life. Please refer to the separate Operating Manual for the miniTIDE probe for the estimated battery life in each mode.

Select the desired sampling regime, and click Next.

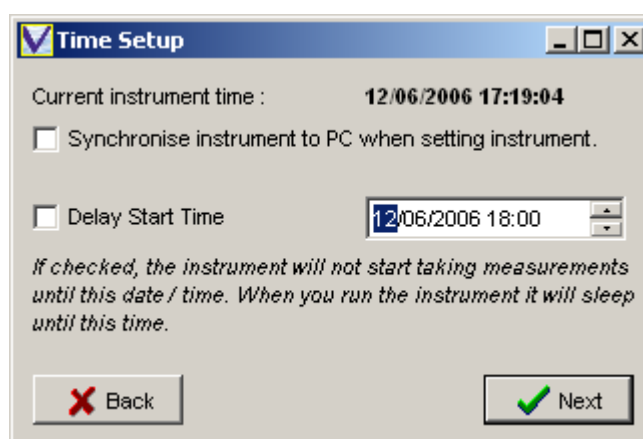
3.3.3 TIME SETUP (STANDARD)

Once you have set up your sampling regime, you will be asked to set the instrument time. The current instrument time is indicated – simply check the box to update this time to match the time on your PC. Note that this update does not happen immediately, but during the final instrument setting process.



3.3.4 TIME SETUP (BURST MODE, MIDAS & MONITOR RANGE)

Once you have set up your sampling regime, you will be asked to set the instrument time. The current instrument time is indicated – simply check the box to update this time to match the time on your PC. Note that this update does not happen immediately, but during the final instrument setting process.



Burst Mode on the MIDAS and Monitor range of instruments also features a “Delay Start” feature, where the instrument may be set to begin sampling at a specified point in the future, usually after it has been deployed. This saves battery and memory being wasted while the instrument is transported to and deployed at the monitoring location. To use the Delay Start function, check the box, and set the required start time. Do this by highlighting each value in the date/time box, and either typing a new value or using the up/down buttons to set the required value.

3.3.5 UNITS SETUP

The data from the various sensors fitted to Valeport instruments is normally displayed in SI units, or a convenient multiple thereof. However, the user may prefer to see Imperial data rather than the default Metric data, so the option is given here. The parameters affected (if fitted) are given in the table below.



Parameter	Metric	Imperial
<i>Speed of Sound</i>	m/s	ft/s
<i>Current Speed</i>	m/s	ft/s
<i>Temperature</i>	°C	°F

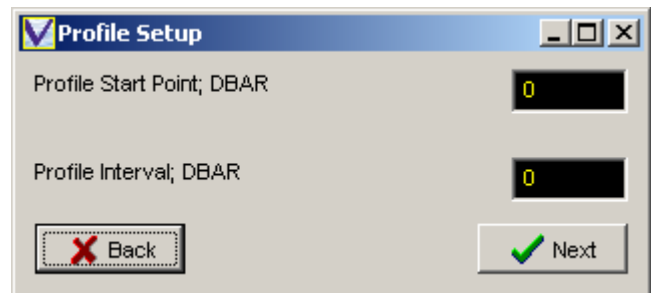
Note that by default, data from the pressure sensor will be given in dBar (deciBar), regardless of whether Metric or Imperial Units are preferred. However, a conversion from dBar to metres or feet as appropriate may be performed by checking the “Apply to pressure?” box. This conversion is done using the standard UNESCO Pressure Depth Relationship, and assumes that the deployment is in Standard Seawater.

It is mathematically possible to perform a Pressure / Depth Conversion using Density measurements, but this is beyond the processing capability of these devices. If this capability is required, we suggesting using Valeport’s MIDAS BathyPack instrument instead, and its associated software BathyLog.

3.3.6 PROFILE SETUP

3.3.6.1 (MIDAS & MONITOR RANGE)

There are two values that must be set to define a Profile. The first is the depth at which you wish to make the first measurement, and the second is the distance between measurements. There are a few points to note:



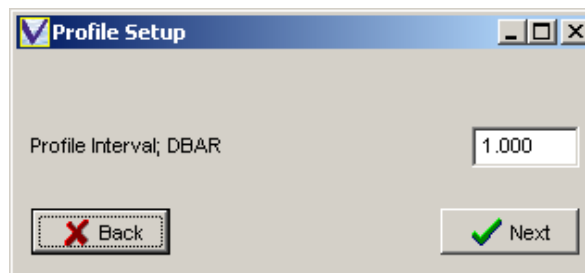
- 1) The Start Point takes account of the fact that you may use a Pressure Tare Value (see Section 3.3.8). If you do use a Pressure Tare, then a value of “0” is effectively the water surface, and “5” would be 5 dBar below the surface. Note that the profile settings are always in dBar (deciBar), where 1 dBar is approximately equivalent to 1m seawater.
- 2) The instrument will take measurements both on the way down and on the way back up through the water column.
- 3) The instrument works by taking complete sets of data as fast as it can (8Hz). For each set of data, it compares the measured pressure with the pressure at which it should take the next reading in the profile. If the pressure has reached this value, then the data is kept. If not, the data is discarded. Because it works this way, it is important that you do not ask it to make an unreasonably detailed profile. It can only take 8 readings per second, so if you ask it to take a measurement every 0.05dBar (approx 5cm), this equates to a maximum drop rate of 0.4m/s. If you then drop it at 2m/s, it will not be able to sample fast enough to give you the required profile interval, and you will not get the profile you expected.

When you are happy with your Profile Setup, click “Next”.

3.3.6.2 PROFILE SETUP (MINISVP & MINICTD)

For the miniSVP and miniCTD, you are required to set the interval for Profiling, i.e. the depth change between each measurement.

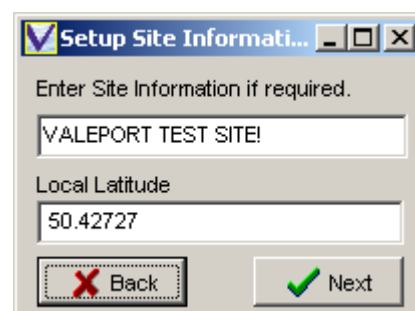
There are a few points to note:



- 1) The Start Point takes account of the fact that you may use a Pressure Tare Value (see Section 3.3.8). If you do use a Pressure Tare, then a value of “0” is effectively the water surface, and “5” would be 5 dBar below the surface.
- 2) The profile settings are always in the same units as you have selected to display the data (Section 3.3.5).
- 3) The instrument will take measurements both on the way down and on the way back up through the water column.
- 4) The instrument works by taking complete sets of data as fast as it can (8Hz). For each set of data, it compares the measured pressure with the pressure at which it should take the next reading in the profile. If the pressure has reached this value, then the data is kept. If not, the data is discarded. Because it works this way, it is important that you do not ask it to make an unreasonably detailed profile. It can only take 8 readings per second, so if you ask it to take a measurement every 0.05dBar (approx 5cm), this equates to a maximum drop rate of 0.4m/s. If you then drop it at 2m/s, it will not be able to sample fast enough to give you the required profile interval, and you will not get the profile you expected.

3.3.7 SITE INFORMATION

Up to 64 characters of text may be entered to describe the deployment. This data will be included in the header of each subsequent file, to allow it to be easily identified.



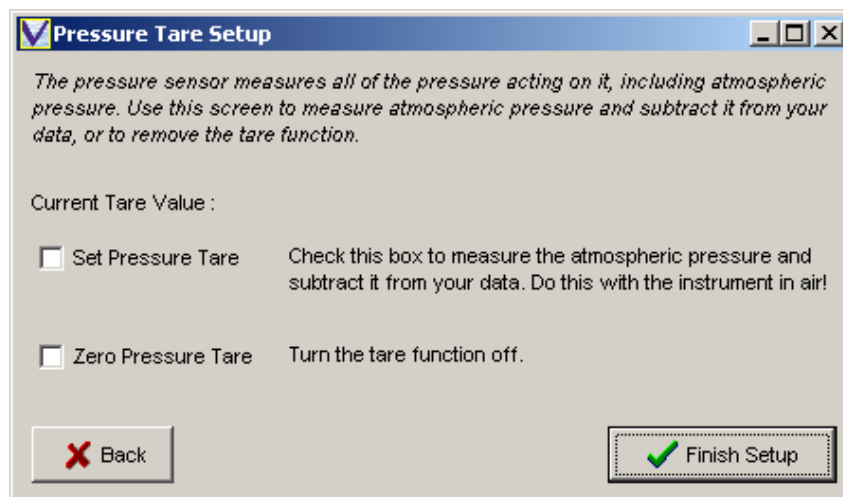
You are also asked to enter the local latitude value, which is used the conversion of Pressure into Depth, if required.

3.3.8 PRESSURE TARE

The Pressure sensor fitted to your device is an “Absolute” sensor, which means it measures the total pressure acting on it, including atmospheric pressure. Atmospheric pressure obviously varies according to weather systems, but at sea level it will be in the region of 1 Bar, or 10 dBar. Depending on the conditions of the day, the sensor will therefore measure approximately 10dBar at the surface, before it has even entered the water. This offset will apply to all your readings throughout the deployment.

Note that the actual value of the reading in air will depend on the accuracy of the pressure sensor as well as the conditions of the day.

The following screen gives you two methods of dealing with this issue:



- 1) Apply a Tare to the pressure reading. This function will measure the pressure acting on the sensor at sea level (before you deploy it), and then subtract this value from each subsequent pressure reading. To do this, click the “Set Pressure Tare” box; the Tare value will be taken when you click the “Finish Setup” button.

We recommend that you use this feature for Profiling.

- 2) Record the total pressure (including atmospheric) by using a Tare value of zero. Click the “Zero Pressure Tare” box to do this. If you do this, and subsequently want to remove the atmospheric pressure value from your data, then you will need to make a separate note of what the atmospheric pressure is, or for long term deployments, how it changes over time.

We recommend that you use this method for long term deployments.

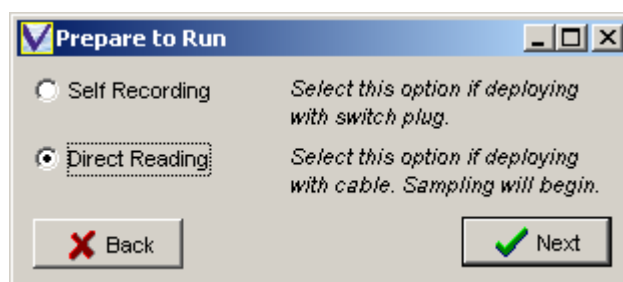
- 3) To maintain the current Pressure Tare values, ensure that both boxes are clear.

To complete the Setup Wizard, click the “Finish Setup” button.

4 DEPLOYMENT

When the Setup Wizard has been completed, you will be returned to the “Communications Established” screen.

To start the instrument running according to the sampling pattern you have set, click the “Run” button.



Choose whether you wish to deploy the instrument in Self Recording mode or Direct Reading Mode (i.e. with a cable attached, outputting data in real time).

4.1 SELF RECORDING DEPLOYMENT

If you choose to deploy in Self Recording mode, the program will display a brief list of instructions as shown:



At this point, the software will send no further commands to the instrument – the act of fitting the Switch Plug (step 3) turns the instrument on and starts the sampling. Clicking “OK” will return you to the opening DataLog Express screen.

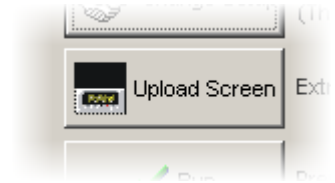
4.2 DIRECT READING DEPLOYMENT

Selecting Direct Reading mode and clicking the “Next” button causes the software to immediately instruct the instrument to begin sampling using the chosen setup. Use the various data display functions as described in Section 7 to view the data in your preferred style.

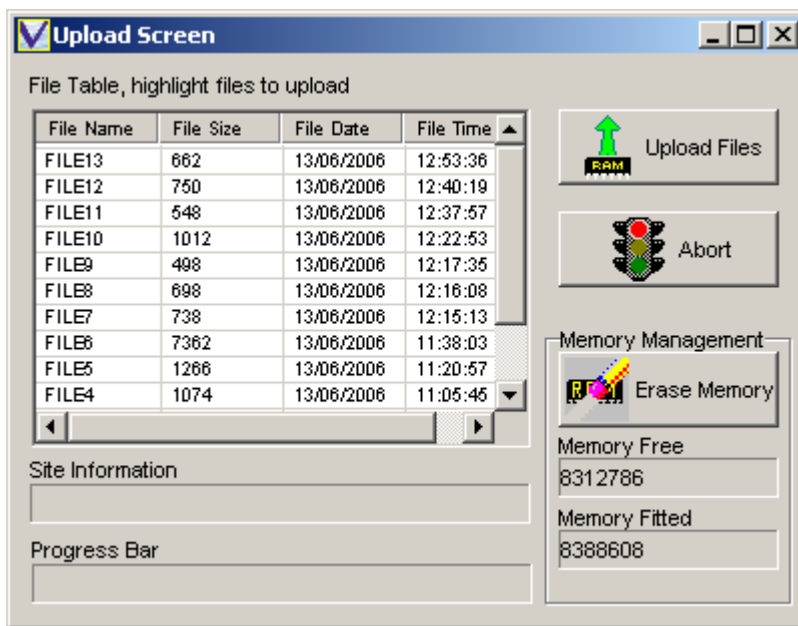
5 DATA UPLOAD & MEMORY

To Upload data from the instrument memory, it is first necessary to establish communications as described in Section 3.1.

From the “Communications Established” window, click the “Upload Screen” button.



The following will be displayed:



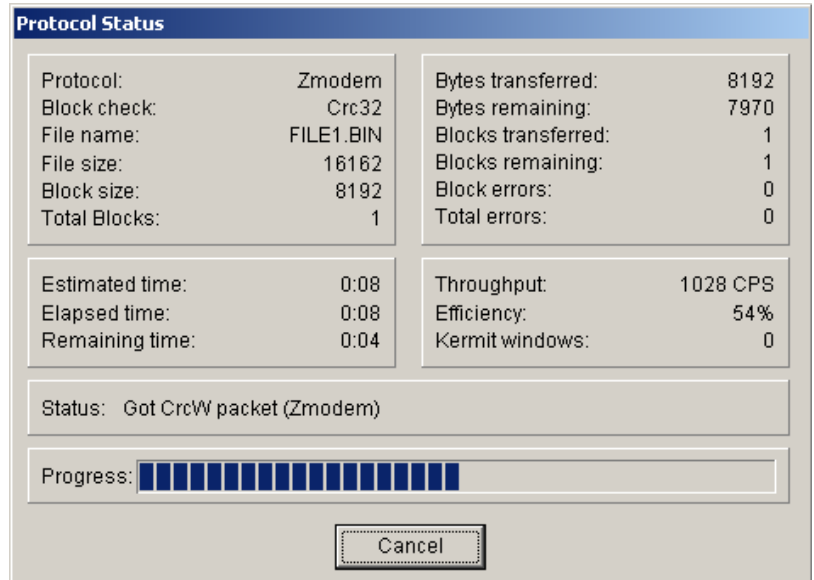
This screen lists all the data files held in the instrument’s memory. It also shows the size of the file, and the date and time at which it was created. Note that a new file is created each time the instrument is put into “Run” mode, or each time the Switch Plug is inserted into the instrument, so if you want to make multiple profiles before uploading data, remove and re-insert the Switch Plug between profiles to put them in separate data files.

5.1 UPLOAD (MIDAS & MONITOR INSTRUMENTS)

Choose the files you wish to upload by highlighting them, using the standard Windows Shift and Ctrl buttons to select multiple files. Then click the “Upload Files” button.

During the Upload Process, the software will show this status window:

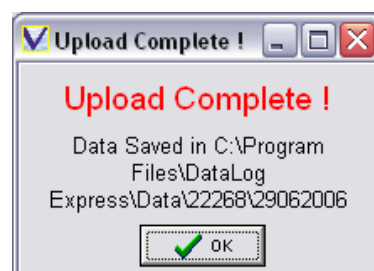
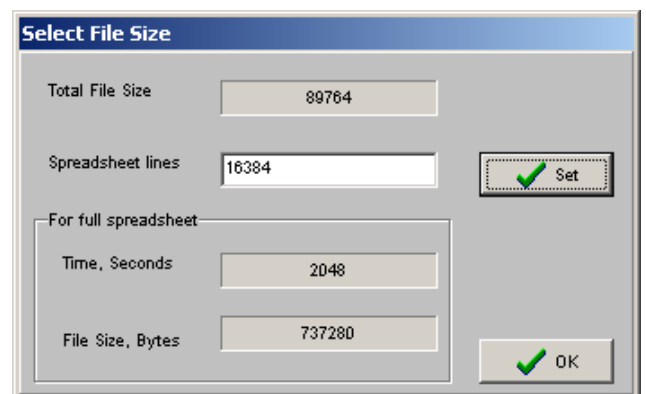
Data is stored in memory and uploaded in binary format, to maximise memory usage. The uploaded binary file (FILE1.BIN in this example) is then automatically translated into a readable ASCII text file.



The text files may be viewed using DataLog Express, but may also be opened in a standard spreadsheet package for further analysis or manipulation. However, some spreadsheet packages have a limit on the number of lines of data that they can handle, so a small pop-up window allows you to specify the maximum file size that you require. If the data file is larger than this, it will be broken down into smaller files.

Simply Enter the maximum number of lines of data that your spreadsheet can handle and click “Set”. The display will show the size of the data file that this is equivalent to (737280 bytes in the example). Provided that this is bigger than the actual file size (89764), then all the data will be contained in a single file. When you are happy with these settings, click OK to complete the translation process.

A confirmation window will appear to show that the process is complete.

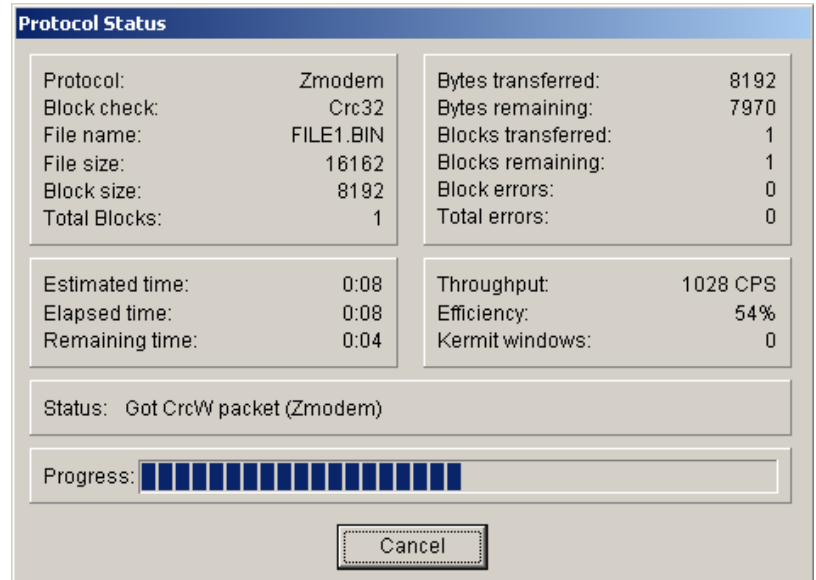


5.2 UPLOAD (MINI INSTRUMENTS)

Choose the files you wish to upload by highlighting them, using the standard Windows Shift and Ctrl buttons to select multiple files. Then click the “Upload Files” button.

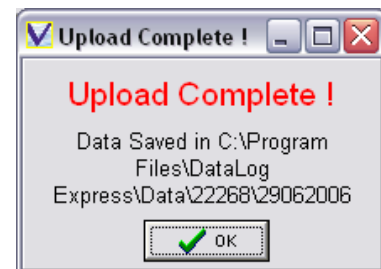
During the Upload Process, the software will show this status window:

Data is stored in memory and uploaded in ASCII text format.



The text files may be viewed using DataLog Express, but may also be opened in a standard spreadsheet package for further analysis or manipulation.

A confirmation window will appear to show that the process is complete.



5.3 DATA FILE LOCATION

Data is always uploaded to the following location:

C:\Program Files\DataLog Express\Data\{nnnnn}\ddmmyyyy

Where: **{nnnnn}** signifies the instrument serial number

Ddmmyyyy signifies the date of the upload

5.4 ERASING MEMORY

Valeport instruments use Flash memory, which is non-volatile (i.e. doesn't require battery backup), and is extremely reliable. It can also be emptied and re-used many thousands of times. However, the way in which the memory is used, maximising the available storage capacity, means that it is not possible to delete individual files - the memory can only be erased completely.

To delete files from the instrument memory, simply click the "Erase Memory" button. You will be warned that data cannot be recovered after this process, and the memory will then be deleted.



6 FILE HANDLING

DataLog Express may be used to view data that has been uploaded from an instrument or data received in real time data via a cable link. Additionally, it may be used to record real time data on the PC as it is received.

Section 7 of this manual gives details on the various data display functions available within the software – this section shows how to open uploaded data files, and how to save and open real time data files.

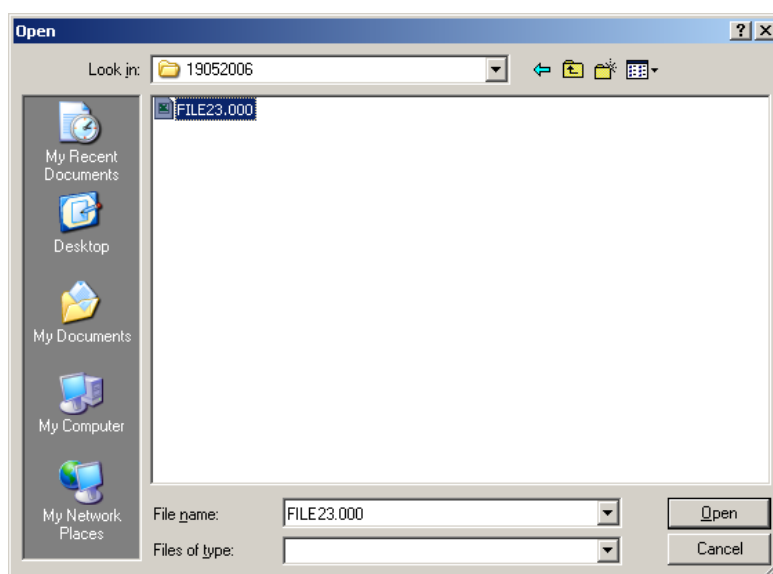
6.1 OPENING UPLOADED DATA FILES

To open an uploaded data file, either click the Open File button on the Welcome Screen or select Open File from the File menu at the top of the page:



You will be shown a standard Windows “Open” display, as indicated.

Navigate to the correct folder, remembering that data is always uploaded to the following location:



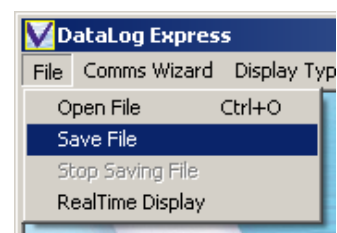
C:\Program Files\DataLog Express\Data\{nnnnn}\ddmmyyy

Where: **{nnnnn}** signifies the instrument serial number
Ddmmyyy signifies the date of the upload

Make sure to select the correct File Type, either MIDAS Data Files or mini Data Files from the drop down list. Mini data files have a “.txt” extension, MIDAS data files have numerical extensions, normally “.000”. Note that if an uploaded file is split into more than one ASCII file (Section 5.1), then the extension increments, i.e. “.001”, “.002” etc.

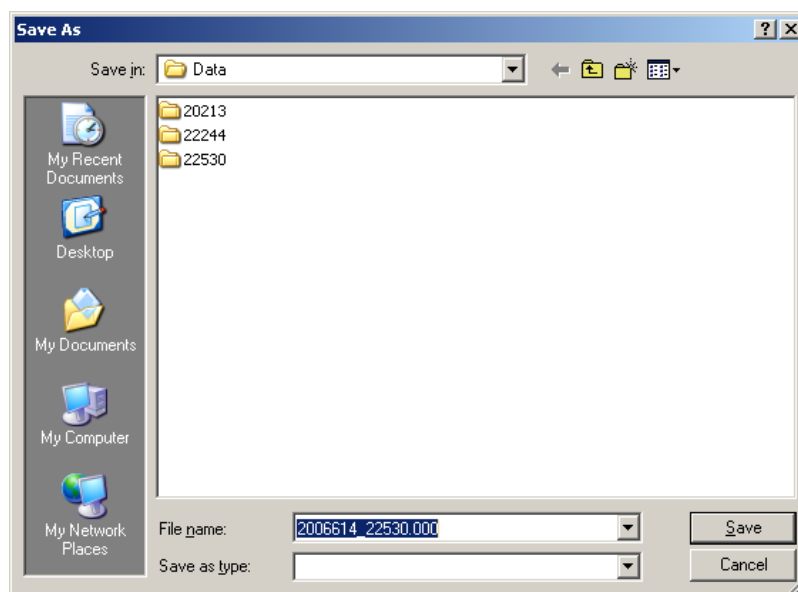
6.2 SAVING REAL TIME DATA FILES

If the instrument is running in direct reading mode, and real time data is being displayed on screen, then this data may be saved to an ASCII text file for backup or subsequent analysis. To begin saving data to a file, click “Save File” on the File menu as indicated.



A standard Windows display will ask you for the location and name of the data file.

Note that although you may save the data anywhere you wish and under any file name, it is recommended that you use the defaults as shown, saving the data with the file name:



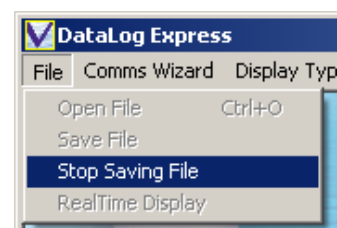
yyyymmdd_nnnnn.000

Where:

- yyyy signifies the year
- mm signifies the month
- dd signifies the day
- nnnn signifies the serial number of the instrument

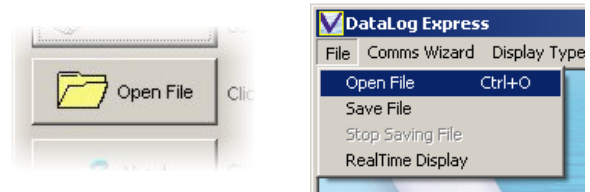
Note that “.000” is an incrementing number – if you record subsequent files it becomes “.001”, “.002” etc.

When you click “Save” the PC will begin to log data as it is received. To stop saving data, simply click “Stop Saving File” from the File menu.

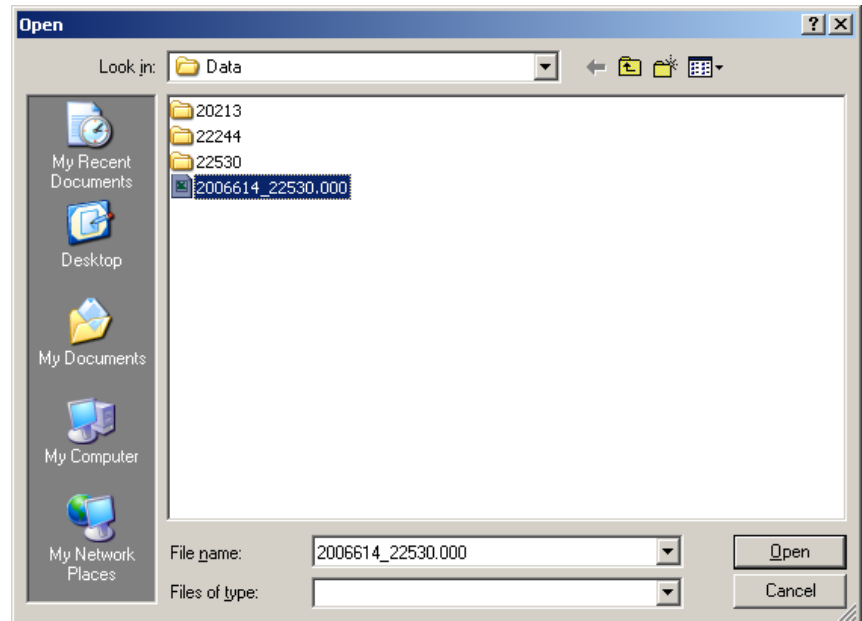


6.3 OPENING REAL TIME DATA FILES

To open an uploaded data file, either click the Open File button on the Welcome Screen or select Open File from the File menu at the top of the page:

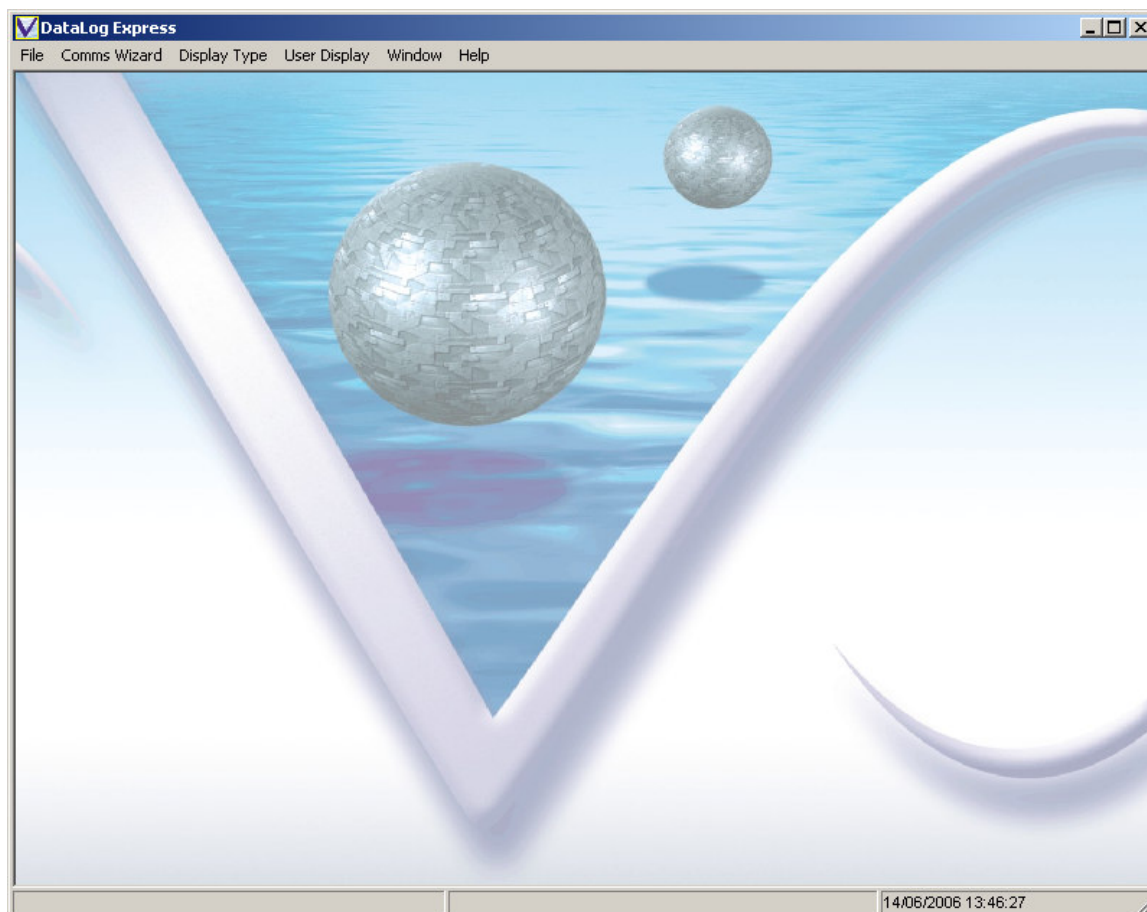


You will be shown a standard Windows “Open” display, as indicated. Navigate to the folder where you saved the data, and locate the correct file, remembering the file naming protocol described in Section 6.2 above. Click Open, and refer to Section 7 for details of how to display the data.

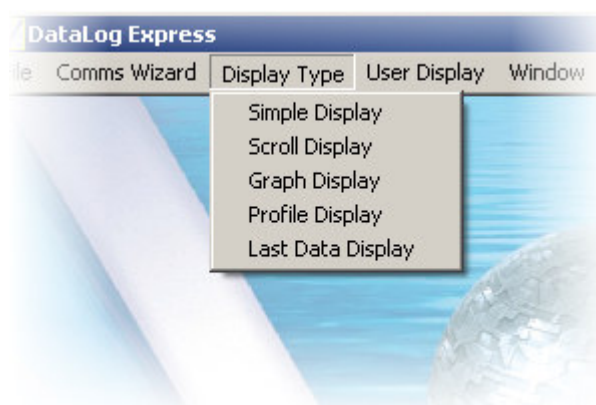


7 DATA DISPLAY

The main screen of Data Log Express should be considered as a blank canvas on which you can create your own preferred data display.



There are 5 basic display types, selected from the "Display Type" menu as shown. You may select any combination of these display types (and more than one of each type), arranging them on the screen to suit your personal preference. The detail of each display type is covered below in the next pages.



7.1 SIMPLE DISPLAY

The Simple Display gives the latest reading of any single chosen parameter, and is therefore best used for viewing real time data. Select “Simple Display” from “Display Type” menu, and this box will appear:

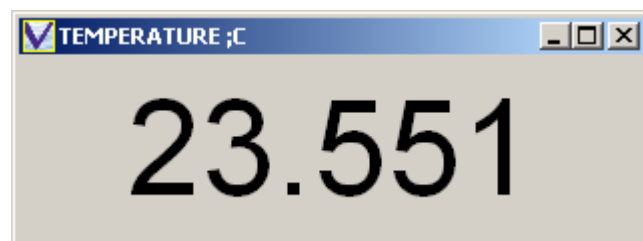


Using the mouse, Right-click in the display box to show the options for this display type.



Firstly, you must choose which parameter you want to display. Click “Sensor List”, and the available parameters will be displayed. Choose the parameter of interest – Temperature in the above example.

The box will now display the most recent data value from that parameter, updating as new data is received.

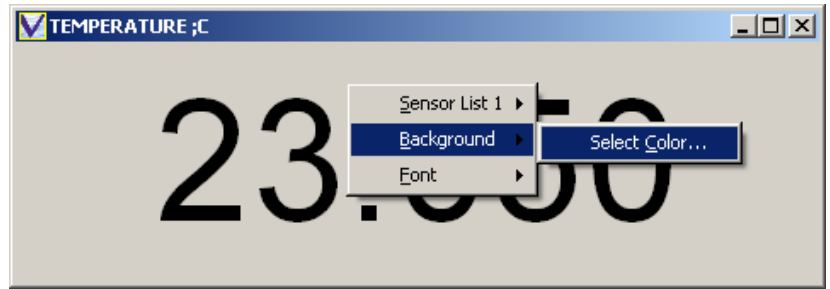


This box may be moved around the screen, and the size changed by dragging the corners. The text will automatically adjust to the largest size that can fit in the box.

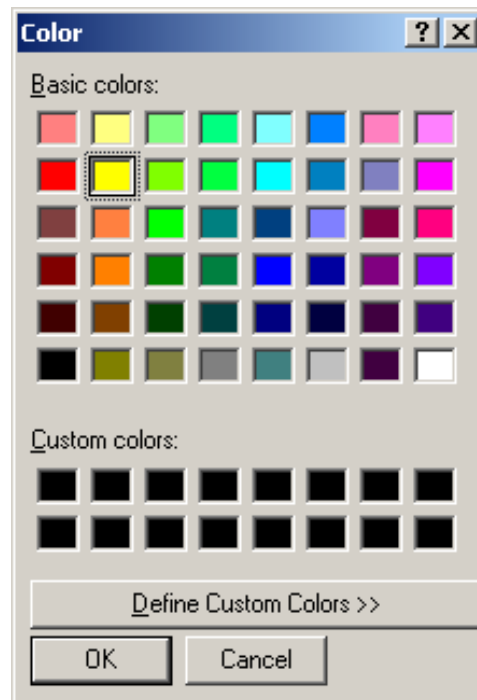
In order to improve the visibility of this display, you can change the properties of the text and the background to suit your preference.

7.1.1 CHANGING BACKGROUND

To change the background colour, right click in the box and select “Background”, “Select Color” as shown:



The display shown below will appear:



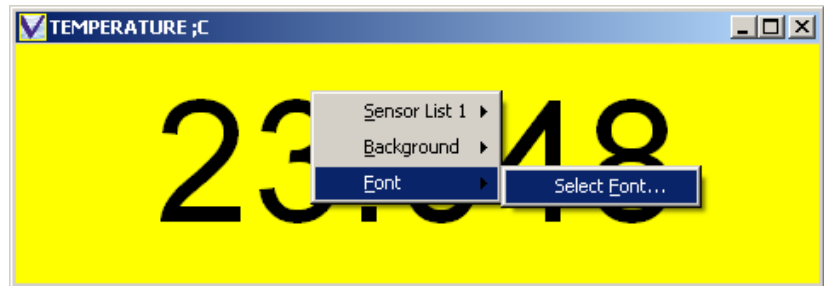
Select your desired colour from those available, and click OK.

The display background will now appear in your chosen colour:

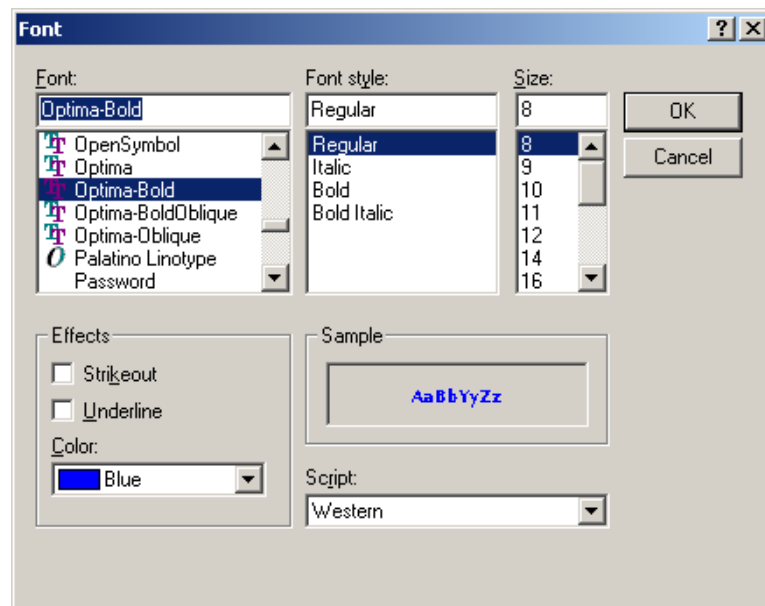


7.1.2 CHANGING FONT

To change the style and colour of the text, right click in the box, and select “Font”, “Select Font” as shown:



The following display will appear:



Choose your preferred Font and colour as shown. Do not adjust the size, since it will automatically fill the available space anyway.

Then Click “OK”. Your display will be given in your chosen Font.



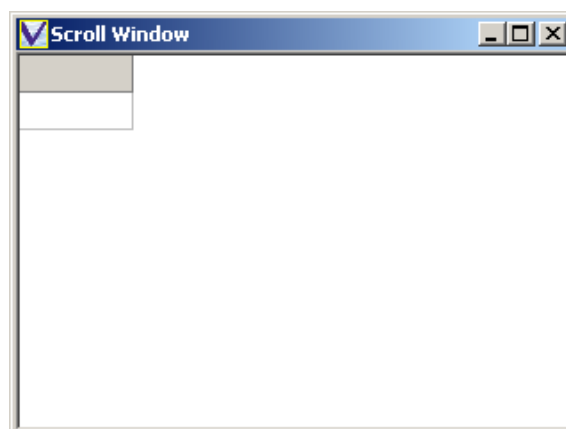
If the Font does not automatically adjust to fill the box, simply adjust the size of the box minutely to force the text to expand.

Note: When changing Fonts and Backgrounds, it is sensible to choose colours that have a high contrast to enable the display to be easily read.

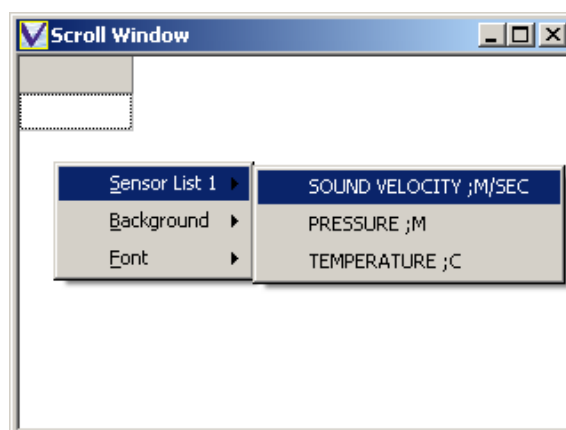
7.2 SCROLL DISPLAY

The scroll display is a tabular list of the data, and is suitable for showing either real time data, or data from a saved or uploaded file.

The Scroll window initially appears as shown:



Right – click in the Window, and select “Sensor List 1”, then choose the parameter you wish to view. Note that you can repeat this process to add parameters to the scroll window



The final Scroll Window will look something like this.

 A screenshot of the "Scroll Window" displaying a table with five columns: Date, Time, SOUND VELOCITY;M/SEC, PRESSURE;M, and TEMPERATURE;C. The table contains ten rows of data.

Date	Time	SOUND VELOCITY;M/SEC	PRESSURE;M	TEMPERATURE;C
13/06/2006	15:07:46	1542.627	9.197	29.162
13/06/2006	15:07:46	1542.635	9.819	29.162
13/06/2006	15:07:46	1542.65	10.564	29.163
13/06/2006	15:07:44	1542.672	12.056	29.163
13/06/2006	15:07:44	1542.686	12.801	29.165
13/06/2006	15:07:44	1542.7	13.671	29.165
13/06/2006	15:07:43	1542.717	14.79	29.166
13/06/2006	15:07:43	1542.738	15.784	29.166
13/06/2006	15:07:43	1542.757	16.654	29.171

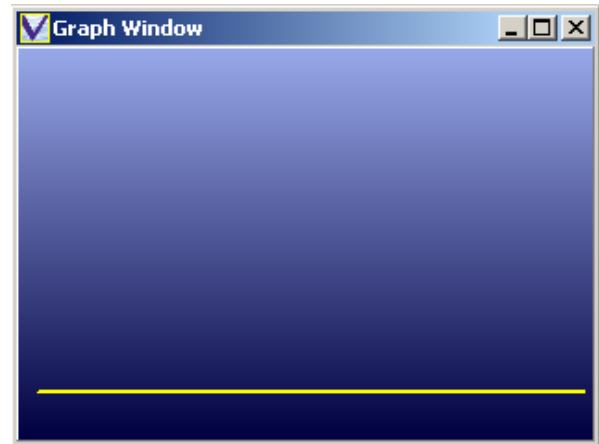
The following points should be noted about the Scroll Window:

- The most recent data point is at the top of the list, the oldest at the bottom
- Large data files may take a few seconds to open with this display
- The columns widths are adjustable using the mouse
- The entire display may be positioned and resized using the mouse
- Background colour and Font may be adjusted as with the Simple Display

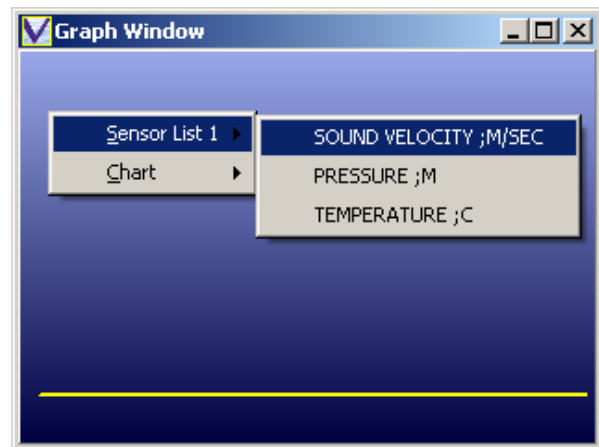
7.3 GRAPH DISPLAY

DataLog Express will show a Time Series Graph of any chosen parameter, from either recorded / uploaded data files or as it is received in real time.

Choose “Graph Display” from the “Display Type” menu and this screen will appear:



Right – click the box and choose the required parameter from the “Sensor List”, as shown.



Repeat to add more parameters to the same graph, which will be shown in a different colour, and on individual axes, as shown below:

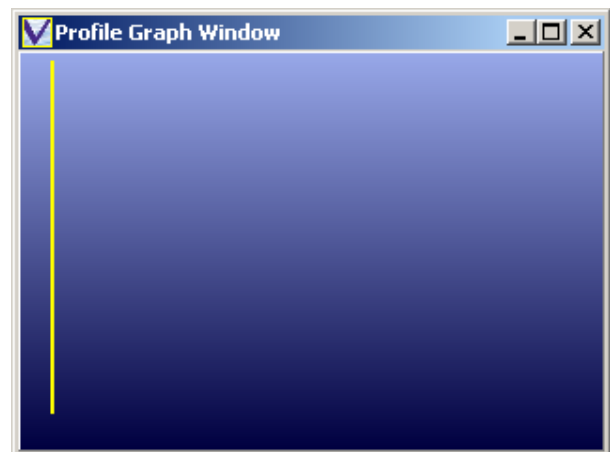


The Graph Window may be moved and sized using the mouse. By default, the graph scales will “Autoscale” to fit the displayed data. Control of this feature and other graph functions are described in Section 7.5.

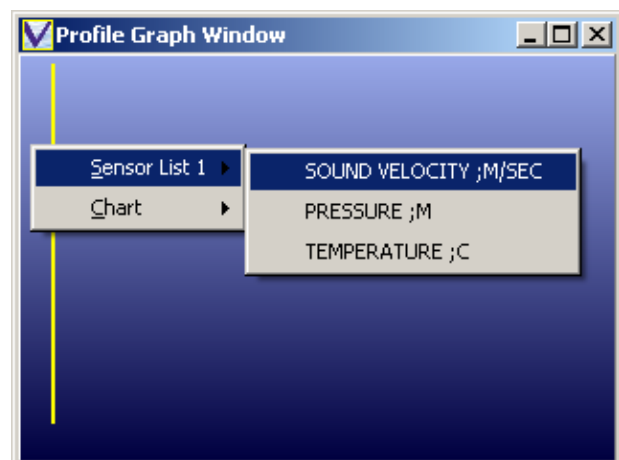
7.4 PROFILE DISPLAY

DataLog Express will display data as a Profile, i.e. plotting each parameter against Pressure / Depth rather than against Time. This type of display is suitable for use with either uploaded / recorded data files, or with real time data.

Choose “Profile Display” from the “Display Type” menu and this screen will appear:

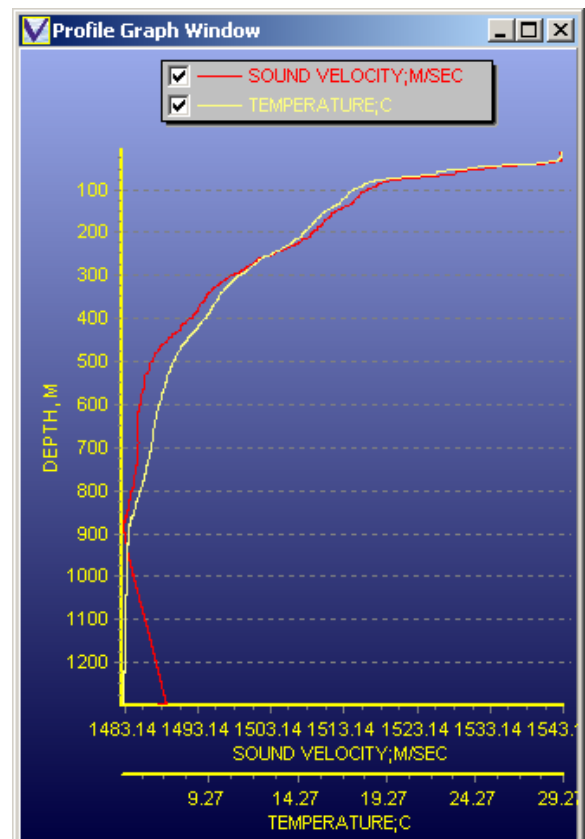


Right – click the box and choose the required parameter from the “Sensor List”, as shown.



Repeat to add more parameters to the same graph, which will be shown in a different colour, and on individual axes, as shown below:

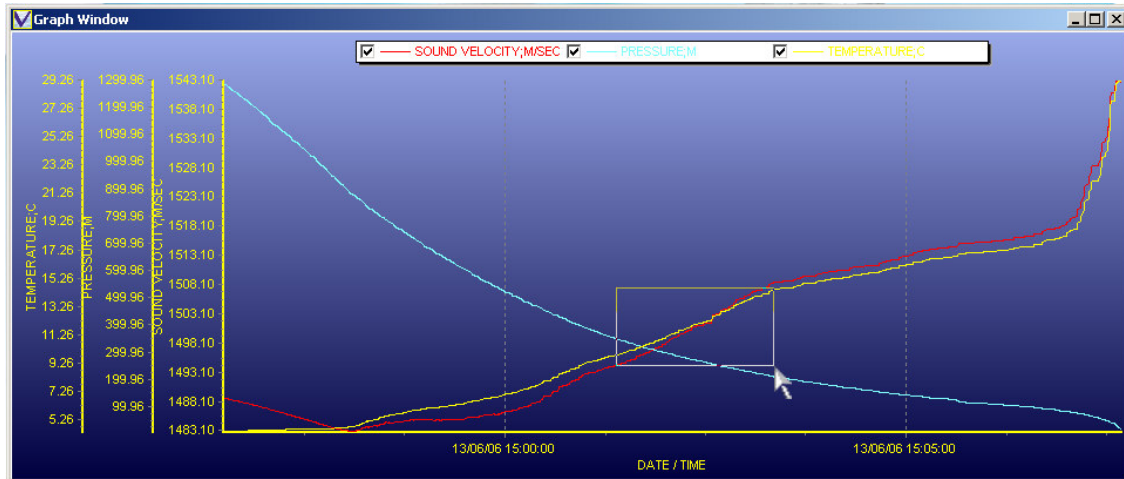
The Profile Window may be moved and sized using the mouse. By default, the graph scales will “Autoscale” to fit the displayed data. Control of this feature and other graph functions are described in Section 7.5.



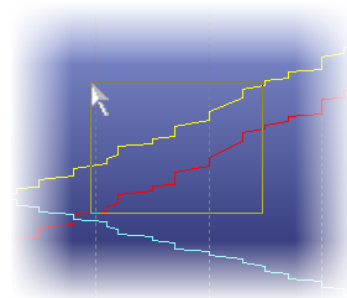
7.5 GRAPH AND PROFILE DISPLAY FEATURES

7.5.1 ZOOMING

A particular Section of the graph may be “zoomed in” for closer viewing by simply drawing a box with the mouse over the area of the graph of interest. Draw the box from top left to bottom right.



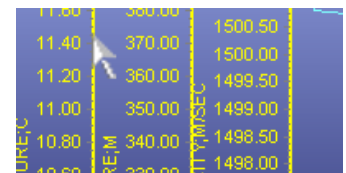
To zoom out, simply draw a box with the mouse from bottom right to top left, anywhere in the graph window



7.5.2 ADJUSTING SCALE

By default, the scale for each parameter will “Autoscale” to suit the range of data being displayed. However, it is possible to manually control the scale if preferred.

Right click on the scale to be adjusted – click on the actual line of the scale as shown.



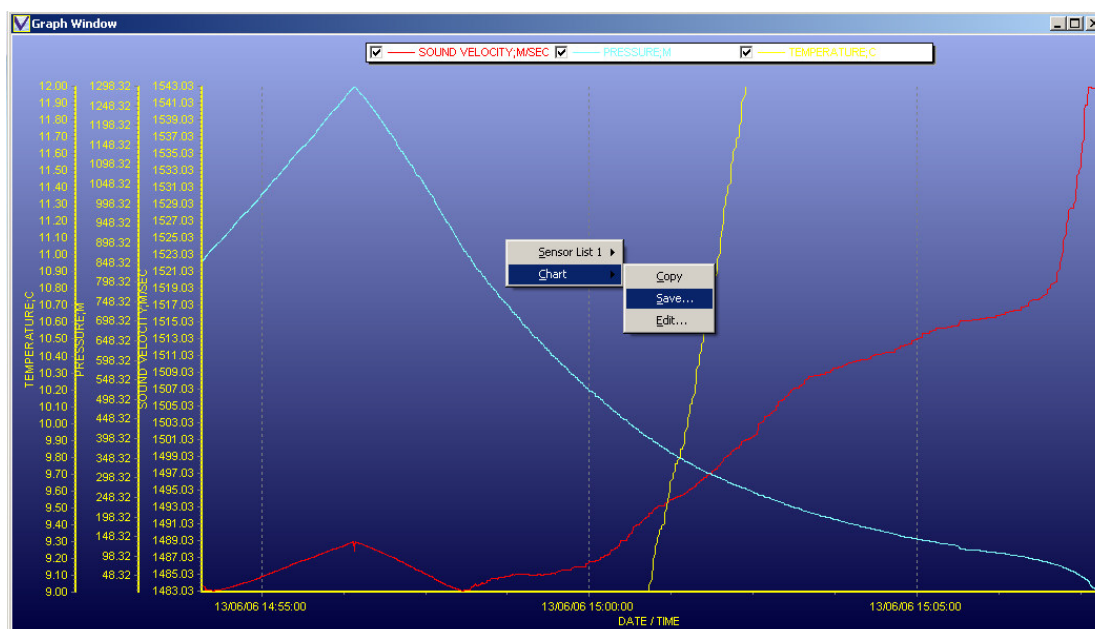
Then, enter the required minimum and maximum values for the scale, and click OK.

The screenshot shows the 'Chart Scale' dialog box. The 'Minimum Value' is set to 0 and the 'Maximum Value' is set to 12. The 'OK' and 'Auto' buttons are visible.

To return to the Autoscale mode, simply click “Auto”.

7.5.3 EXPORTING GRAPHS

The image of a Graph or Profile may be made available to other packages, for use in presentations and reports. Right click the Graph and select the “Chart Option”, then choose to either “Copy” the image to the PC clipboard for simple pasting, or “Save” it to disk as a bitmap or metafile image.



7.6 LAST DATA DISPLAY

The Last Data Display is a simple tabular display of the last piece of data received for each parameter. It is suitable for use with real time data. Initially the screen will appear as indicated:

The screenshot shows a 'Last Data Window' with a blue title bar. Below the title bar is a table with four columns: 'Parameter', 'Date', 'Time', and 'Reading'. The table is currently empty.

Parameter	Date	Time	Reading

Right click the mouse in the box to select the required parameters from the “Sensor List”, repeating the process to add more sensors.

The screenshot shows a 'Last Data Window' with a blue title bar. Below the title bar is a table with four columns: 'Parameter', 'Date', 'Time', and 'Reading'. The table contains three rows of data.

Parameter	Date	Time	Reading
SOUND VELOCITY;M/SEC	15/06/2006	13:21:49	0.000
PRESSURE;M	15/06/2006	13:21:49	0.000
TEMPERATURE;C	15/06/2006	13:21:49	23.738

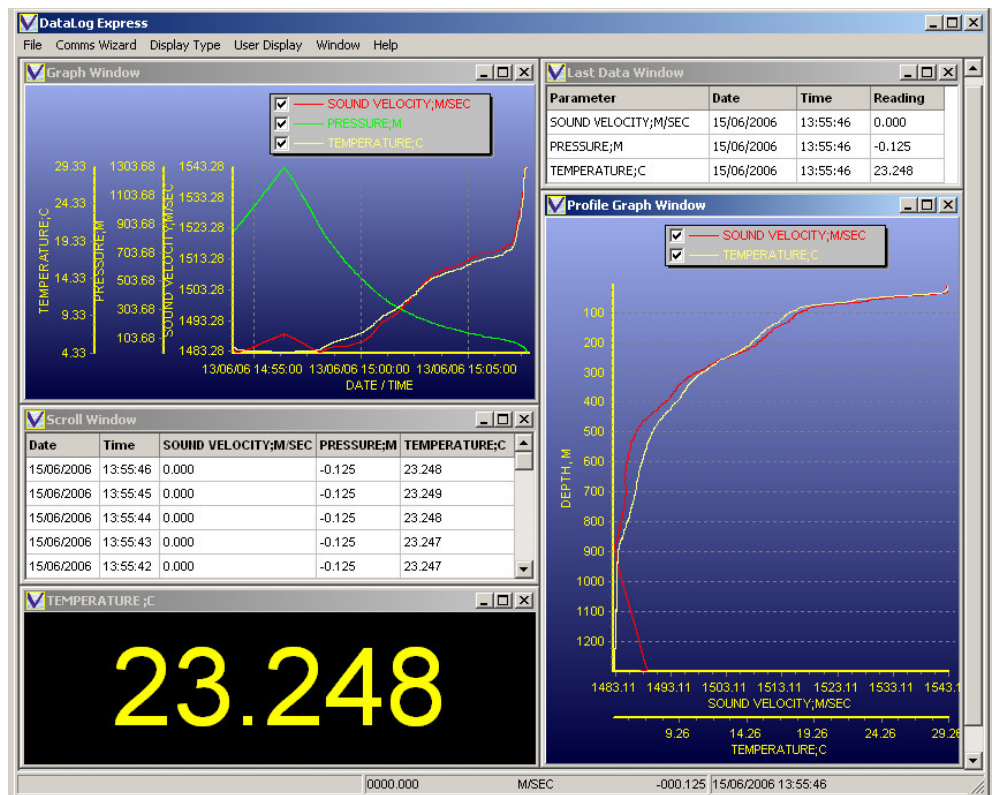
The following points should be noted about the Last Data Window:

- The columns widths are adjustable using the mouse
- The entire display may be positioned and resized using the mouse

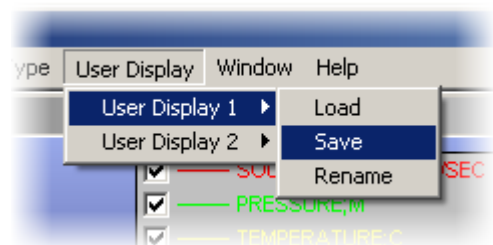
- Background colour and Font may be adjusted as with the Simple Display

7.7 SAVING YOUR DISPLAY

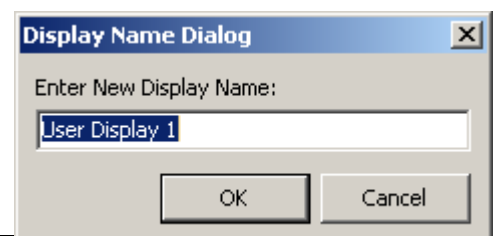
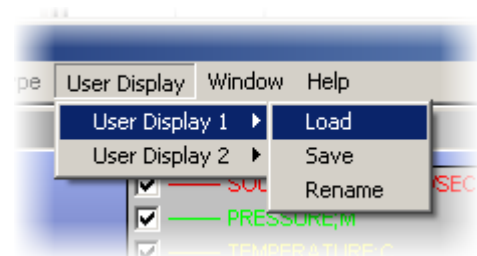
Having decided on which types of data display you require, it is possible to arrange them on the screen by moving and resizing them as appropriate. An example of how the screen could look is shown here:



Having finalised your design, it is possible to save it for future use as one of two “User Displays”. Click “User Display” on the menu bar, then choose either “User Display 1” or “User Display 2”, and finally “Save”. The screen format will be recorded as either User Display 1 or 2 accordingly.



To call up a previously saved display format, simply select User Display 1 or 2, and “Load”. Note that it may take a few seconds to load all the data into the various displays.



It is also possible to rename these preferred display formats to enable easier recognition. Select "Rename" from either User Display 1 or 2 and Enter the new name as appropriate:

8 MANUALS

A software copy of this operating manual, together with the hardware manuals for all the instruments with which DataLog Express is compatible, is included with the installation of the software. Select “Manuals” from the menu, and then choose either “DataLog Express” or the appropriate instrument hardware manual from the drop down list.

These manuals are saved in Adobe Acrobat format, so will require Adobe Acrobat Reader to be installed on your PC. If you do not have this, please visit the following website to download it. Acrobat Reader is free.

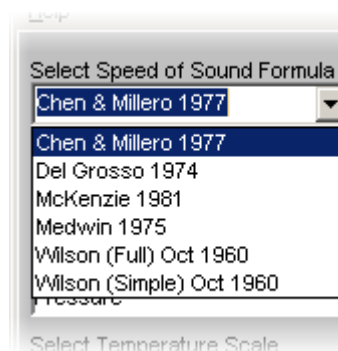
www.adobe.com/products/acrobat/readstep2.html

9 SEAWATER CALCULATIONS UTILITY

The Seawater Calculations Utility installed in conjunction with DataLog Express is provided as a tool for the user to carry out standard oceanographic calculations.

Simply input Conductivity/Salinity, Pressure Temperature (in IPT68 or IPT 90 scales) and Latitude (if known), and click on the Calculate button. The program will calculate and display the following parameters:

- Density Anomaly Gamma (Calculated Density – 1000kg/m³)
- Conductivity or Salinity (whichever the user did not enter).
- Sound Speed calculated using the chosen Speed of Sound Formula:
- Depth in metres calculated using the UNESCO standard formula. This is an approximation, and does not account for variations in density distribution throughout the water column. Its accuracy has been estimated at better than 0.1m.



All formulae, including the various Speed of Sound formulae are available in full from Valeport, if required.