



USB Instruments

**EasyLogger for PS40M10
"Swordfish" Help**

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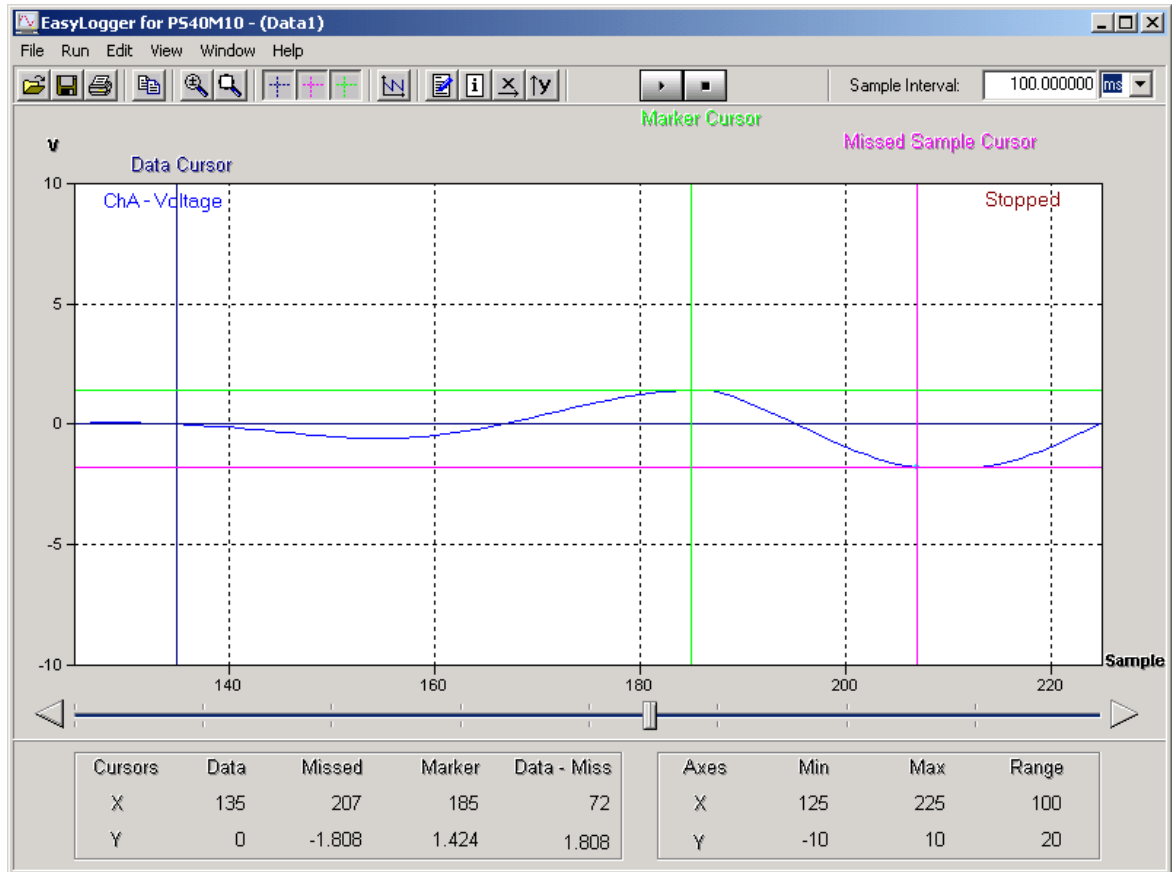
1 Introduction

1.1 Welcome to EasyLogger for PS40M10

EasyLogger is the easy to use but powerful data logging application program for the USB Instruments PS40M10.

It runs on any USB 1.1 or USB 2.0 equipped PC using Windows 98, 2000 or XP.

Drivers and an instrument interface DLL are provided for Linux systems.



1.2 EasyLogger Features

- Attractive, easy to use visual display
- 40MHz digital sampling rate
- Input saturation ranges from 1 V to 100 V
- Integrated switch to halt data capture through hardware
- User-defined sampling rate
- O.S.D. markers for voltage measurement
- O.S.D. markers for time measurement
- Save screens to Windows BMP files
- Export data to CSV and text files
- Load saved traces for display and export to other formats
- Screen printout facility
- Memo functions to comment data
- AC / DC coupling support
- Support for x1 and x10 probes
- User-defined display colour themes

2 Installing EasyLogger

2.1 Installing the EasyLogger Software

Before connecting the instrument to the PC, insert the supplied installation disk into the CD-ROM drive of your PC. The following menu will appear after a few seconds.

The EasyLogger program is installed with the EasyScope II program.

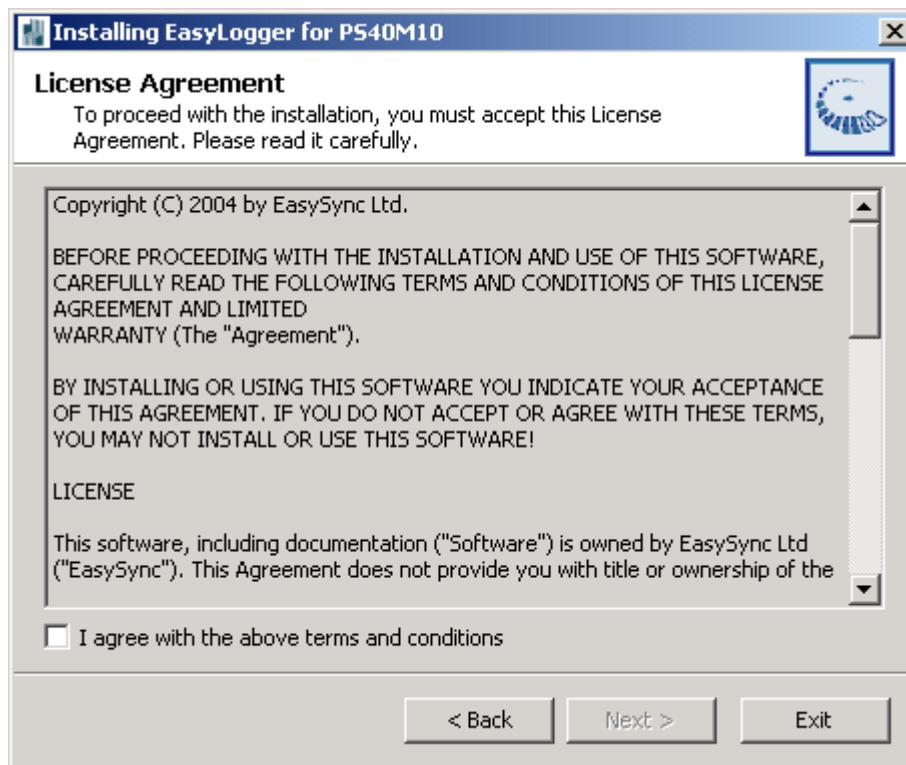
Before connecting the instrument to the PC, insert the supplied installation disk into the CD-ROM drive of your PC. The following menu will appear after a few seconds.



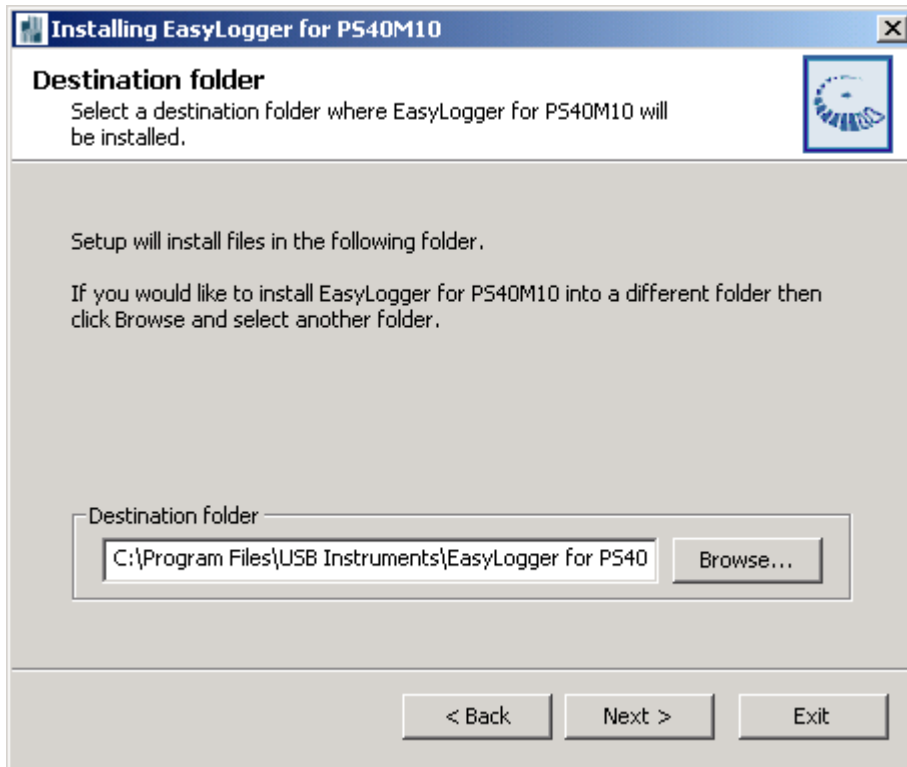
Click on the "Install EasyLogger Data Logger Application" button to launch the EasyLogger installation program. The following screen will appear:



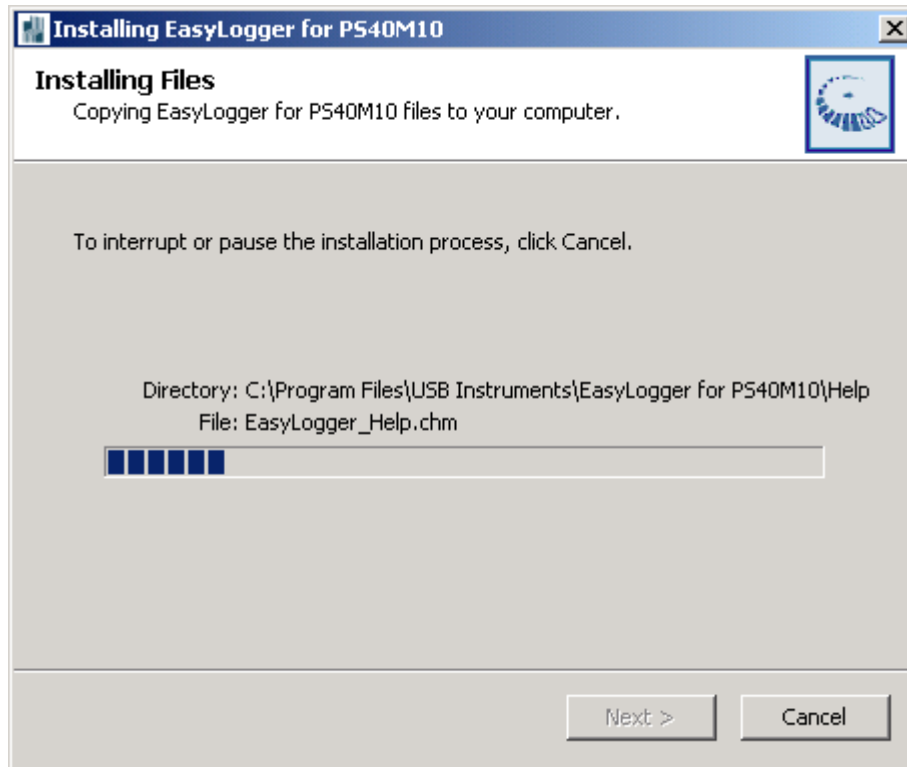
Click on the "Next" button to bring up the License Agreement Screen.



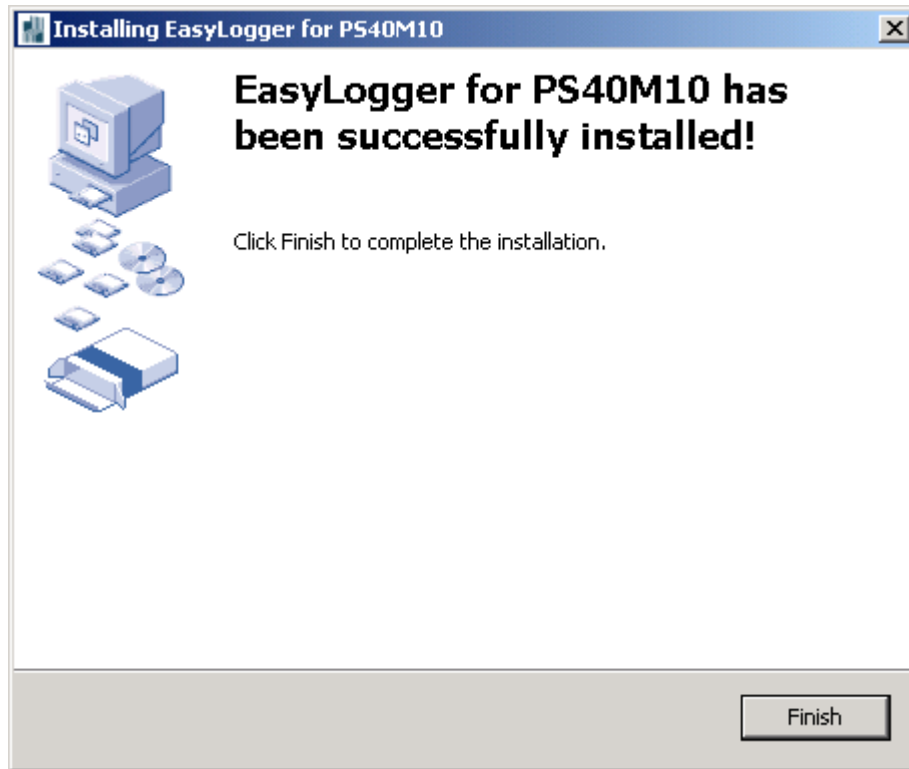
If you agree with the terms and conditions of the License Agreement, check the "I agree" box and click on the "Next" button to continue the installation process else click on the "Exit" button. The "Next" button is disabled if you do not agree to the terms and conditions. Agreeing to the terms and clicking on the "Next" button brings up the following screen.



Select the directory you wish to install the EasyScope software into. A default directory is shown on the screen. Unless you have good reason to change it we suggest you use the default suggested by the installation program. Click on the "Start" button to commence copying the files to the EasyScope program directory.



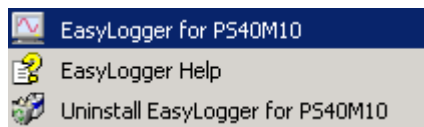
A progress screen (shown above) will appear as the files are installed. After a few seconds you should see the "Installation was completed successfully" message. Click on the "OK" button to complete the final stage of the installation process.



The installation process is now complete. You can launch the EasyLogger program from the desktop by double-clicking on the EasyScope icon (pictured below).



You can also launch the EasyLogger program from the Start -> Programs -> EasyLogger for PS40M10 menu on the Windows Toolbar.



As shown above, you also have access to the EasyScope Help files and Program Uninstaller from there.

Before using EasyScope, the USB drivers need to be installed. This is done by plugging the instrument into a spare USB port on the PC. The instrument should be plugged into a USB hub port of your PC or alternatively, a self-powered USB hub (one that has it's own power supply).

If this is the first time that the instrument has been plugged in, Windows will then request the USB drivers for your product. See [Installing the USB Drivers](#) for further details.

2.2 Installing the USB Drivers

Before using EasyLogger the USB drivers need to be installed. This is done by plugging the instrument into a spare USB port on the PC. The instrument should be plugged into a USB hub port of your PC or alternatively, a self-powered USB hub (one that has it's own power supply).

In the case of Linux systems, please follow the installation instructions in the ReadMe.dat file located in the Linux Drivers folder on the PS40M10 CD.

In the case of Windows based systems, please follow the instructions below.

If this is the first time that the instrument has been plugged in, Windows will request the USB drivers for your product and will display an Add New Hardware Wizard dialog box. The example below is for Windows 2000 but the procedure is very similar for other Windows versions.

Connect the instrument to a spare USB port on the PC or self-powered hub. The following screen will appear to begin guiding you through the driver installation.



Click "Next" to proceed with the installation. The following screen will appear:



Select the option box for "Search for a suitable driver for my device (recommended)" and click "Next".



Check the box for "CD-ROM drives" and un-check all others.

NOTE: If the CD is not available and the EasyLogger software has already been installed, then check the "Specify a location" box and use the Browse button to select the "drivers" sub-directory of the EasyLogger Program Files directory instead.

Keep Clicking on "Next" until the installation is finished as per the screen below.



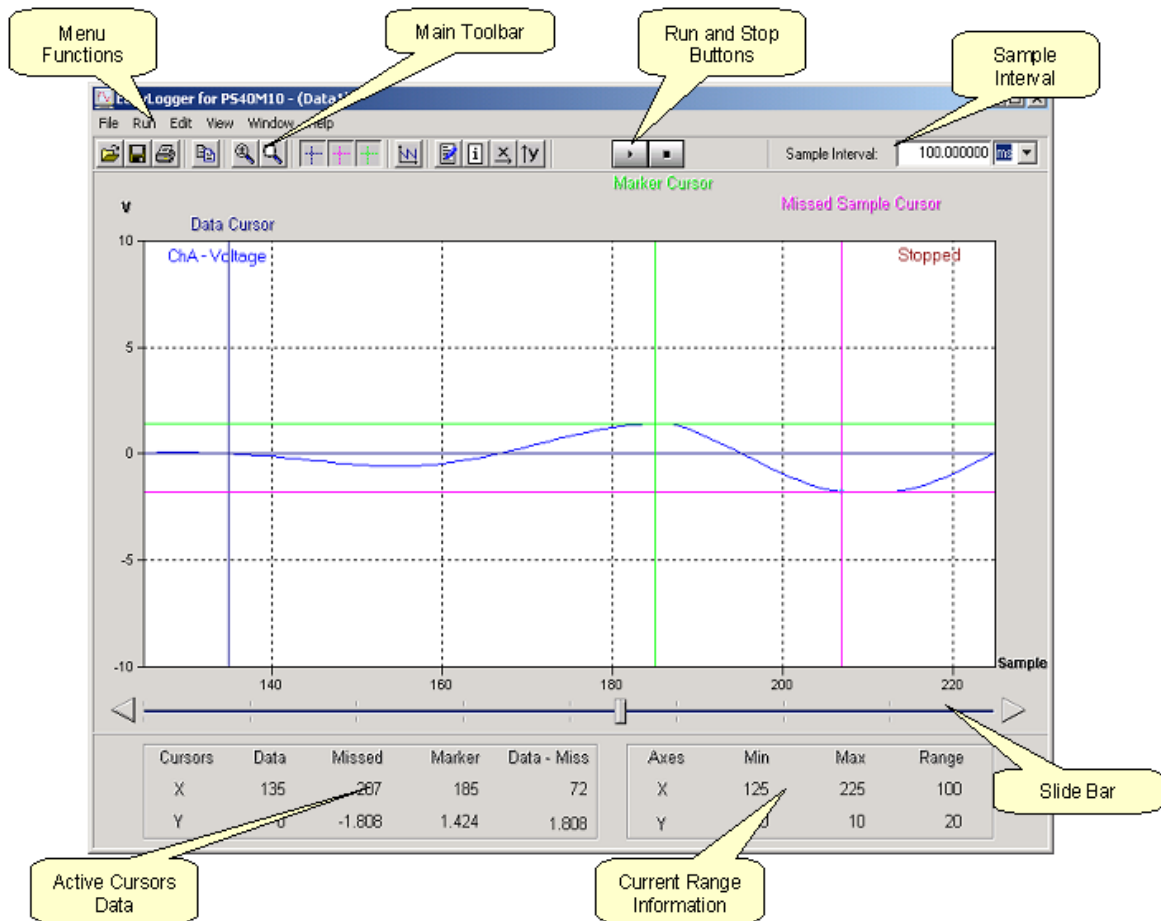
Click "Finish" to complete the installation of the first device.

If using Windows 2000, the second device will be installed automatically. For other versions of Windows, the above process may need to be repeated to complete the instrument installation.

3 Using EasyLogger for PS40M10

3.1 EasyLogger Overview

The EasyLogger has a simple layout with easy to use controls. The main controls and features are highlighted below. A full explanation of each feature is provided in the sections that follow.



3.2 Front Panel Functions

3.2.1 Start Button

Clicking the Start Data Logger button will commence data capture.



Please note that the controls for altering the sampling rate and vertical scales are disabled while the data logger is running.

When running, a caption appears at the top right of the data window which says "Running".

3.2.2 Stop Button

Clicking the Stop button will halt data capture.



The sampling rate and vertical scale controls will be enabled after the stop button has been clicked.

When stopped, a caption appears at the top right of the data window saying "Stopped".

3.2.3 Sample Interval

Use the Sample Interval control to specify the logging rate before starting to log data.



The image shows a software control for setting the sample interval. It consists of a text label 'Sample Interval:' followed by a text input field containing the value '1.000000' and a dropdown menu currently set to 'ms'.

Any rate between 50ms and 100s may be specified, but invalid sampling rates will be rounded to the nearest multiple of 25ns when logging starts. Data points may be missed at fast sampling rates on slower PC systems. Missed data points are indicated with a red cross.

3.2.4 Slide Bar

The slide bar allows scrolling through the logged data.



The chart display is updated as the scroll bar is moved. If tracking is enabled, the scroll bar is disabled while running.

The slide bar can be operated by dragging the handle or by clicking the triangular buttons at each end of the bar.

3.2.5 Scale Panel

The scale panel indicates the area of the chart currently visible. The default values before logging are shown below.

Axes	Min	Max	Range
X	0	100	100
Y	-10	10	20

These values are updated when data is logged or if scaling values are changed.

3.3 Toolbar Buttons

3.3.1 Open Chart

Clicking on the Open Chart button will display an open dialog box.



The user can then browse to a file of type .dlog (data logger format) which can then be imported back into the data logger for viewing. Please note that files of type .dlog cannot be viewed as text. To export data as text for analysis in 3rd party applications please export the data as text or comma separated values (.csv).

3.3.2 Save Chart

Clicking the Save Chart button produces a save dialog box that allows the user to save the current data chart in a variety of formats.



Either the data chart or load chart (selectable through the [Window menu](#)) may be saved.

Bitmap (*.bmp)

Selecting the bitmap option saves the area of the data chart which is currently visible to a bitmap picture file. This option will not allow access to the actual data for analysis or the data to be reloaded to the data logger for display.

Comma Separated Values (*.csv)

Selecting to export as .csv exports all of the chart data to a .csv file complete with start and stop markers which can then be analysed in 3rd party packages. Information on missed or clipped points is also included. .csv files are automatically associated with Microsoft Excel if it is installed.

Please note that Excel can only handle a maximum of 65536 lines of data. This limits the amount of logged data that can be viewed from a .csv file. If there are more than 65536 lines to write to the .csv file, the later lines are not available. It is possible to get around this by editing the .csv in a text editor (such as notepad), re-saving and then opening in Excel. This file format cannot be reloaded to the data logger for display.

Text (*.txt)

Exporting as text write all data points and headers to a text file. Unlike .csv files, text files are not limited to 65536 data points. This will allow access to the logged data for external analysis, but cannot be loaded into the data logger to display the chart.

Data Log Format (*.dlog)

The data log format cannot be used externally by other programs. It can however be used to reload previously logged traces to the load chart window. When a .dlog file is loaded, it can be re-exported as a bitmap, .csv or .txt file.

3.3.3 Print Chart

Clicking the Print Chart button prints the current chart area of the data logger.



The data printed can be changed by using the [slide bar](#), [zoom controls](#) or switching between [data1 and load windows](#).

3.3.4 Copy Chart to Clipboard

Clicking the Copy Chart to Clipboard button places a copy of the current chart area on the Windows clipboard.



This allows an image of the current plot area to be pasted into a document or spreadsheet.

3.3.5 Zoom In/Out

The Zoom In/Out button allows the user to enlarge areas of the chart.



To zoom in, click the button and then click and drag an area on the chart. This will display the selected area stretched to fill the full range of the chart screen. Alternatively, click the Zoom In/Out button and then simply left click on the chart area to zoom in. The minimum number of samples that can be displayed is 10.

To zoom out, click the Zoom In/Out button and then right click on the chart area.

3.3.6 Zoom Full

The Zoom Full button scales the x-axis to display all of the data points currently in memory.



To change the number of data points stored in memory, see Settings from the [Edit menu](#). The default value is 500000 samples.

3.3.7 Cursors

Three cursors are available. These are:

Data Cursor



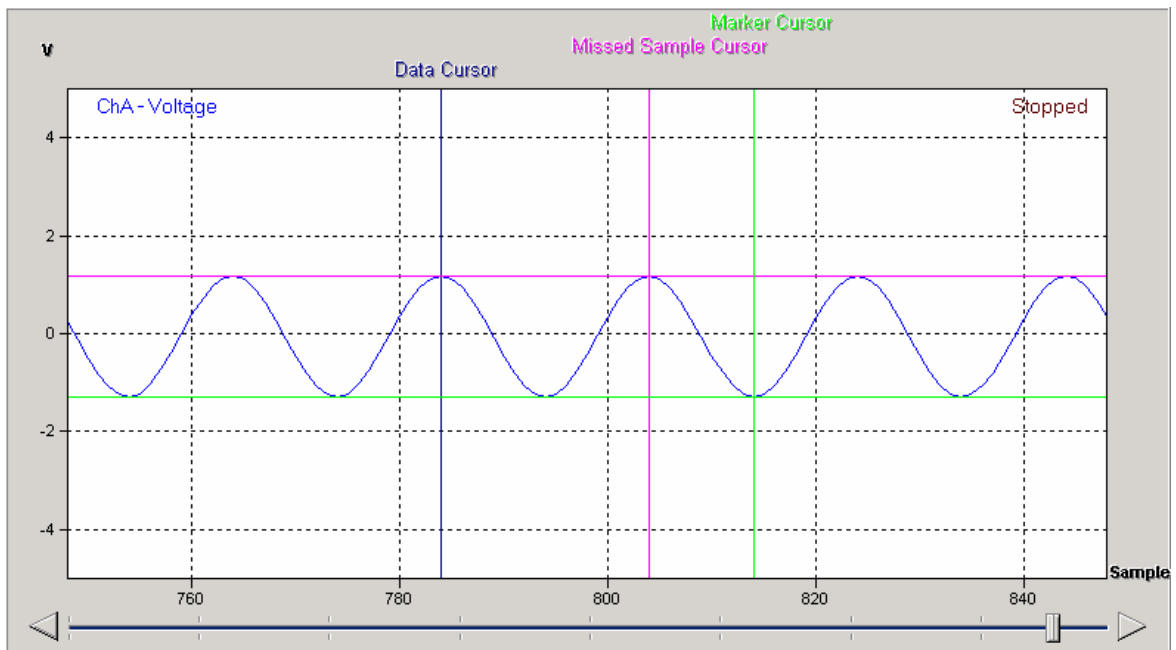
Missed Sample Cursor



Marker Cursor



They have different colours and names to allow them to be distinguished easily.



Each of the cursors can be moved by dragging the name label horizontally. Vertical dragging will have no effect as the cursors automatically track the data line.

The x and y coordinates of each active cursor are displayed in the Cursor Panel at the bottom left of the main window.

Cursors	Data	Missed	Marker	Delta
X	784	804	814	
Y	1.18	1.18	-1.29	

The delta column can be made to display the differences in x and y between two of the cursors. Right click on the word "Delta" and the following menu will appear:

Select Delta
Data - Missed
Data - Marker
Missed - Marker
Off

Selecting "Data - Missed", "Data - Marker" or "Missed - Marker" will display the differences between those cursors. The delta values can be turned off by selecting "Off". The following example shows the differences in x and y values between the Data and Missed cursors for the trace given above.

Cursors	Data	Missed	Marker	Data - Miss
X	784	804	814	20
Y	1.18	1.18	-1.29	0

3.3.8 TestMode Waveform

Clicking on the TestMode Waveform button activates the EasyLogger test mode. This produces a saw-tooth waveform without any input to the device.



Any input to the device will be ignored while test mode is active. The frequency of the waveform is 76.29Hz

3.3.9 Memo Window

Clicking the Memo Window button shows the [Memo window](#).



This allows markers and information to be added to the chart.

3.3.10 Info Window

Clicking the Info Window button shows the [Info Window](#).



The Info Window displays information about the current chart.

3.3.11 X-Control Window

Clicking the X-Control Window button shows the [X-Control Window](#).



This allows the range and scale of the x axis to be changed.

3.3.12 Y-Control Window

Clicking the Y-Control Window button shows the [Y-Control Window](#).

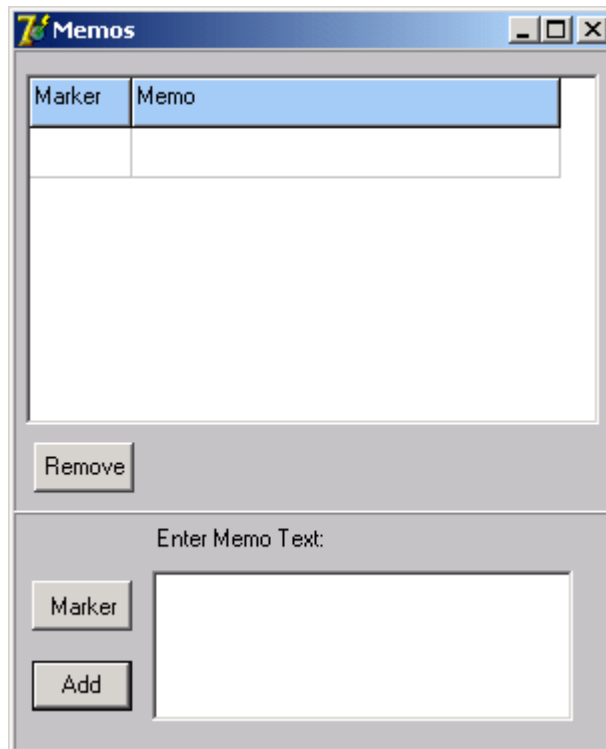


This allows the range and scale of the y axis to be changed.

3.4 Sub Panel Functions

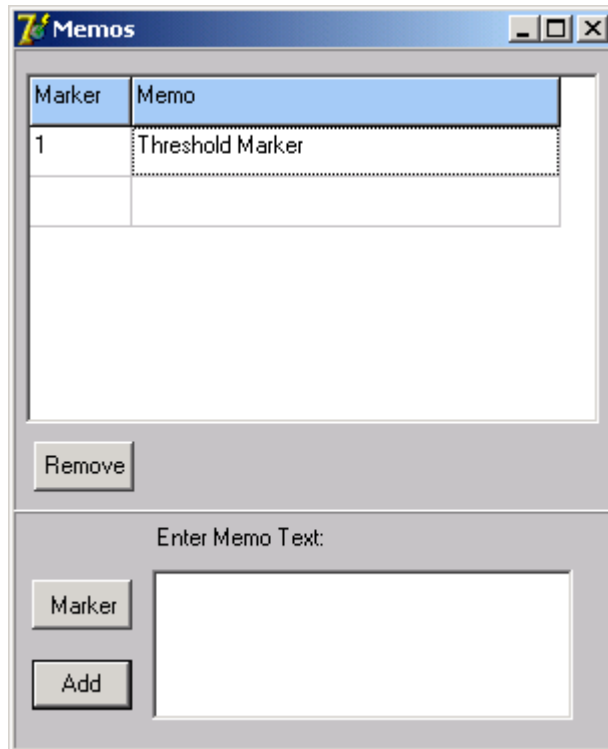
3.4.1 Memo Window

The Memo Window is shown below.

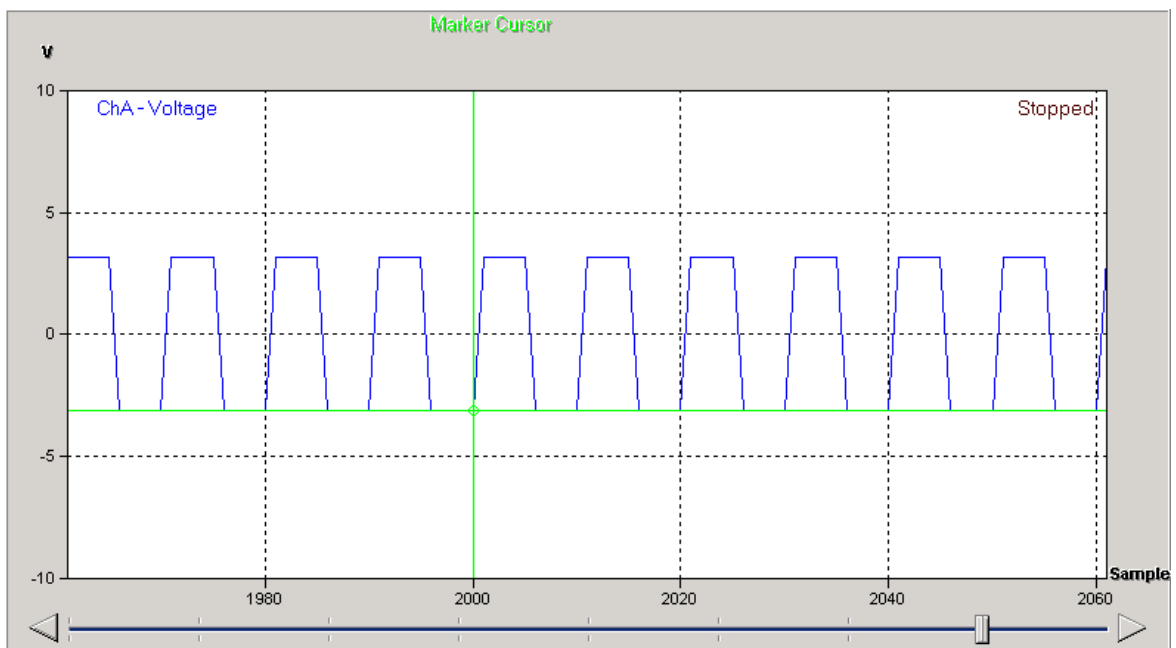


This can be used to manually comment the data on the chart.

To do this, click "Marker" and click on the chart where the marker is desired. This will add the marker to the chart. Next, type a memo in the memo text box and then click "Add". This will add the text to the memo list.



This process may be repeated to add multiple markers to the chart. The markers appear as green circles by default.

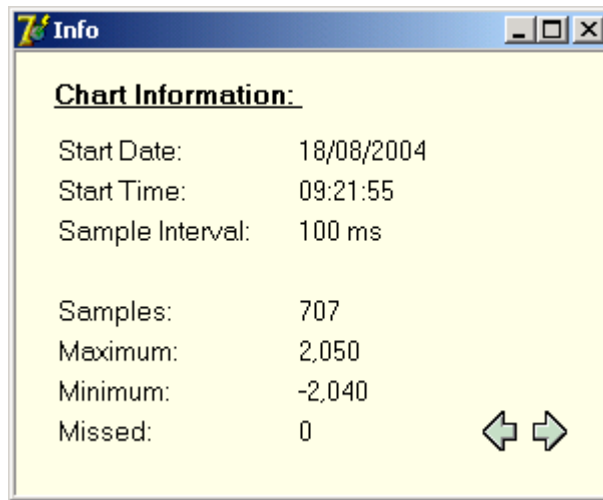


Double-clicking on a memo in the memo window will jump to the corresponding marker on the chart.

To remove markers, simply select the marker from the list in the Memo Window and click "Remove".

3.4.2 Info Window

The Info Window contains general data for the current chart, such as start date, start time and sample interval. An example is given below.

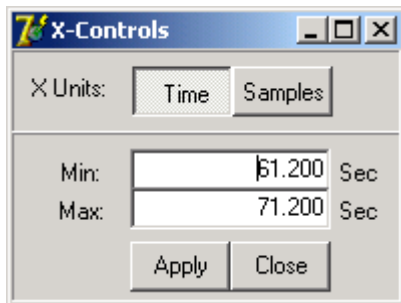
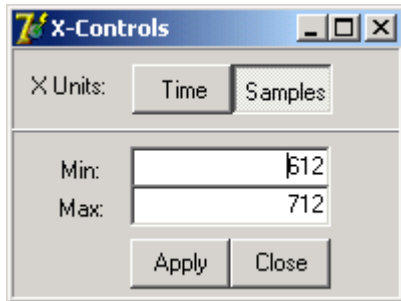


In the event that there are missed samples in the trace, the total number of missed samples is indicated next to "Missed:". The arrows may be used to seek the missed data points. When a missed data point is found using the arrow buttons, the missed cursor is applied at the same point to highlight the location.

3.4.3 X-Control Window

The X-Control window is shown below and provides manual control over the X-axis.

The scale unit may be changed between time and number of samples by clicking the "Time" and "Samples" buttons respectively.

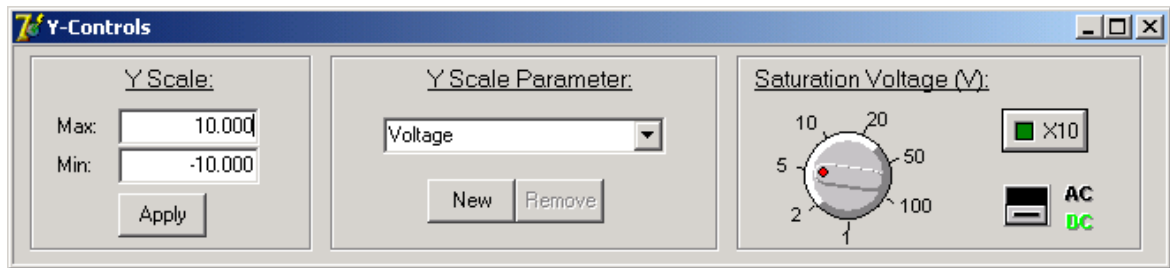


Values for the maximum and minimum scales values may then be entered in the text boxes and the display is updated when the "Apply" button is clicked.

The scale units may also be switched between number of samples and time by clicking on the axis label on the chart.

3.4.4 Y-Control Window

The Y-Control window (shown below) allows the chart Y-scale to be customised.



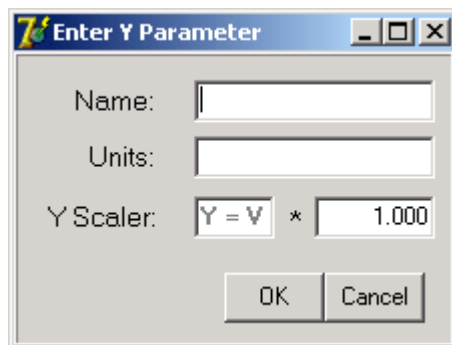
The window is divided into three sections. Each is described below:

Y-Scale

This allows the range of the Y scale to be manually adjusted. Simply enter the desired maximum and minimum values in the text boxes and click "Apply" to change the scale.

Y-Scale Parameter

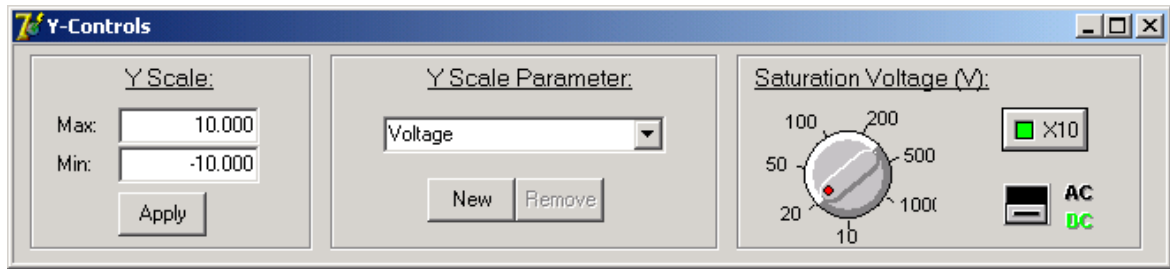
This allows the units of the Y-axis to be changed. Volts (V) and milli-Volts (mV) are provided by default, but custom units may be created by clicking the "New" button and filling in the form below. Click "OK" to add the new units to the list of available units.



Custom units can be removed from the list by selecting them from the combo box and then clicking "Remove".

Saturation Voltage (V)

This panel provides control over the ADC saturation Voltage limit and coupling. In addition, activating the "x10" button as this will re-scale for a x10 probe as indicated below.

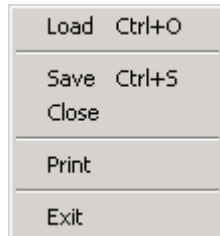


If the Voltage saturation level is exceeded, the data will be clipped to the saturation value and displayed in a different colour. The colour for clipped data can be customised through the [View menu](#). If data is clipped, a memo is added in any exported file to indicate that clipping has occurred.

3.5 Menu Functions

3.5.1 File Menu

The File menu (shown below) provides alternative access to functions available on the main toolbar.



Load

This provides the same functionality as the [Open Chart](#) button from the toolbar. An open dialog box is shown for the user to select a .dlog file to load to the load chart.

Save

This provides the same functionality as the [Save Chart](#) button from the main toolbar. A save dialog box is shown that allows the user to save the current data as a bitmap file (*.bmp), a comma separated values file (*.csv), a text file (*.txt) or a data logger format file (*.dlog). Data may be saved from either the data chart or the load chart.

Close

The close option clears the selected chart. If the Load chart is displayed, the chart is cleared and is no longer selectable from the [Window menu](#). If the Data chart is displayed, the chart is cleared in the same way as Clear Screen from the [Edit menu](#).

Print

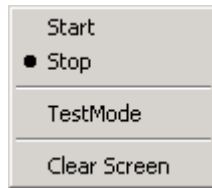
This provides the same functionality as the [Print Chart](#) button from the main toolbar.

Exit

The Exit option allows the user to quit the application and has the same function as the Windows Close button .

3.5.2 Run Menu

The Run menu (shown below) provides access to the following functions:



Start

This provides the same function as clicking the [Start Button](#). Selecting "Start" begins data logging with the specified sample rate and Voltage saturation limit.

Stop

This option provides the same functionality as the [Stop Button](#). Selecting "Stop" will terminate data logging.

TestMode

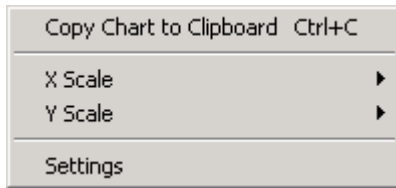
Selecting TestMode activates the EasyLogger test mode in the same way as the [TestMode Waveform](#) button from the main toolbar. This creates a saw-tooth waveform with a frequency of 76.29Hz.

Clear Screen

Selecting Clear Screen removes all data from the data chart. This option is disabled if the load chart is selected.

3.5.3 Edit Menu

The Edit menu (shown below) allows access to the following functions:

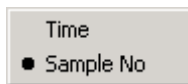


Copy Chart to Clipboard

This option provides the same functionality as the [Copy Chart to Clipboard](#) button on the main toolbar. This copies an image of the chart area to the Windows clipboard for pasting into documents or spreadsheets.

X Scale

Selecting X Scale displays the following sub-menu.



This allows the units of the X-axis to be changed between time and sample number. The units of the X-axis can also be changed through the [X-Control Window](#) or by clicking on the axis label.

Y Scale

Selecting Y Scale displays the following sub-menu.



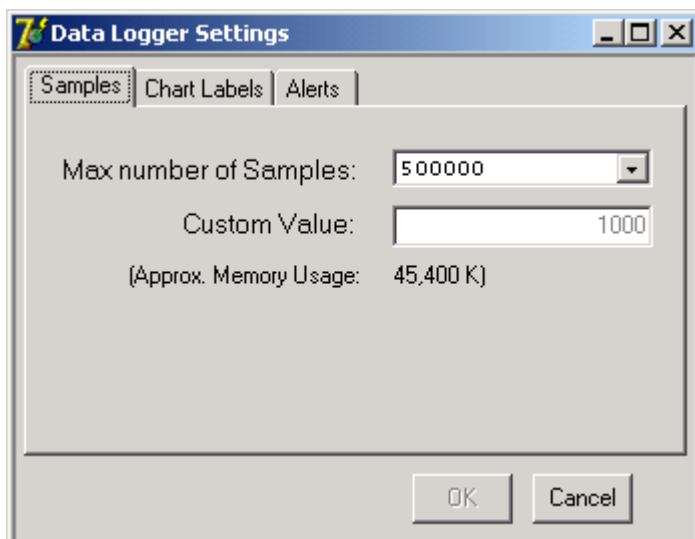
This allows the units of the Y-axis to be changed between the default units of V (Volts) and mV (milli-Volts). The units of the Y-axis can also be changed through the [Y-Control Window](#). To display custom units on the Y-axis, use the [Y-Control Window](#).

Settings

Through the settings option, a window appears which allows access to three tabs: Samples, Chart Labels and Alerts.

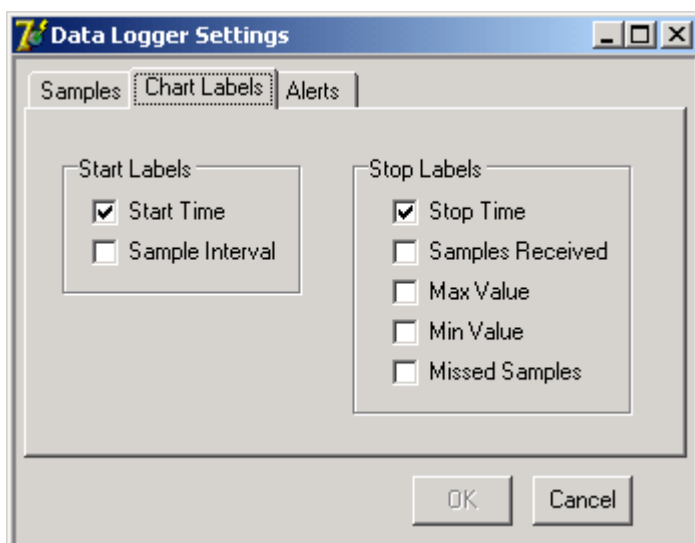
- **Samples**

The samples tab is shown below. This can be used to customise how many data points EasyLogger will hold in memory before writing earlier data points to a backup file. The default value is 500000 samples, but this may need to be reduced for systems with small amounts of memory as performance may be reduced. An approximate memory usage is displayed for the current maximum number of samples. If the slide bar is used to scroll backward through the buffer beyond the data in memory, the data points required are read back into memory.



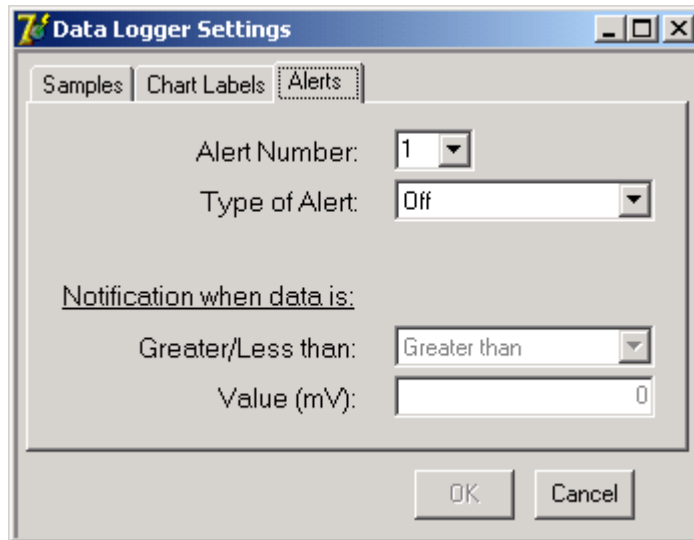
- **Chart Labels**

The chart labels tab is shown below. This allows customisation of which text labels are visible on the chart at the start and stop markers. Please note that regardless of which options are checked here, all exported data files will contain all of this information.



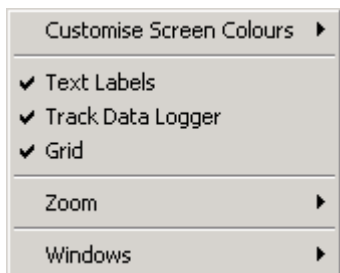
- **Alerts**

The alerts tab is shown below. This can be used to configure up to four alerts to flag when the logged data reaches a critical value. Alert types are pop-up windows, e-mails or both. A valid e-mail address and network connection are required for the e-mail alerts. Alerts can be configured for when values are greater than or less than some value.



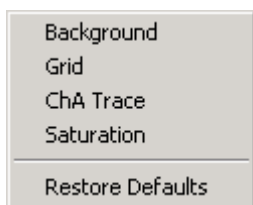
3.5.4 View Menu

The View menu (shown below) allows the user to change the appearance of the EasyLogger.



Customise Screen Colours

Selecting Customise Screen Colours shows the following sub-menu:



Selecting any of the options available on this sub-menu allows the user to select a new colour for the selected item. Selecting "Restore Defaults" resets all colour settings to the original colours.

Text Labels

Selecting Text Labels will check or un-check the text labels option. This will toggle whether start and stop marker text labels are shown on the chart or not.

Track Data Logger

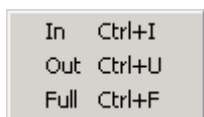
Selecting Track Data Logger will check or un-check the tracking option. This will toggle whether the chart updates constantly to show the newly acquired data or allow the display to remain static. The [slide bar](#) is disabled if tracking is enabled and the [slide bar](#) is enabled if tracking is disabled.

Grid

Selecting Grid will check or un-check the grid option. This will toggle whether the grid is shown on the chart or not.

Zoom

Selecting Zoom from the menu displays the Zoom sub-menu (shown below).

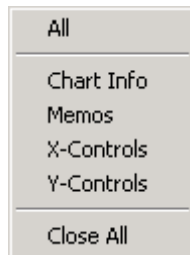


These functions provide the same functionality as the [Zoom In/Out](#) and [Zoom Full](#) buttons and can be used to enlarge or shrink an area of the display. Keyboard shortcuts are also indicated in the

menu.

Windows

Selecting Windows from the menu displays the Windows sub-menu (shown below).

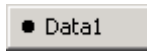


This provides the same control over which windows are visible as the [Memo Window](#), [Info Window](#), [X-Control Window](#) and [Y-Control Window](#) buttons on the main toolbar. In addition, there are options to display all windows or to close all windows.

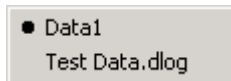
3.5.5 Window Menu

The Window menu allows the user to select whether the data chart or the load chart data is displayed.

By default, the load window is not selectable as there is no file loaded.



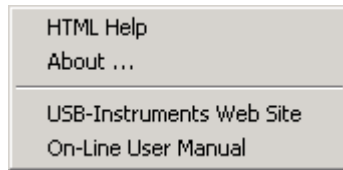
If a .dlog file is loaded using either the [Open Chart](#) button or the Load option from the [File menu](#), the load chart becomes selectable from the window menu. The following example shows the window menu after a .dlog file called Test Data.dlog has been loaded.



The window currently displayed is indicated by a ●.

3.5.6 Help Menu

The following options are available through the Help menu (shown below).



HTML Help

Selecting HTML Help from the menu will launch this help file.

About ...

The About ... option displays version information and release dates.


USB-Instruments Web Site

This will connect to the Internet and take the user directly to the USB Instruments web site where information can be found on products and updates.

On-Line User Manual

This option will take the user to the EasyLogger manual section of the USB Instruments web site.

3.6 Quitting EasyLogger

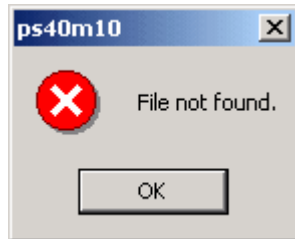
EasyLogger can be exited by either accessing the Exit option of the [File menu](#) or clicking the Windows Close button  in the top right-hand corner of the window.

4 Appendix

4.1 Error Messages

4.1.1 File Not Found

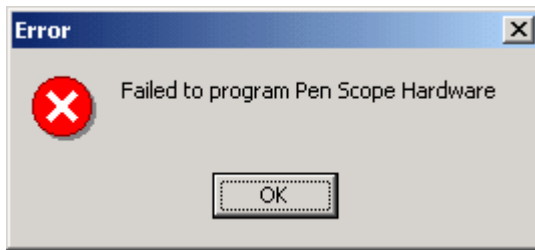
This error occurs when EasyLogger cannot find the file to program the PS40M10 hardware.



To resolve this problem click "OK", quit the EasyLogger application and check that the file PSDLOG.rbf exists in the same directory as the EasyLogger application program. If the file is there, try to re-launch the EasyLogger application ensuring that the instrument is connected to the PC. If the file is not there, it may be retrieved by browsing the installation CD and copying it to the same location as the EasyLogger application.

4.1.2 Failed to program Pen Scope Hardware

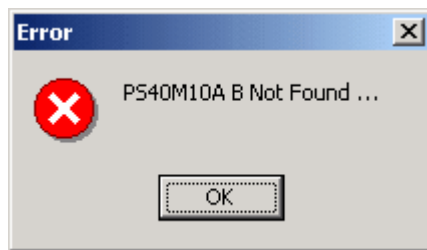
This error occurs when the EasyLogger application cannot detect any instruments connected to the PC when it is launched.



Ensure that the instrument is connected to the PC and that the correct drivers are installed, then re-launch the EasyLogger application.

4.1.3 PS40M10A B Not Found ...

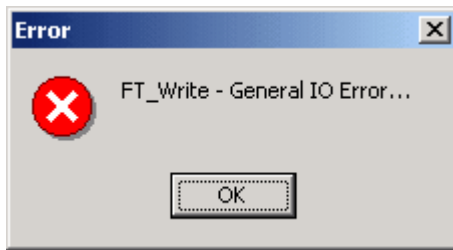
This error can occur when trying to run the EasyLogger application with no PS40M10 hardware connected to the PC.



To resolve this, connect a PS40M10 to the PC and run the application again. If this has no effect, check that the drivers are installed correctly.

4.1.4 FT_Write - General IO Error ...

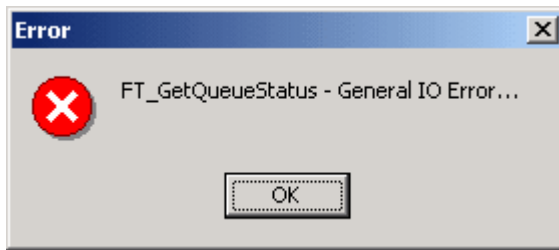
This error may occur if the PS40M10 is unexpectedly disconnected from the PC while the program is running.



A message box with this error may appear several times but will clear and run as normal after clicking "OK" on each message box that appears.

4.1.5 FT_GetQueueStatus - General IO Error ...

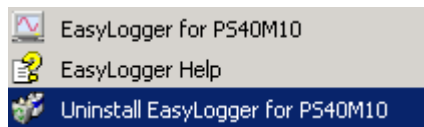
This error may occur if the PS40M10 is unexpectedly disconnected from the PC while the program is running.



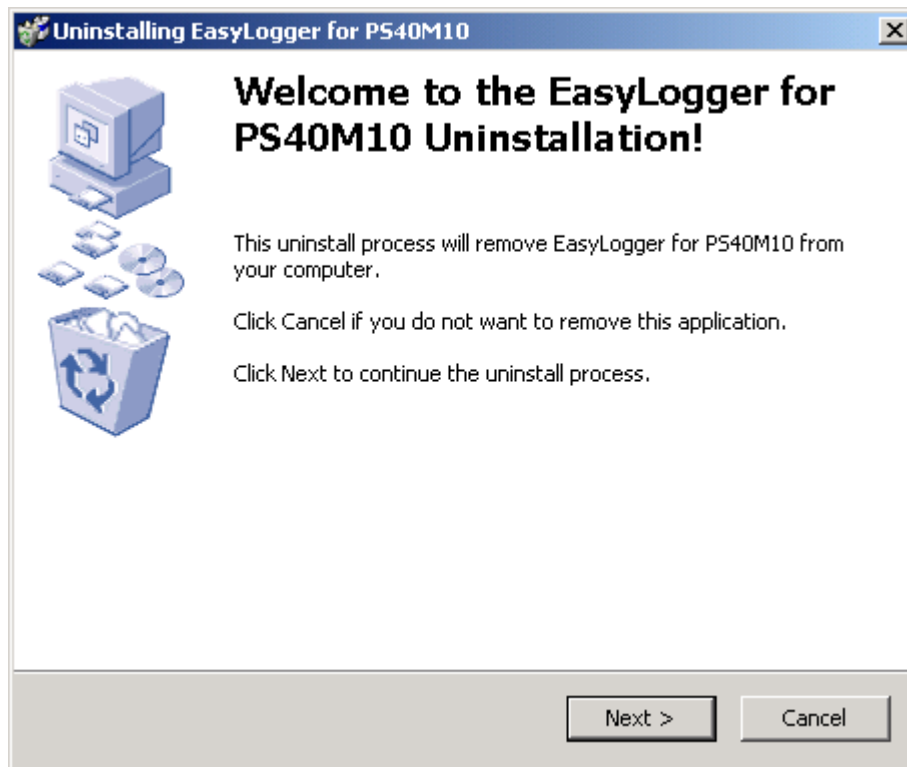
A message box with this error may appear several times but will clear and run as normal after clicking "OK" on each message box that appears.

4.2 Uninstalling EasyLogger

From the Start -> Programs -> EasyLogger for PS40M10 menu on the Windows Toolbar, select the Uninstall EasyLogger for PS40M10 Option and click on it.

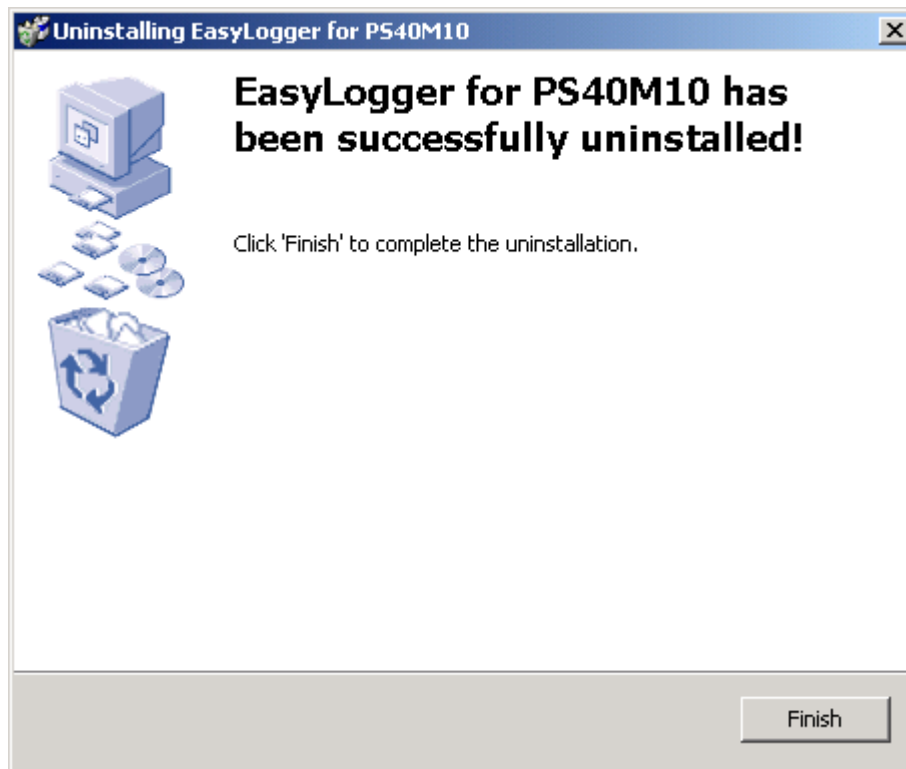


This will start the uninstaller program. The following confirmation screen will appear.



If you are sure you want to uninstall the EasyLogger Program, click on "Next". If not, click on "Cancel" to abort the Uninstall process.

Clicking on "Next" starts the uninstall sequence. When the EasyLogger Software is run for the first time, it automatically creates an INI file (PDL40M10.ini) to store program settings. It is safe to delete this if asked by the uninstaller.



Click on "Finish".

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