



DataLog Pro Operating Manual



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1 Introduction

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

- MIDAS CTD (+)
- MIDAS ECM

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.

DataLog Pro is supplied 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 Pro, run “setup.exe” from the installation CDROM, or from the “DataLog_Pro_install” directory if you have downloaded the software.

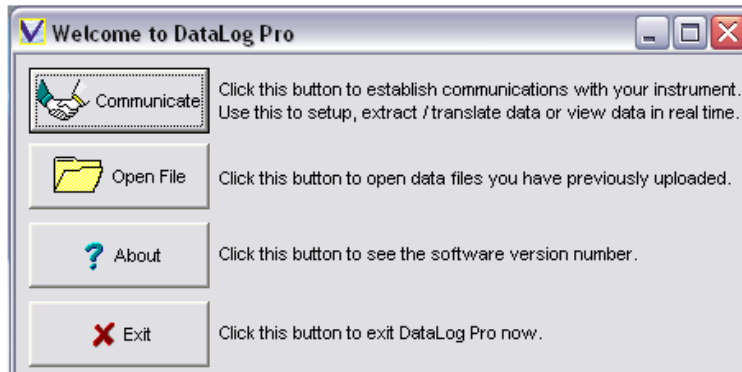
Once installed, DataLog Pro may be run by clicking the icon on your desktop:



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

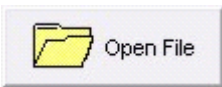
When you run DataLog Pro, or click "Comms Wizard", on the menu bar, this screen will appear:



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



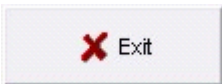
The Communicate button allows you to talk to the instrument for the purposes of setting it up or extracting recorded data files to PC. These functions are described in detail in Sections 3, 4 & 5



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



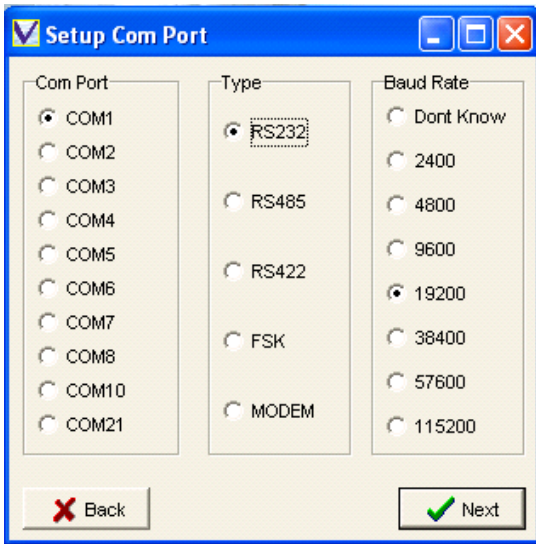
The About button displays the current version number of the software. Valeport support staff may ask you for this number if you have a technical problem



Exit closes down the DataLog Pro 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.
- 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

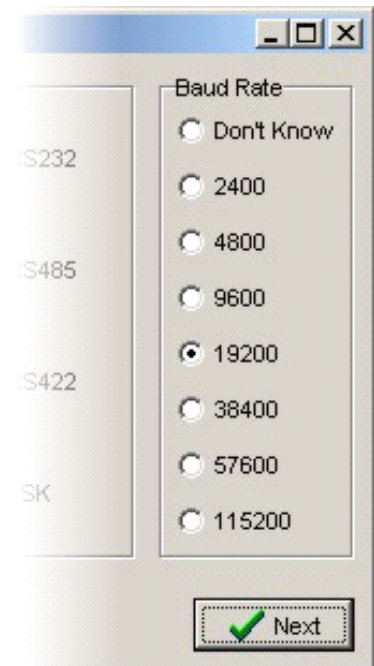
- MODEM Allows communication via a TAPI modem with Valeport GSM modem interface. (19200 baud only).

3.1.1 Baud Rate

Baud rate is the speed at which the PC and the instrument communicate. Monitor and MIDAS Instruments will always leave the factory set to 19200 baud, which works reliably with RS232 over cable lengths up to 50m. miniSVP/CTD/Tide instruments always leave the factory set to 115200.

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

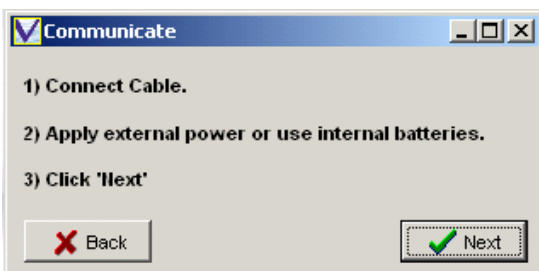
If you do not know the baud rate of your instrument, or communications cannot be established at the baud rate you thought the instrument was set to, select "Don't Know", and DataLog Pro will find the current baud rate of the instrument



miniTide, miniSVP, miniCTD should only be set to 34800, 57600 or 115200

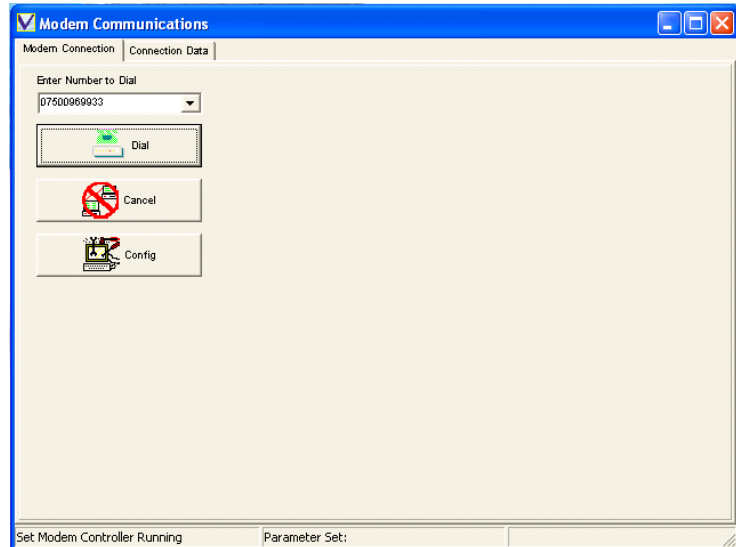
if you using FSK adapters, the baud rate will be fixed to a default value (FSK 38400)

When you have chosen the correct Comm Port, Type and Baud Rate, click Next. The following screen will appear. (Unless using MODEM option)



Follow the instructions, and Click Next.

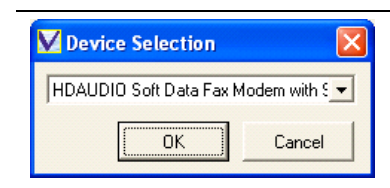
Alternatively, If MODEM option is selected the following screen will appear



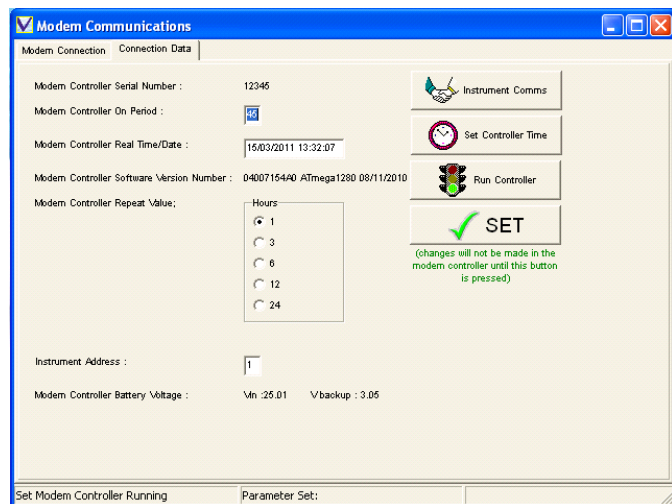
Dial button will dial the number entered in the enter number to dial box. Up to five numbers can be stored

Cancel button will hang up call

Config button allows selection of modem.



Once modem communications are established the following screen will be displayed



The modem controller serial number will be displayed

The modem controller on period in minutes will be displayed. This is how long the modem controller stays on each time it wakes up. This can be set up to 55 minutes. If you wish to change this edit the value in the box and select the SET button

The modem controller real time / date will be displayed. If you wish to synchronise this to the PC time, then select the Set Controller Time button

The modem controller software version will be displayed.

The modem controller repeat value in hours will be displayed. This is the wake up interval. Options of 1, 3, 6, 12 and 24 hours are available. To change, select the required radio button and select the SET button.

The instrument address is displayed. If you wish to change this, edit the value in the box and select the SET button.

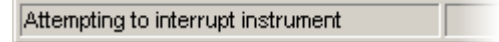
The modem controller voltage levels will be displayed.

The Instrument Comms button starts the interrupt instrument process.

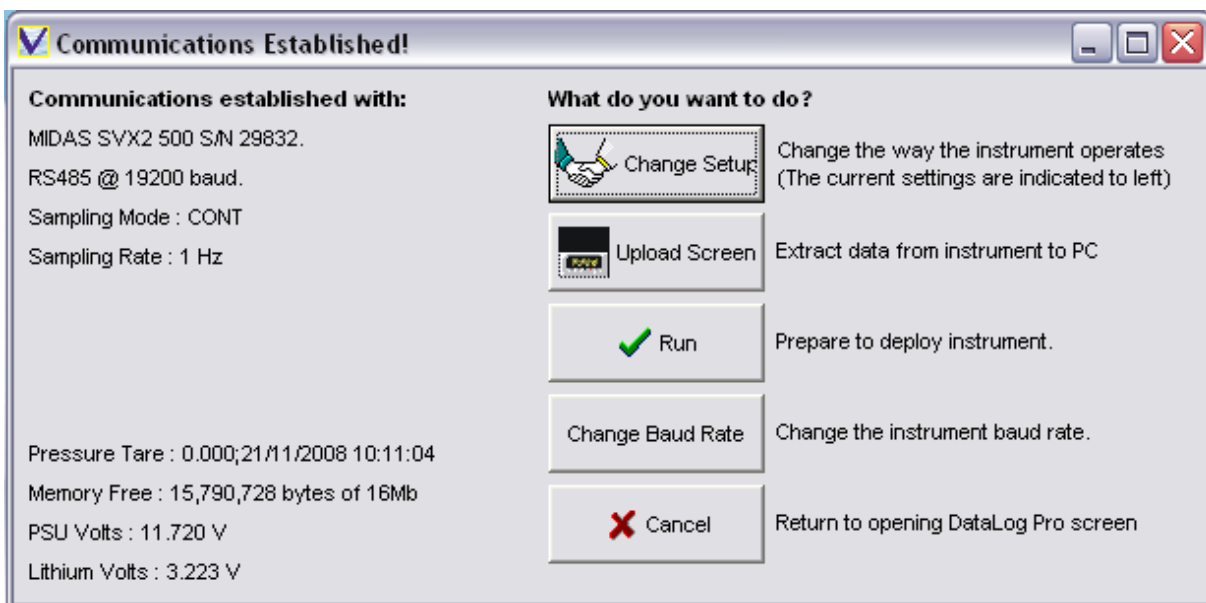
The Run Controller button closes the dial up connection and returns the controller to its shutdown / wake-up cycle.

Once the interrupt cycle has started:

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 SVX2 500, Serial Number 29832. Communications have been established using RS485 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 3.3.12), 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).

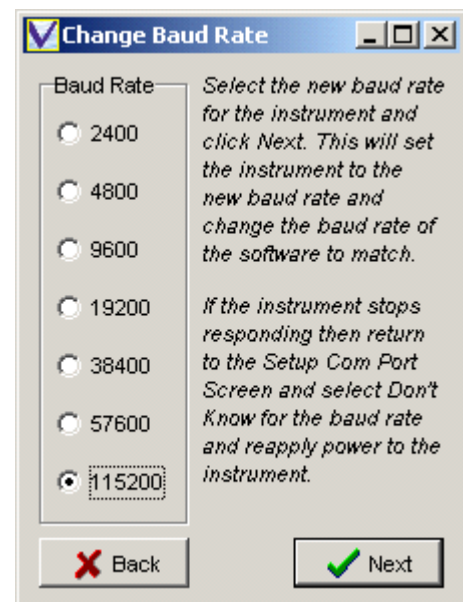
During the interrogation the software may encounter an unexpected setting or value for a particular parameter. The unexpected value MAY be indicative of an underlying problem, and a warning will be displayed. An example may be that the instrument date/time is unacceptably different from the PC date/time. 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.



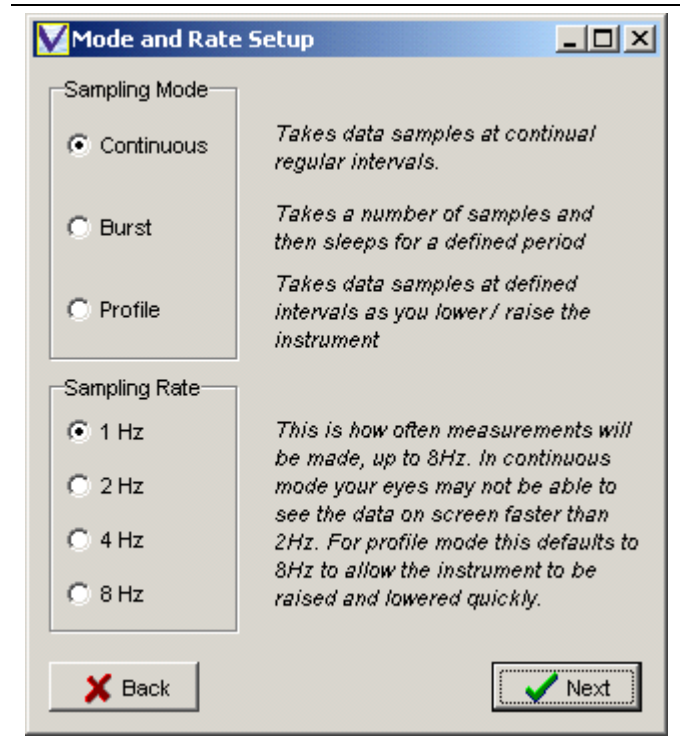
miniTide, miniSVP, miniCTD should only be set to 34800, 57600 or 115200

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

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.

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

Continuous Set Time, Set Units, Site Information, PressureTare

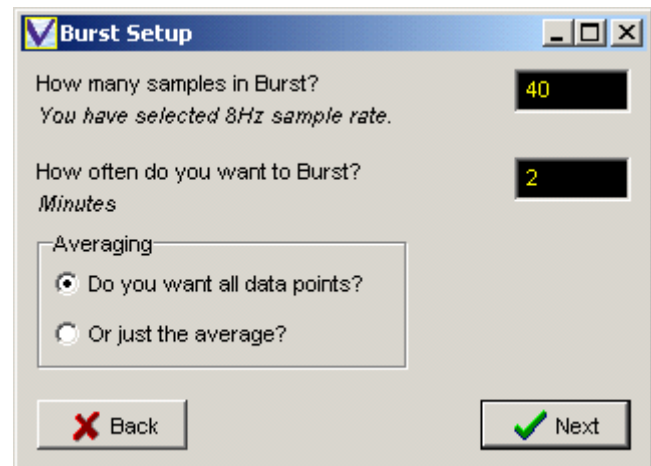
Burst Set Burst Pattern, Set Time, Set Units, Site Information, PressureTare

Profile Set Time, Set Units, Set Profile Pattern, Site Information, PressureTare

3.3.2 Burst Setup

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

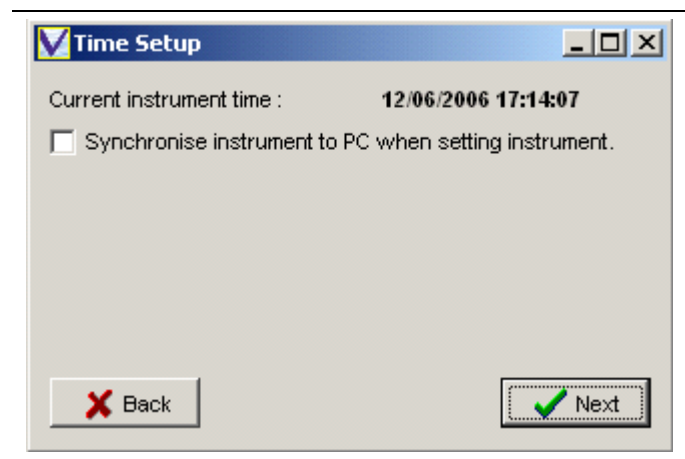
There are 4 values to be set for this mode, which together define this sequence



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.

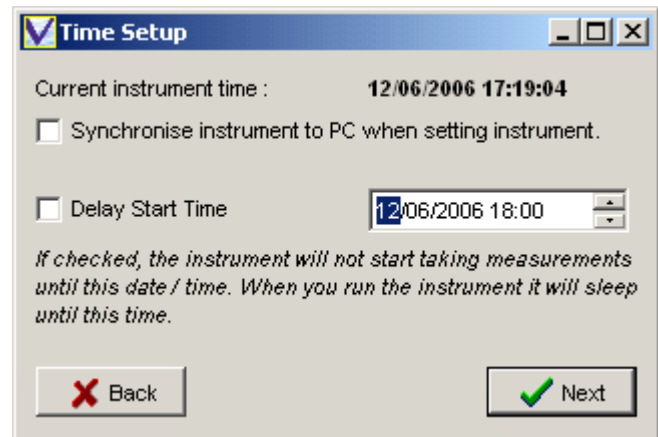
3.3.3 Time Setup - Standard

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

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.

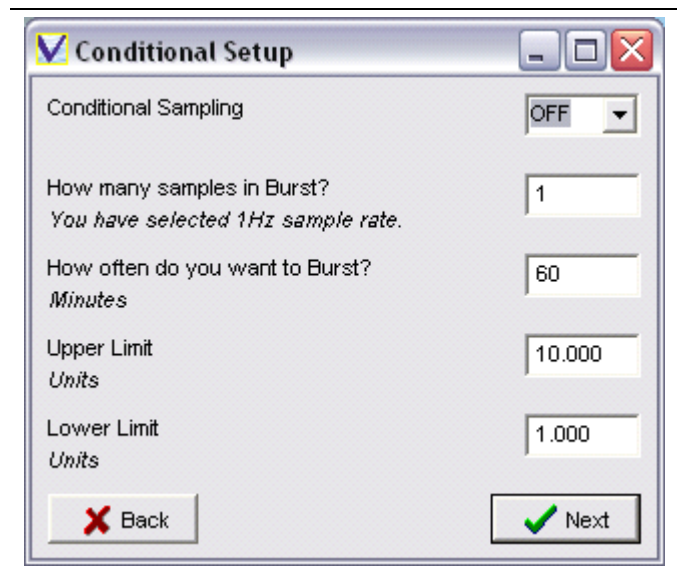


Burst Mode on the MIDAS and Monitor range of instruments also features a “Delay Start” feature, where the instrument may be set to begin sampling at a specified point in the future, usually after it has been deployed. This saves battery and memory being wasted while the instrument is transported to and 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 Conditional setup

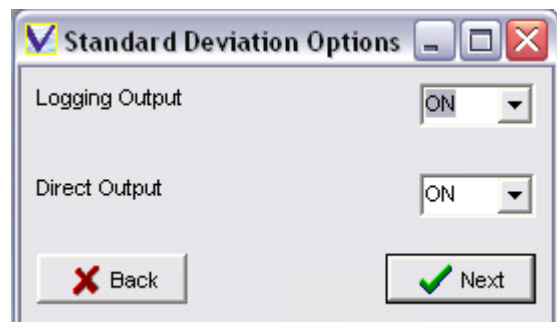
Conditional setup allows the instrument to wake up on a defined schedule, collect a burst of data and evaluate it

If the required conditions are satisfied the unit will collect data as previously configured until the condition is no longer satisfied. The unit will then go into sleep mode, waking up on the defined interval to collect another burst



3.3.6 Standard Deviation Output

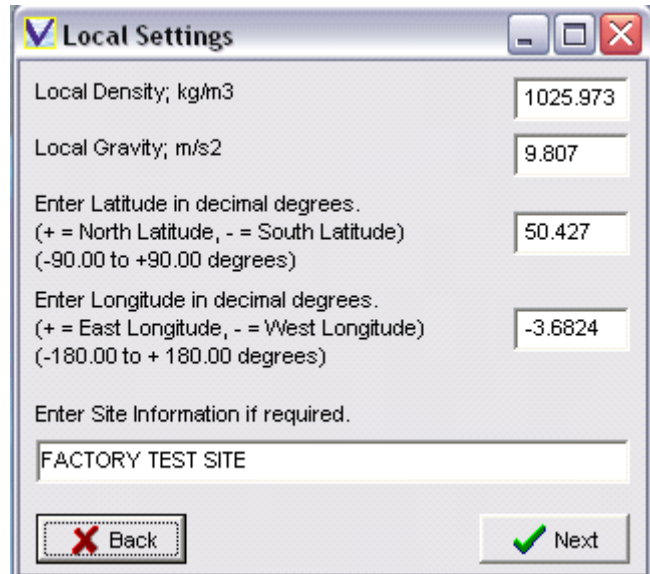
Outputs standard deviation of values measured in burst mode.



3.3.7 Local Settings

The local settings allow some information about the site to be entered. This information will be in the header of the data files

Only the Latitude is used in calculating the depth from pressure

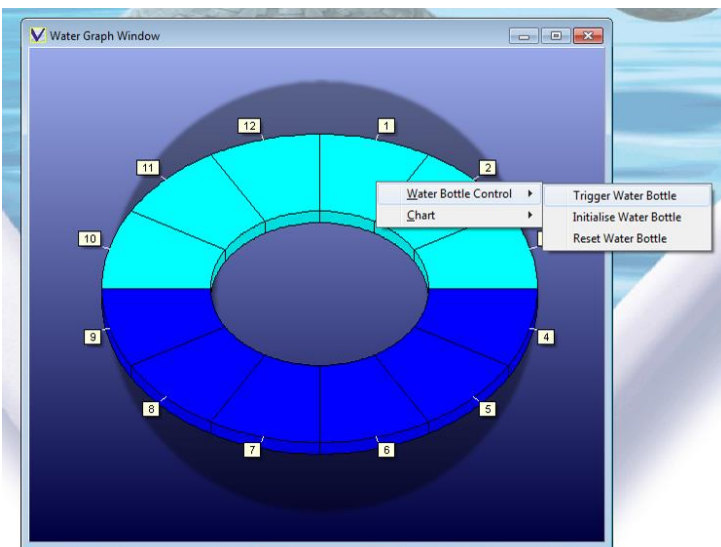


3.3.8 Water Bottle setup

The Valeport Water Sampler System uses a geared motor. The Model 606+ will decide when a sample is to be taken according to the programmed regime and will apply power to the motor. The motor rotates a mechanical arm that will move to release the next bottle in the sequence. A series of optical switches in the motor housing are used to inform the Midas CTD+ of the arm's current position, causing the motor to be switched off after the bottle has been successfully triggered.

The instrument actually treats the water bottle system as two separate sensors, described as "WATER R" and "WATER". These correspond to the instrument Request for the next sample, and the motor signal that the sample has been taken.

The water sampler can be reset and initialised via the water sampler window. This is accessed via the Display Type menu.



The Trigger Water Bottle option will interrupt the instrument and manually trigger a water bottle. This command can be carried out at any time but will result in the current file stopping recording and a new file being created.

When the instrument is interrupted, The Bottle Initialise button causes the motor to advance to the next position, and reset its internal counter to 0. The system therefore believes that it is ready to sample bottle 1. This function should be used when the system is first received to correctly set the rotor arm position.

Once the MIDAS CTD+ has triggered this number of samples, it will not trigger any more until the counter is reset using the Bottle Reset button.

If the system has been used, but not all the bottles have been triggered, there are three options for resetting the system:

Use the Bottle Reset button, and the system will consider that the next bottle is “Bottle 1” and will continue as normal from there.

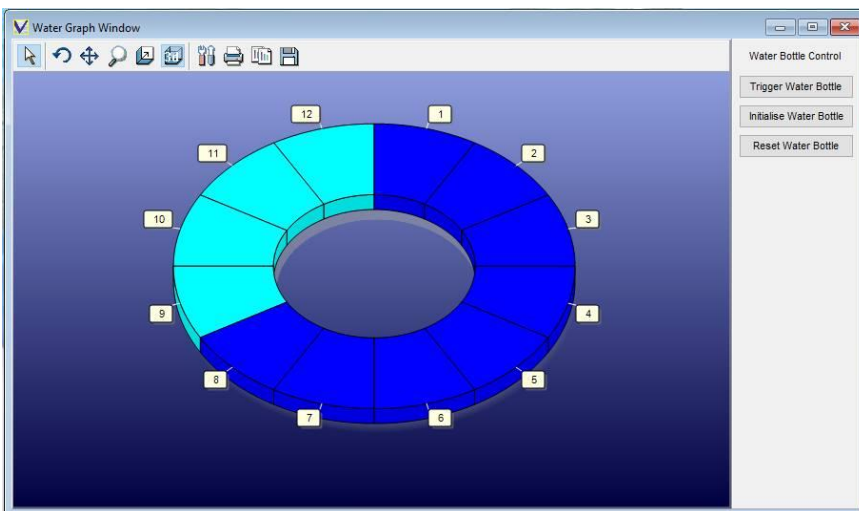
Use the Bottle Reset button to reset the counter, and then move the Rotor Arm to its start position as described above (just before Bottle 1).

Use Bottle Initialise as many times as necessary to advance the arm to its start position (Bottle 1)

Reset and Initialise commands are only available when the instrument is interrupted

3.3.8.1 Software version H2

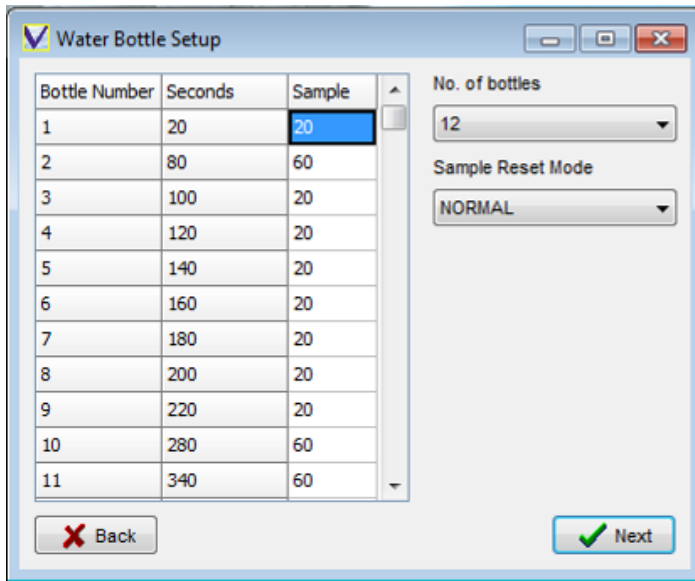
In February 2022 a new version of software was released that modified the Water Bottle Setup page to be more reliable. Functionally identical, the pop up menu was replaced by a side menu bar:



If you have problems with this functionality please ensure you have the latest version available to download from <https://valeport.download> select MIDAS from the dropdown list, DataLog Pro can be found towards the bottom of the table.

3.3.9 Water Bottle Settings

The user must setup several parameters to correctly operate the Water Bottle System. The first of these is the number of bottles in the system (usually 6 or 12).



Bottle Number	Seconds	Sample
1	20	20
2	80	60
3	100	20
4	120	20
5	140	20
6	160	20
7	180	20
8	200	20
9	220	20
10	280	60
11	340	60

No. of bottles: 12

Sample Reset Mode: NORMAL

Back Next

The Midas CTD+ will operate the Water Sampler at user defined intervals, either on a time based or Profile based regime. It is setup according to number of samples. This applies to all modes. For example, if it is required that a sample is taken every 10 minutes, and the system is operating in Continuous model at 2Hz sampling, it should be set to take a water sample every 1200 samples (600 seconds at 2Hz). If the instrument is in Trip (profile) mode, and is set to take a reading every 2 metres, and a water sampler is required every 100m, then the instrument should be set to take a water sample every 50 readings.

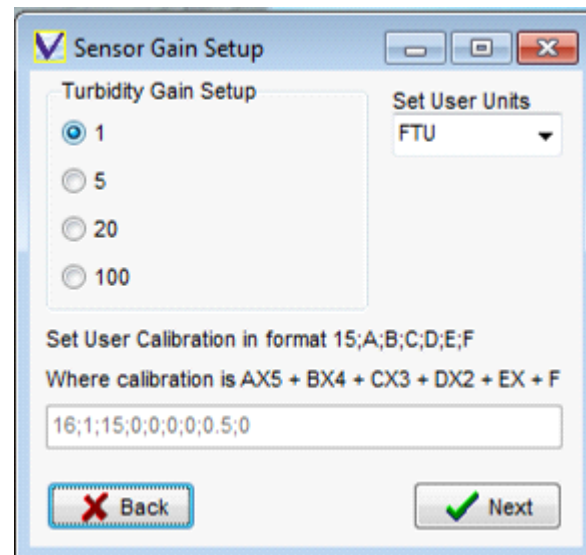
Finally, the user can specify how the sampling system will work in Burst Mode. If the instrument is set to run in a Burst of 60 readings at 1Hz, followed by a 10 minute sleep, but the water sampler is set to take a reading every 50 samples, the instrument would take a sample after the first 50 seconds of the first burst. After this, the instrument will do one of two things:

- Reset its counter so that when the next burst starts, it will begin counting from zero again, and will take the next sample after 50 seconds of the second burst.
- Not Reset its counter, so that at the end of the first burst, it has noted that 10 further readings have been made since the water sample was taken. At the start of the second burst, it will therefore begin counting from 10, and take the second water sample after 40 seconds of the second burst.

To choose between these two operating modes, select “RESET” or “NORMAL” from the drop down list. RESET mode is Option (a) above, and NORMAL mode is Option (b).

3.3.10 Secondary Sensor Calibration

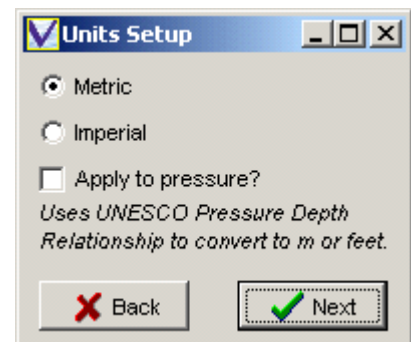
If a Turbidity Sensor, Transmissometer or Fluorometer is fitted then when the sensor is selected a gain setting box will be displayed as shown



To alter the gain setting, simply click on the required radio button and press the Sensor Setup Button

3.3.11 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
Speed of Sound	m/s	ft/s
Current Speed	m/s	ft/s
Temperature	°C	°F

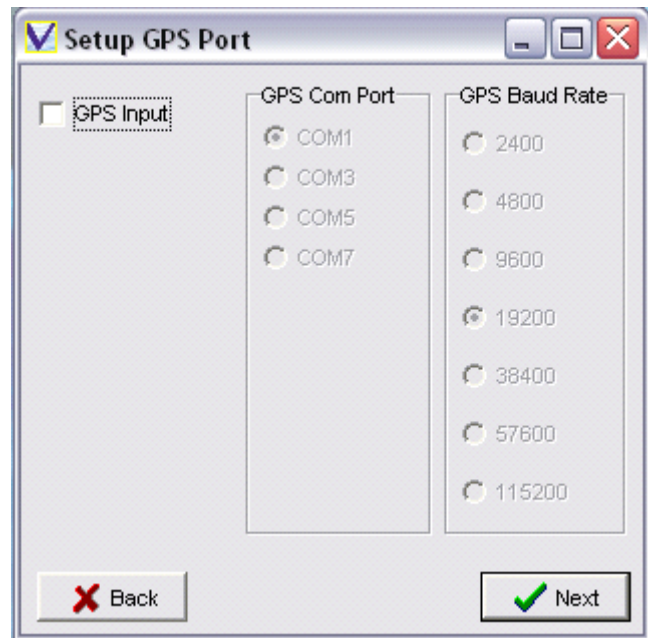
Note that by default, data from the pressure sensor will be given in dBar (deciBar), regardless of whether Metric or Imperial Units are preferred. However, a conversion from dBar to metres or feet as appropriate may be performed by checking the “Apply to pressure?” box. This conversion is done using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

3.3.12 GPS Port Setup

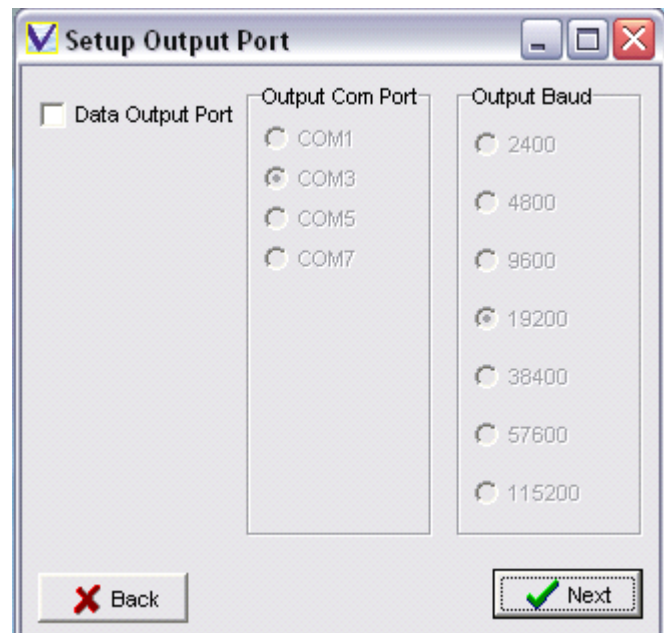
DataLog Pro will log a GPS input on the specified port/baud rate

It will recognise an NMEA GPGGA string and append the current Latitude/Longitude to the real time data string



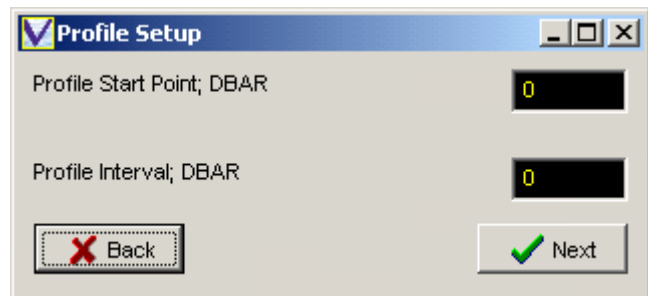
3.3.13 Output Port Setup

Datalog Pro can relay the real time data string on via a selected com port. It is intended to be used once the GPS position has been appended to the real time string.



3.3.14 Profile Setup

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.

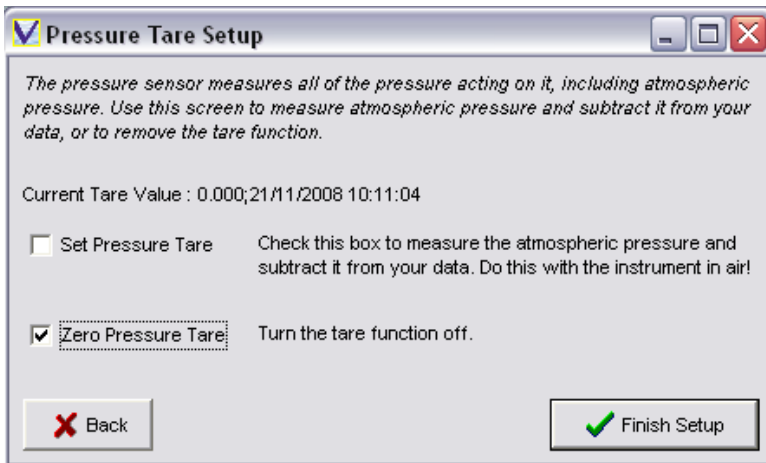
When you are happy with your Profile Setup, click “Next”.

3.3.15 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:



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.

Valeport recommend that you use this feature for Profiling

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.

Valeport recommend that you use this method for long term deployments

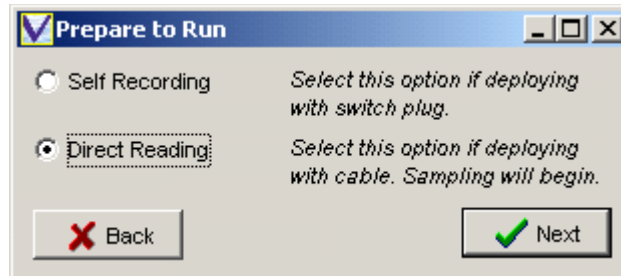
To maintain the current Pressure Tare values, ensure that both boxes are clear.

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.

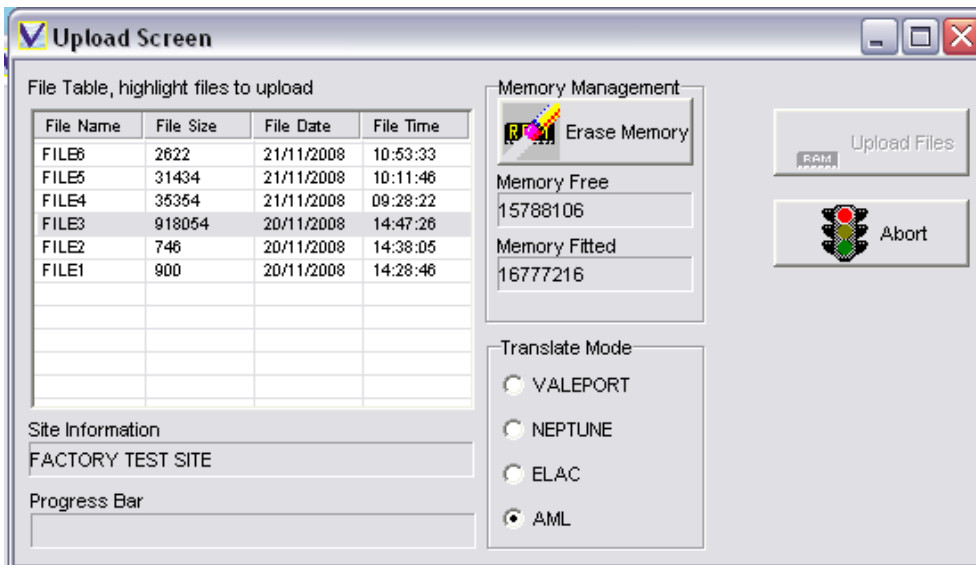
5 Data Upload & Memory

To Upload data from the instrument memory, it is first necessary to establish communications as described in Section 3.1 [Establishing Communications](#)

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.

There are also options for translating data into different output formats.

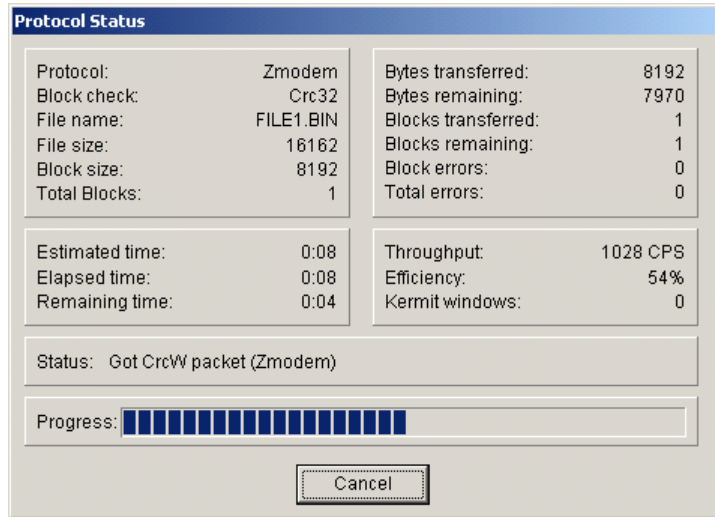
5.1 Upload

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.

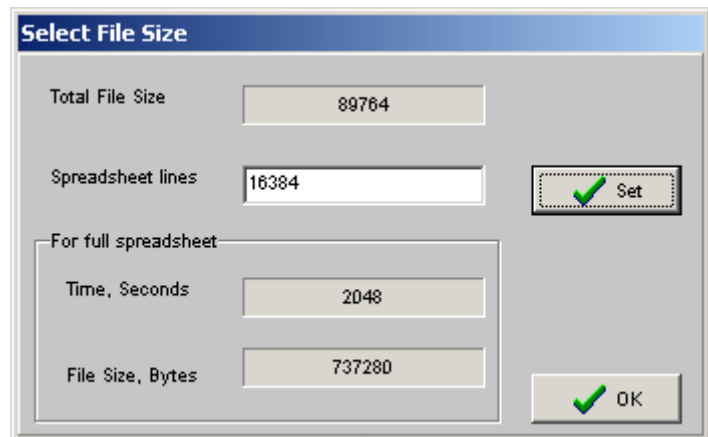
During the Upload Process, the software will show this status window:

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

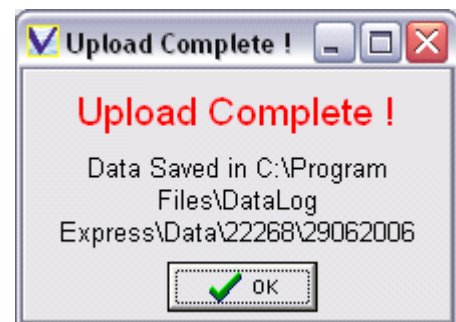
The text files may be viewed using DataLog Express, but may also be opened in a standard spreadsheet package for further analysis or manipulation. However, some spreadsheet packages have a limit on the number of lines of data that they can handle, so a small pop-up window allows you to specify the maximum 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 Data File Location

Data is always uploaded to the following location:

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

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

Ddmmyyyy signifies the date of the upload

5.3 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



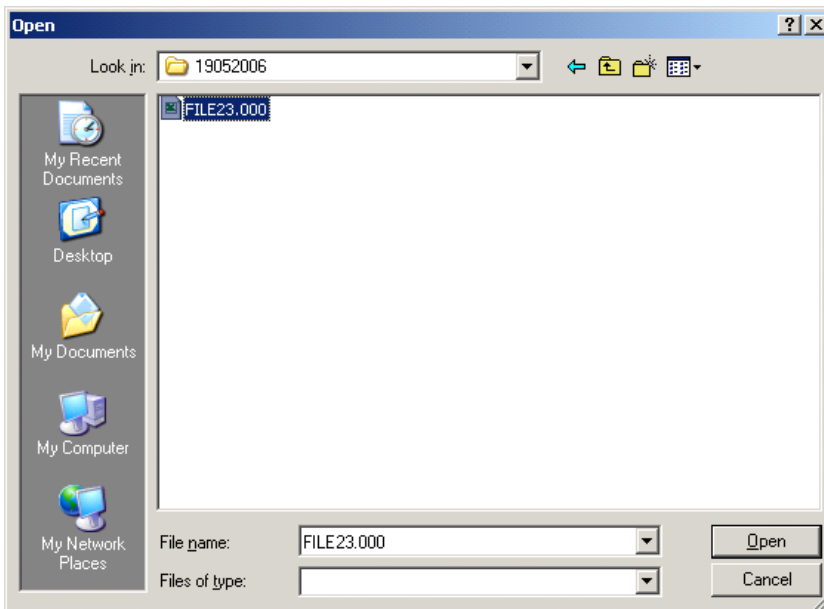
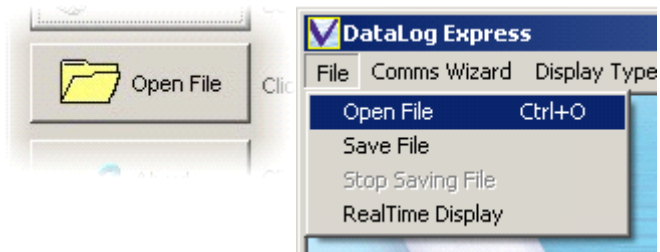
6 File Handling

DataLog Pro 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.

The [Data Display](#) Section 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 Pro\Data\{nnnnn}\ddmmyyyy

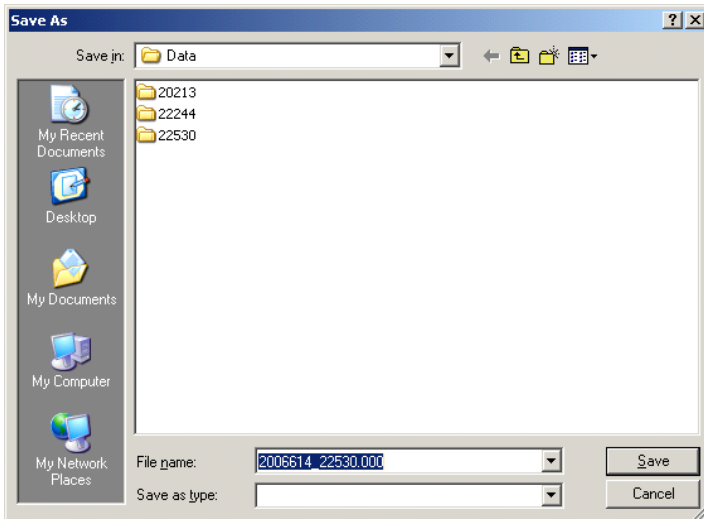
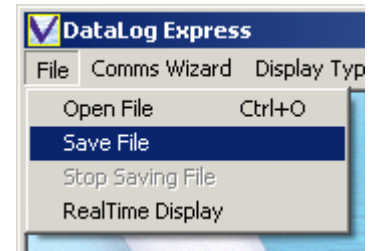
Where: **{nnnnn}** signifies the instrument serial number

Ddmmyyyy 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, 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

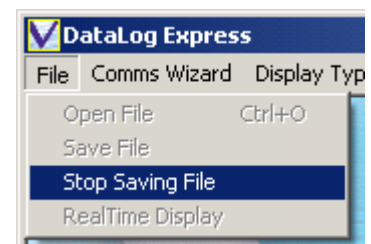
mm signifies the month

dd signifies the day

nnnnn signifies the serial number of the instrument

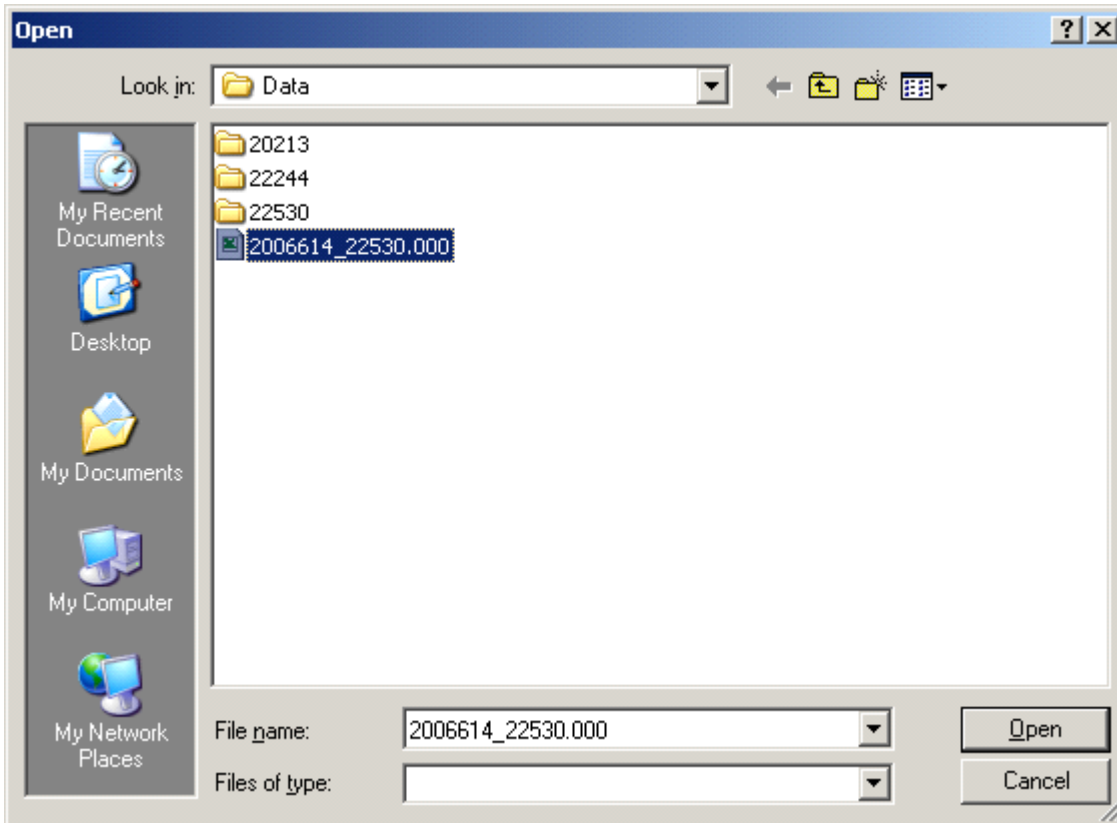
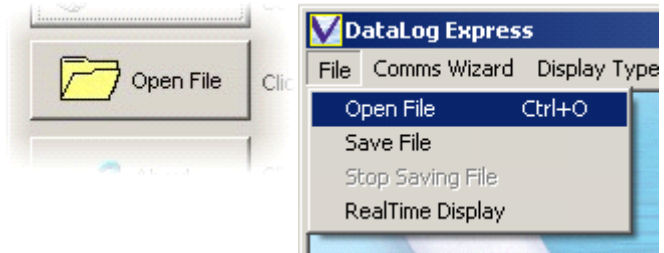
Note that “.000” is an incrementing number – if you record subsequent files it becomes “.001”, “.002” etc.

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:

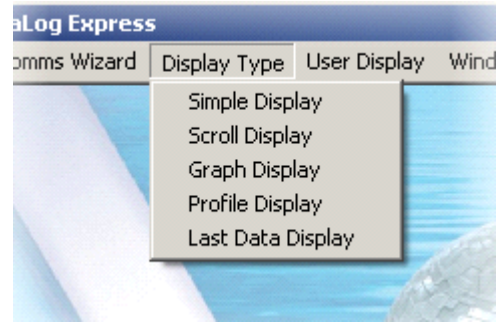


You will be shown a standard Windows “Open” display, as indicated. Navigate to the folder where you saved the data, and locate the correct file, remembering the file naming protocol described in Section 6.2 above. Click Open, and refer to Section 7 for details of how to display the data.

7 Data Display

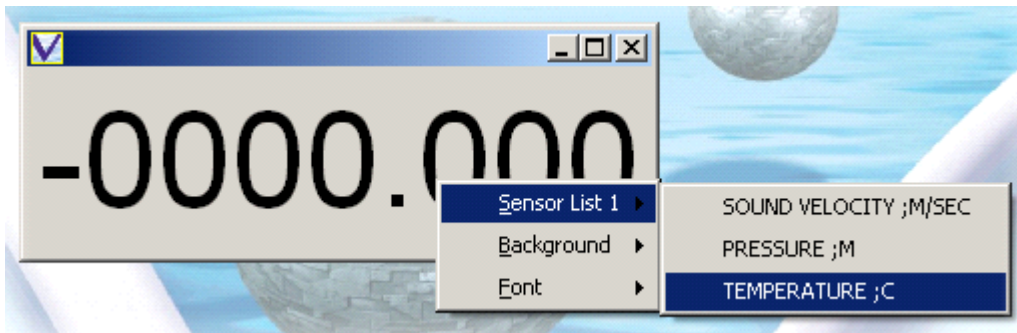
The main screen of Data Log Pro should be considered as a blank canvas on which you can create your own preferred data display

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

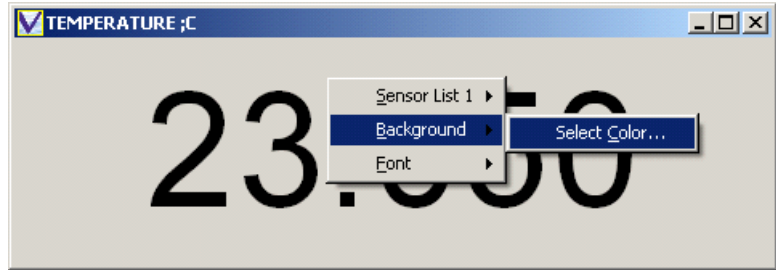
This box may be moved around the screen, and the size changed by dragging the corners. The text will automatically adjust to the largest size that can fit in the box



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:



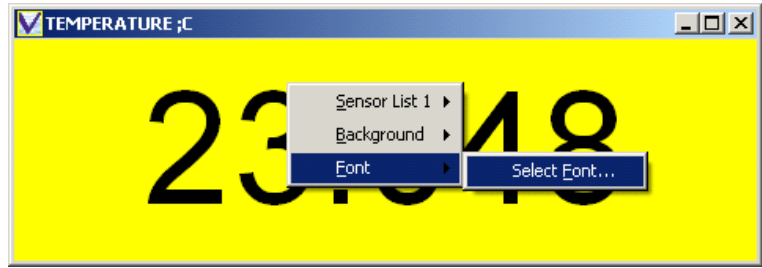
Select your desired colour from those available, and click OK.

The display background will now appear in your chosen colour:

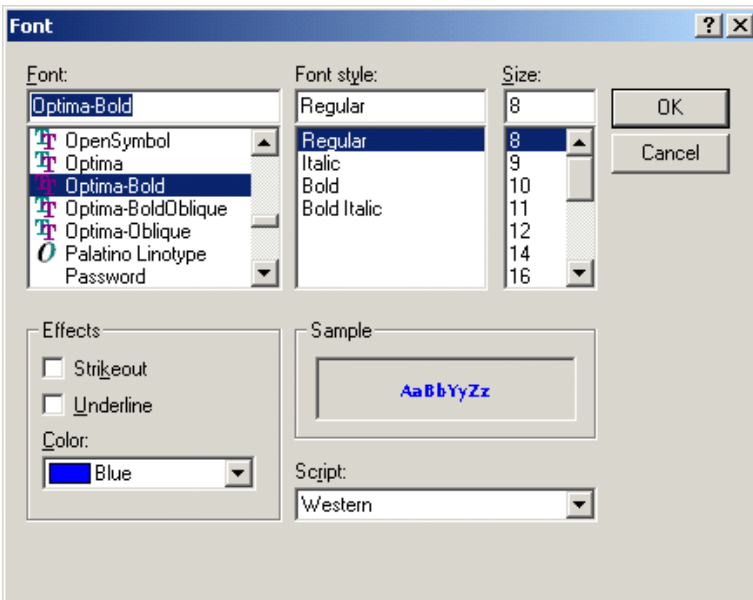


7.1.2 Changing Font

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

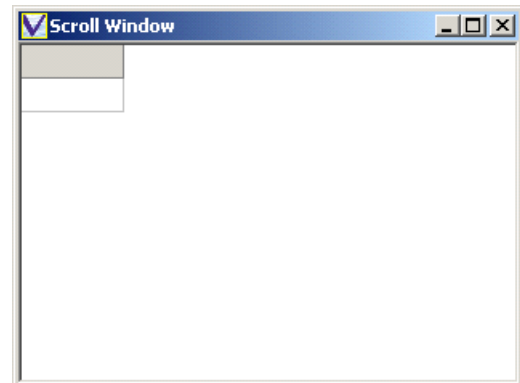


When changing Fonts and Backgrounds, it is sensible to choose colours that have a high contrast to enable the display to be easily read

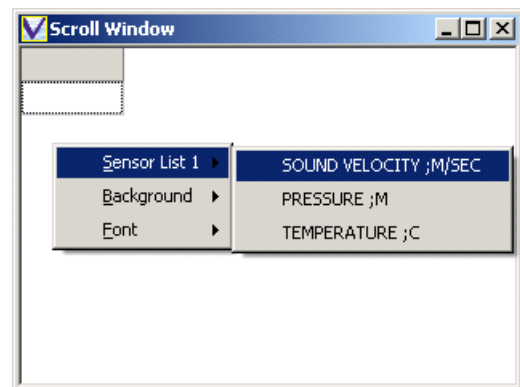
7.2 Scroll Display

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.

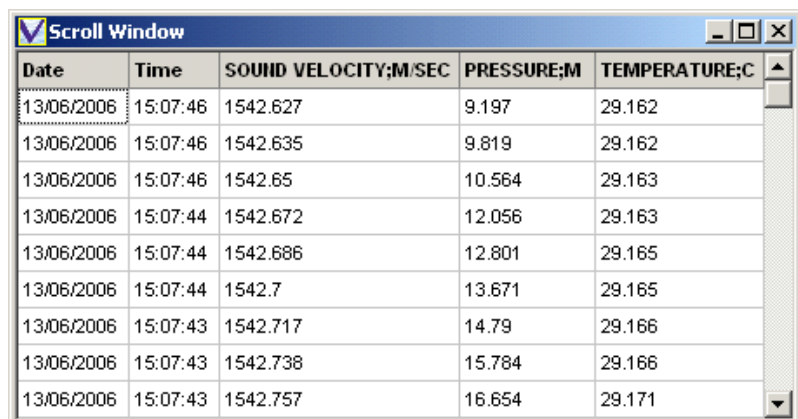
The Scroll window initially appears as shown:



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



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

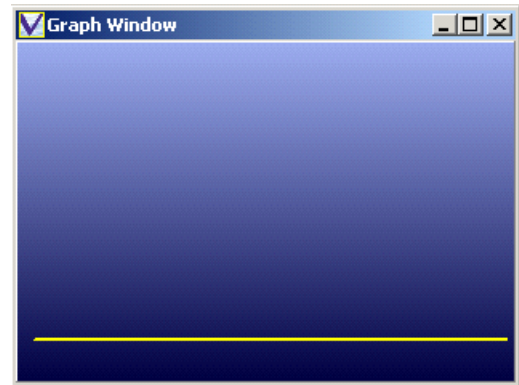
The following points should be noted about the Scroll Window:

- 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 re-sized using the mouse
- Background colour and Font may be adjusted as with the Simple Display

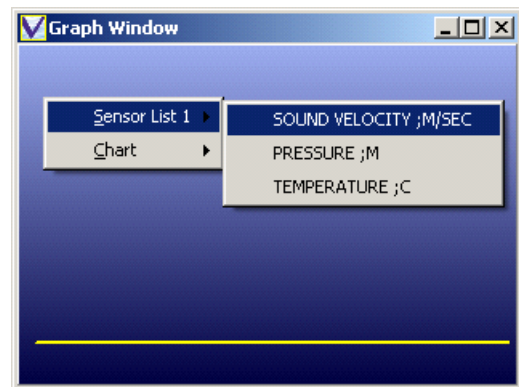
7.3 Graph Display

DataLog Pro 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:

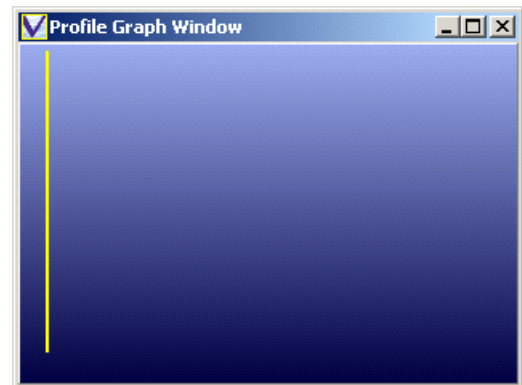


The Graph Window may be moved and sized using the mouse. By default, the graph scales will “Autoscale” to fit the displayed data. Control of this feature and other graph functions are described in Section 7.5.

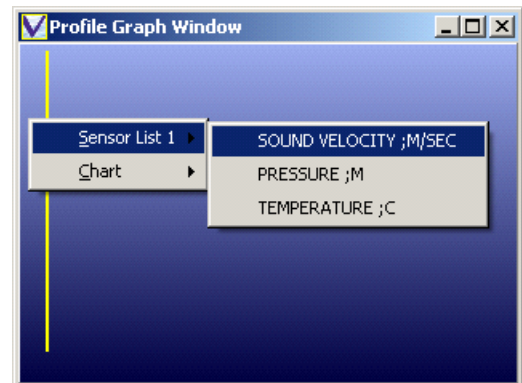
7.4 Profile Display

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:

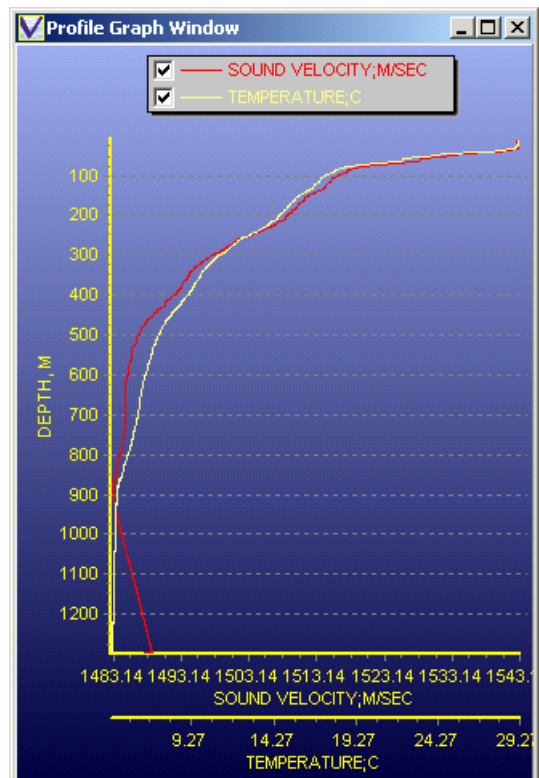


Right – click the box and choose the required parameter from the “Sensor List”, as shown



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

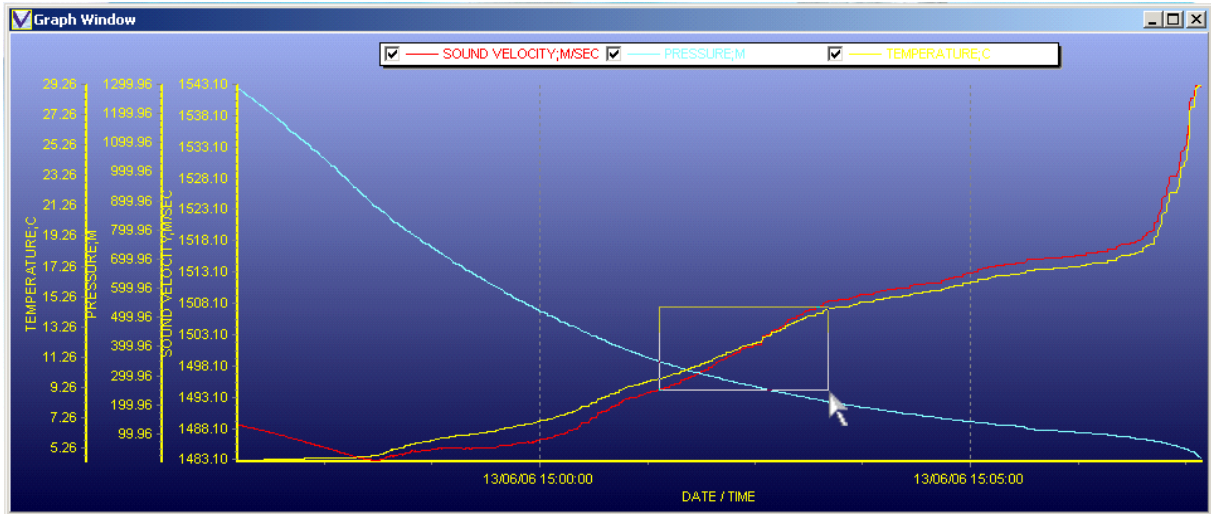
The Profile Window may be moved and sized using the mouse. By default, the graph scales will “Autoscale” to fit the displayed data. Control of this feature and other graph functions are described in Section 7.5.



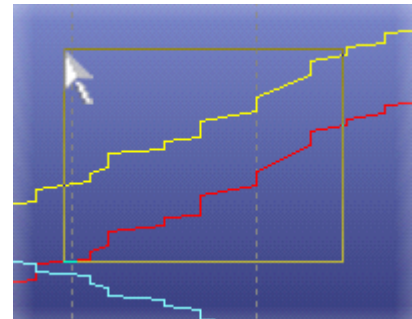
7.5 Graph and Profile Display Features

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.



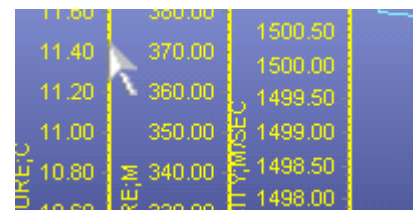
To zoom out, simply draw a box with the mouse from bottom right to top left, anywhere in the graph window



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.

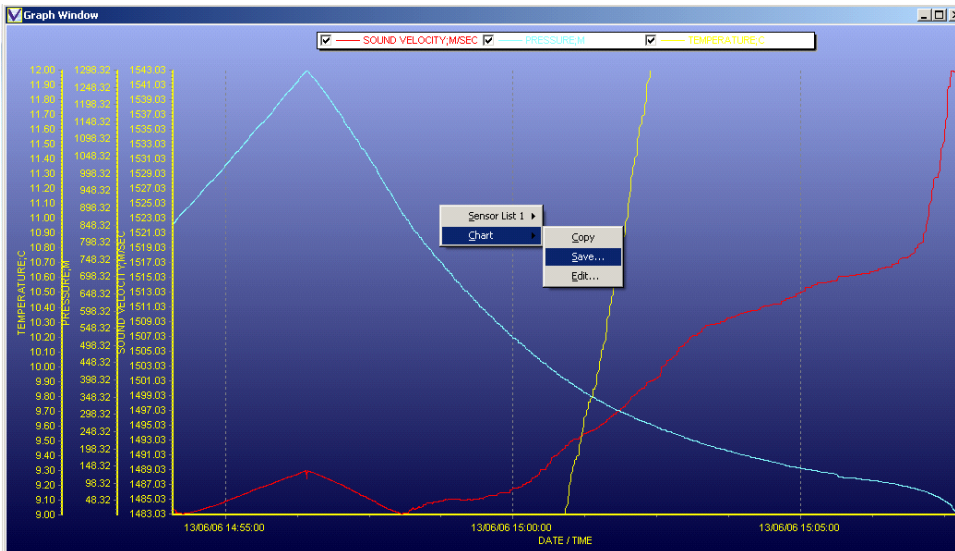
The 'Chart Scale' dialog box is shown with the following fields and buttons:

- Minimum Value: 0
- Maximum Value: 12
- Buttons: OK, Auto

To return to the Auto Scale 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:

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

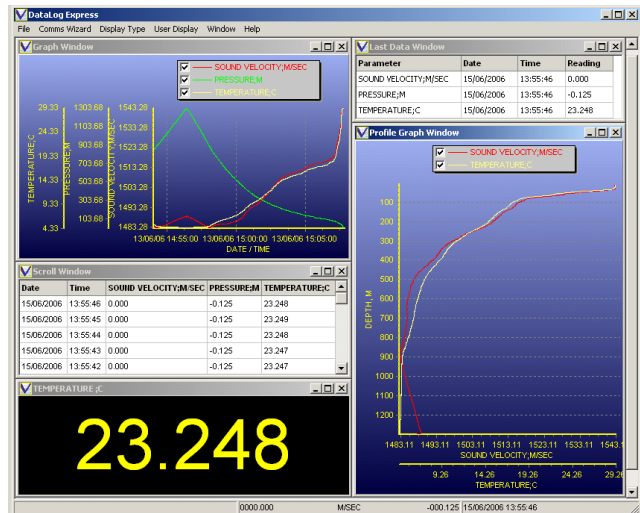
Parameter	Date	Time	Reading
SOUND VELOCITY;M/SEC	15/06/2006	13:21:49	0.000
PRESSURE;M	15/06/2006	13:21:49	0.000
TEMPERATURE;C	15/06/2006	13:21:49	23.738

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

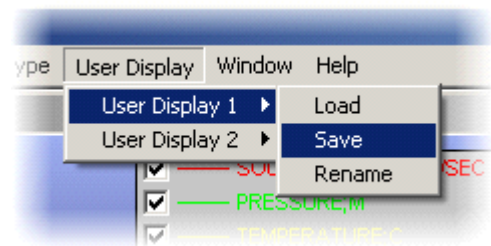
- The columns widths are adjustable using the mouse
- The entire display may be positioned and resized using the mouse
- Background colour and Font may be adjusted as with the Simple Display

7.7 Saving Your Display

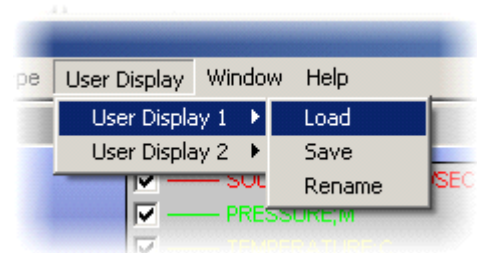
Having decided on which types of data display you require, it is possible to arrange them on the screen by moving and resizing them as appropriate. An example of how the screen could look is shown here:



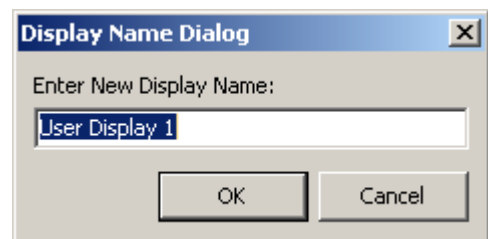
Having finalised your design, it is possible to save it for future use as one of two “User Displays”. Click “User Display” on the menu bar, then choose either “User Display 1” or “User Display 2”, and finally “Save”. The screen format will be recorded as either User Display 1 or 2 accordingly



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

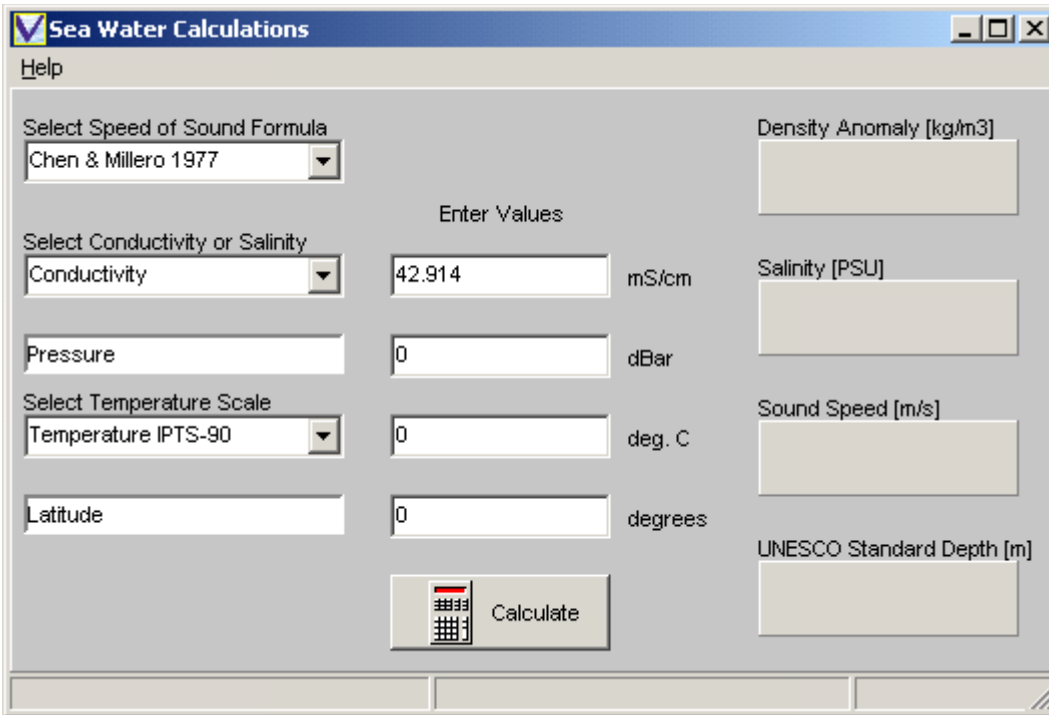


It is also possible to rename these preferred display formats to enable easier recognition. Select “Rename” from either User Display 1 or 2 and Enter the new name as appropriate:



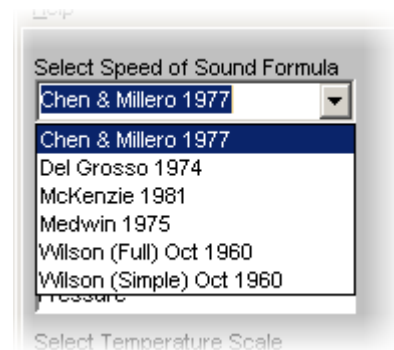
8 Seawater Calculations Utility

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.