

**Download Software
User Guide
Software Version 1.3.51**

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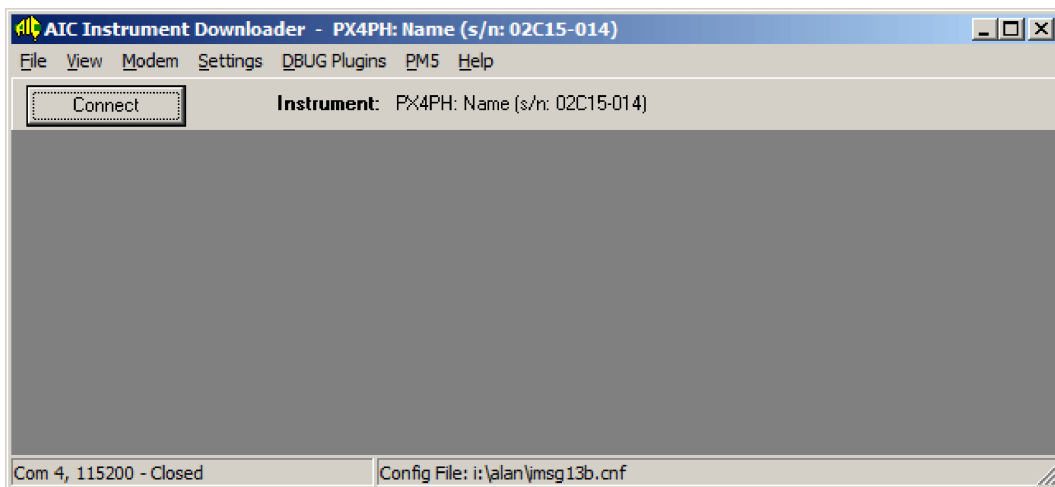
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1 Introduction

The download software is designed for use with Windows operating systems 98, 2000, NT, XP or Windows 7 (may not operate with Vista). The software allows downloading of data from any Amalgamated Instrument Co (AIC) instrument fitted with serial communications (optional on most instruments). The software allows viewing of live data and data logging directly to a file using the computer hard drive for storage. Data logged on the hard drive is saved as a comma separated “.csv” file allowing it to be opened by most spreadsheets. If the instrument is fitted with internal data logger memory or is used with the PM4-DL datalogger the software also allows downloading and viewing of data logger data. Once the data has been downloaded from the internal data logger chip it can, if required, be exported for use in a word processor, spreadsheet or database. This User Guide covers the main windows required for setup, the function of the remaining windows should be self explanatory or easy for the user to test for themselves.

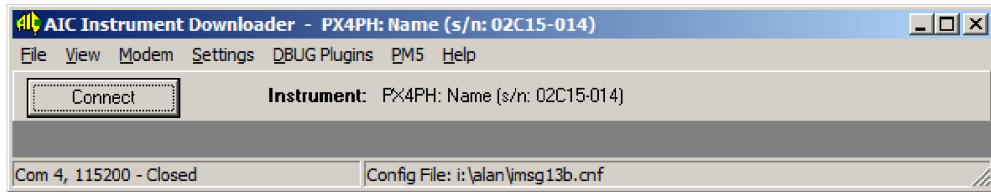
1.1 Installation

The software is supplied on CD ROM. To install insert the CD ROM, if Windows “Auto Run” is enabled the “Install Wizard” will guide you through installation once the disk is inserted. Alternatively view the contents of the CD ROM using Windows Explorer or similar program and double click on “Setup.bat”. The “Install Wizard” program will then guide you through installation. An icon will automatically be inserted in the selected menu e.g. Start Programs or Applications. Double click on the icon to start the program. A window similar to the one below should then appear e.g. some instruments will have password facilities and some will not.



1.2 Overview of main software menus

The diagrams which follow show the main setup menus for the software. Some instruments allow the use of additional “plugin” software which may cause additional menus to appear on the top line. Refer to the relevant chapters in this manual for details of the plugin versions available. Note the sections which appear may change depending on the instrument connected.



Comms port
and baud rate
details

Configuration file location

Connect button - for single connection to one instrument (**A.buS** only).
This button will not be seen when multiple instruments are selected for connection.

File - sub menus:

New Config - allows setup of a new configuration file i.e. new settings file

Open Config - opens an existing configuration file

Save Config As - save configuration file with new name
(file is automatically saved with old file name when program closes)

Exit - closes program

View - sub menus (note: data logger menus will only be seen if connected to an instrument with internal data logger):

Data Logs - allows viewing, download or export of data log files

Event Logs - only seen on instruments with event logger capability, allows viewing, downloading and export of event logs

Live Data - view live data, also allows logging of data to PC drive

Instrument Properties - view details of instrument connected

Datalogger Properties - view data logger settings

Eventlogger Properties - view event logger settings

Password Configuration - bring up the Password Config window if applicable

Terminal Window - bring up the terminal window

Modem - sub menus:

Connect - allows entry of phone number & description

Disconnect - disconnects modem

Setup - allows entry of required modem parameters

Settings - sub menus:

Unit Address - allows setting of unit address number and comms testing
(this menu will not be seen if multiple instrument connection is selected)
- allow setting of com port, baud rate and parity (fixed 8 bit data)

Abus Discovery - detects and shows all devices connected via A.buS

Comms - allows access to serial communications settings

Instrument Setup - allows setup of multiple instruments or instruments without **A.buS** option

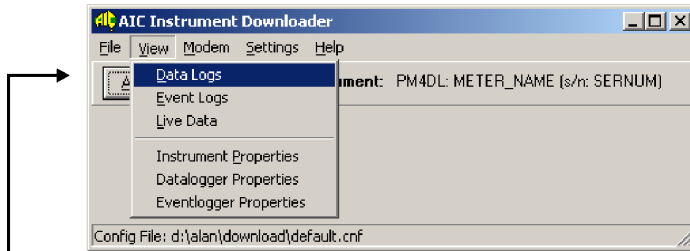
Output Files/Directories - allows setup of working directories and exported file directories, extensions etc..

Plugin Path - allows selection of directory which contains plugin files.
Plugins are files available with certain instruments which will bring up new menus for that instrument

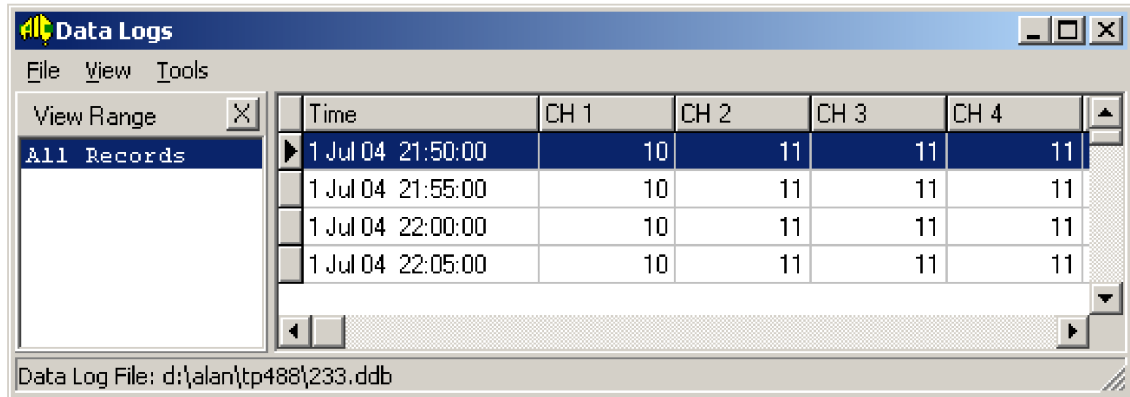
Help - allows access to the software version number

If the software is run with "plugins" i.e. special files for certain instruments then extra menus for these instruments will also be seen.

1.3 Data Logs Menus



Data Logs selected via **View** button - typical data logs window below



File - sub menus:

- New** - create new datalog ".ddb" file
- Open** - open existing datalog .ddb file
- Close** - close Data Logs window

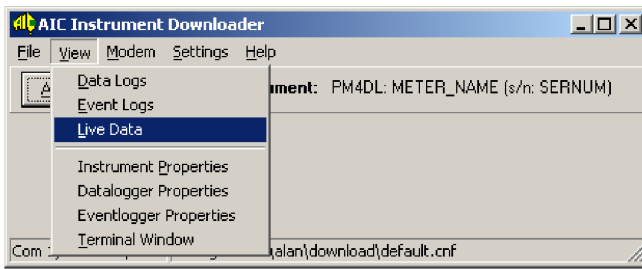
View - sub menus:

- Datalogger Properties** - view data logger details
- Graph** - show graph
- Range List** - show data viewing range list

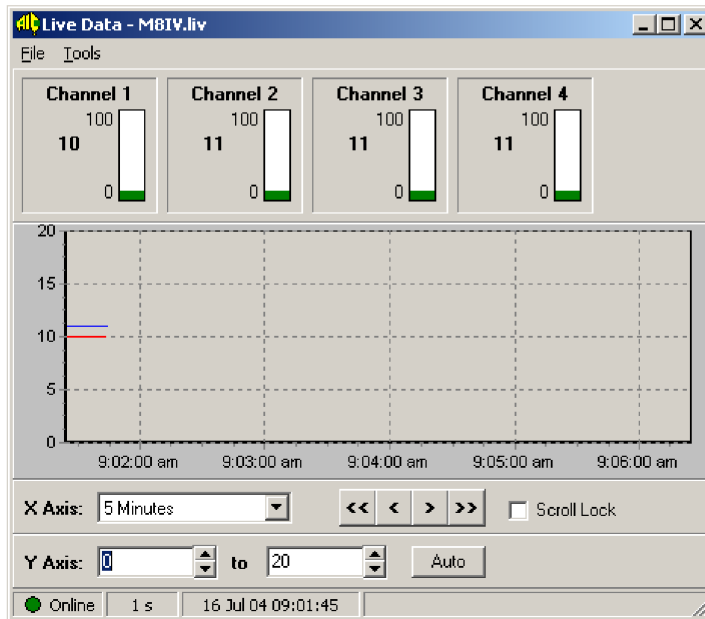
Tools - sub menus:

- Download** - download file from data logger
- Export** - export file for use in spreadsheet etc.
- Settings** - view datalogger settings
- Range List Options** - show options for data viewing range

1.4 Live Data Menus



Live Data selected via View button - typical live data window below



File - sub menus:

- New** - create new live data settings ".liv" file
- Open** - open existing live data settings .liv file
- Save As** - save current settings as new file name
- Print Graph** - send graph to printer
- Close** - close Live Data window

Tools - sub menus:

- Go Offline** - stop live data update
- Go Online** - start live data update
- Start Logging** - start logging live data to drive
- Stop Logging** - stop logging live data to drive
- Settings** - brings up live data settings window
- Graph Legend** - brings up graph colour identification window

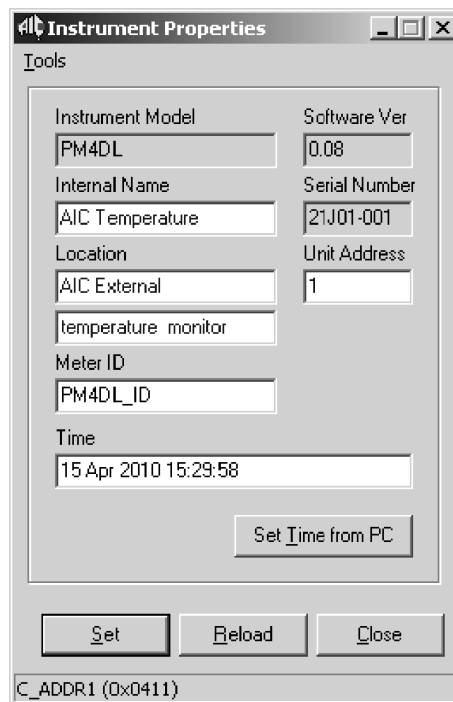
2 Setting up the software for communication

1. First ensure that the instrument or instruments are switched on and connected to the serial port. The **O.Put** function on the instruments connected should be set to **R.buS** (AIC binary protocol) or if **R.buS** is not available set the **O.Put** function to **POLL**. Ensure that the correct baud rate, parity and addresses are set. If the instruments are fitted with internal data logger chips then ensure that the correct date and time are set.
2. Using this download software go to the **File** menu and select **New Config**. Select a directory and filename for the new configuration (config.) file. This file stores the details of the instruments connected, comms. settings etc. In future use the software will automatically select the last config. file used.
3. At the **Settings** menu select **Comms** then select the comms port to be used, the baud rate and the protocol must match those set in the instruments connected. If only one instrument is being used and **R.buS** is being used then you now have the option of clicking on the **Auto Detect Instrument** window which will interrogate the instrument and automatically perform a basic setup. If **R.buS** is not being used or more than one instrument is connected or changes are required to the basic setup created by **Auto Detect Instrument** follow the remaining steps below.
4. At the **Settings** menu select **Instrument Setup > Instruments**, if more than one instrument is connected ensure that the **Single Instrument Mode** box is not ticked.
5. At the **Instruments** folder click on **Add**, “Device 1” will appear in the **Instruments** list. If required you can change the name at the **List Name** window. Add the address of the instrument at the **Unit Address** window. Ensure that **Supports AIC Binary Protocol** is selected if the instrument at this address is using **R.buS** as its communication mode. If the instrument is using **POLL** mode then ensure that **Supports AIC Binary Protocol** is not selected.
6. If the instrument at this address is using **R.buS** as its communication mode then click on **Auto Setup**. Do not worry if the **Instrument Identity** information which is automatically generated is incorrect, this can be changed later at the **Instrument Properties** window.
7. If using **POLL** mode complete the **Instrument Identity** boxes, the serial number entry is optional. If an instrument is connected you can now test communications by clicking on the **Test Comms** box. A window will appear to let you know whether or not the test was successful. If the test was not successful then check that the comms setup is identical in the download software and in the instrument, also check that the instrument is correctly connected to the serial port.
8. If a data logger memory is fitted to the instrument (**R.buS** only) used then click on the **Datalogger** window. Tick the **Enable Data Logger** window and choose a location and name for the file in the **Data Log File Name** window. If more than one instrument is to share the same datalogger file then each must be given the same file name and location.
9. If an event log file is required then click on the **Eventlogger** window. Very few instruments have eventlogger capability and event logging is not available unless used with these special instruments. Tick the **Enable Event Logger** window and choose a location and name for the file in the **Event Log File Name** window.
10. Repeat steps 5 to 10 for any additional instruments to be used in this config. file. i.e. add the next instrument to the list and follow steps 5 to 9.

11. The **Report Options** under **Settings** are provided for use with special instruments and cannot generally be used at this stage.

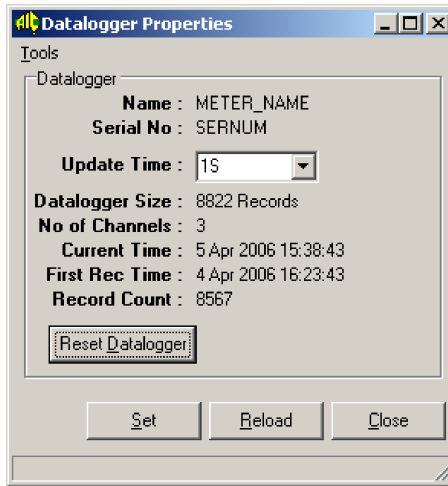
2.1 Viewing and setting instrument properties

If more than one instrument is connected then first select the required instrument in the window below **File** and **View**. At the **View** menu select **Instrument Properties**. A window similar to the one alongside should now appear. If any changes to the **Internal Name**, **Serial Number** or **Location** are required they can be changed here. When the **Set** button is clicked the new information will be sent to the instrument and stored. The time shown is the datalogger memory time. The time displayed can be overwritten and the **Set** button clicked alternatively the **Set Time from PC** can be clicked. Either of these methods will cause the time displayed to be downloaded to the datalogger.



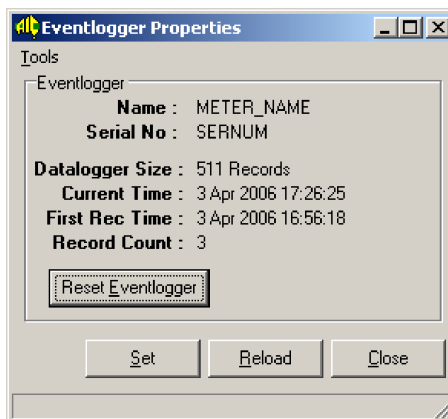
2.2 Viewing and setting datalogger properties

If more than one instrument is connected then first select the required instrument in the window below **File** and **View**. At the **View** menu select **Datalogger Properties**. A window similar to the one alongside should now appear. The logging period can be changed here if required by selecting a new time from the window and clicking on the **Set** button. The logging time section allows various time selections between 1 second and 60 minutes. The data logger memory can be cleared at this window by clicking the **Reset Datalogger** button. If this is done a new window will appear asking for confirmation of the datalogger memory clearing request. Note: if the **Datalogger Size: is 0 Records** this indicates that the software has not detected a datalogger chip in the instrument.

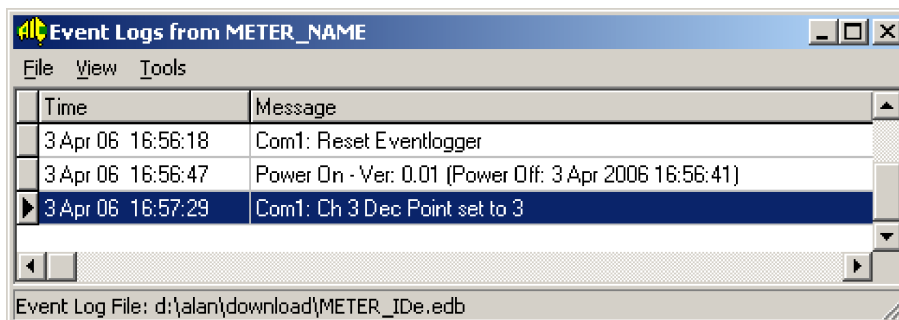


2.3 Viewing and setting eventlogger properties and eventlogs

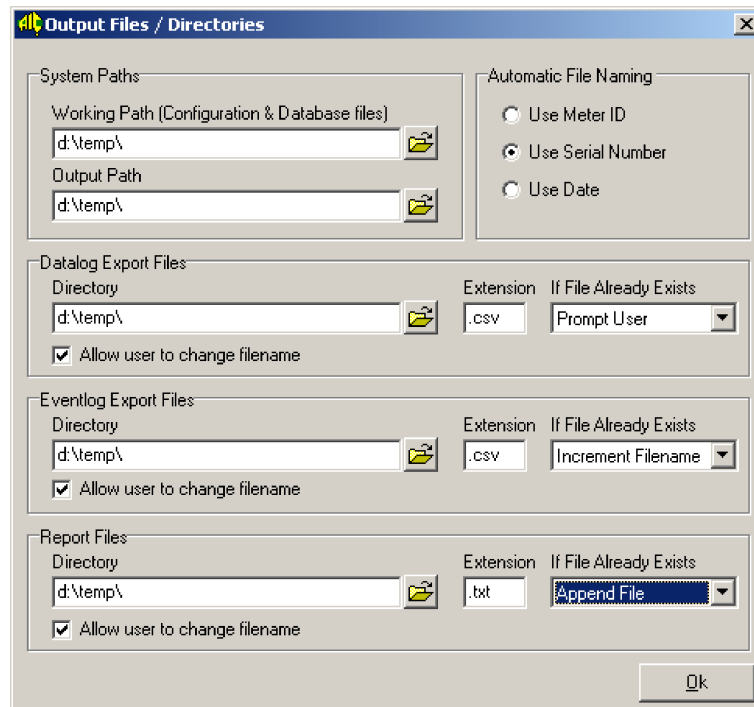
Certain instruments are fitted with event log memories which record times and dates of switch on, switch off, changes to settings etc. The **Eventlogger Properties** box can be viewed by clicking on **View** then **Eventlogger Properties**, when this is done a window such as the one below will appear. The event log memory can be cleared by clicking on the **Reset Eventlog** button.



To view the event logs go to **View** then **Event Logs**, a window such as the one below will appear. The **Tools** menu allow the event logs to be downloaded and exported for viewing in a different program type if required.



2.4 Output Files/Directories window



The **Output Files/Directories** window is found under **Settings**. This window allows setup of directories for storing and exporting files. The **Automatic File Naming** section allows selection of the default filename type to be used when saving, exporting etc. Alternatively the filename can be manually overwritten when exporting. If the **Allow user to change filename** box is not ticked for a particular file type then there will be no opportunity to change the filename when exporting but the filename can be automatically incremented, appended or overwritten, see below. The extensions for exported files can be changed here and the action taken when files are exported selected, the selections available are:

Prompt user - When this option is selected the user will be asked to select a directory and filename each time data is exported. The default filename presented will be the same as the previous filename (based on the **Automatic File Naming** selection in this window). If an attempt is made to export using a filename which already exists in the same directory a **File Save Mode** window will pop up asking if the file is to be incremented, appended or replaced.

Increment Filename - When this option is selected the user will still be asked to select a directory and filename each time data is exported but the filename for the newly exported data will be the same as the previous filename plus 1 e.g. 2006-04-01_1 will update to 2006-04-01_2.

Append file - When this option is selected the previous filename will appear as the default file when exporting and the new export data will be added to the data in to the existing file.

Replace File - When this option is selected the previous filename will appear as the default file when exporting but unless the filename and/or directory is manually altered the old file will be overwritten by the new data.

2.5 Plugin Path window

The **Plugin Path** window is found in the **Settings** window and allows selection of the directory in which the plugin files are stored. The plugin files have “.bpl” extensions. These files are only applicable to certain instruments and should only be used with these instruments. e.g. a TP488 plugin file is only intended for use with model TP488 instruments.

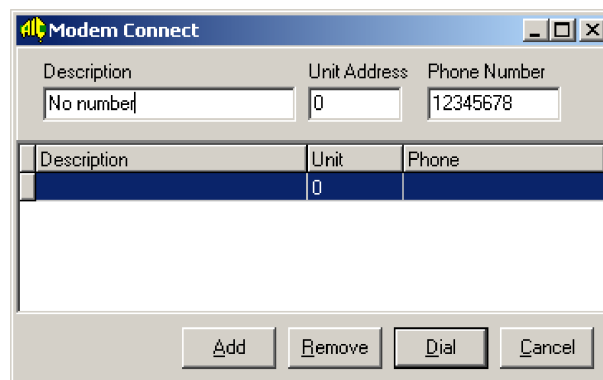
2.6 Terminal Window

A terminal window is provided to aid in testing, this is not one of the normal data download windows. Any character typed on the keyboard whilst the Terminal Window is active will be immediately sent as an ASCII character via the serial port. Any data entering the serial port whilst this window is active will be displayed in the window. This window cannot be used to view data as it is being downloaded. An individual instrument can be used to check communications into the PC using this window, with baud rate etc. set to match that in the download software set the instruments **G.Put** function to **Cont**, if the communications path is set up correctly and working the display value of the instrument should appear in the Terminal window. Communications out of the PC can be tested by connecting a loop back to the Com port, any character typed on the keyboard should appear in the Terminal window.

2.7 Phone Modem and COM port and TCP connection Windows

Provision is made for the software to enter numbers and addresses for a dial up phone modem or connect to an ADSL modem using an IP address. The phone modem windows are found under **Modem** and the TCP window under **Settings** then **Comms**. The TCP address is in the format “address:port number”. Examples of these windows are shown below. Note that other than providing this facility in the software for those who wish to use it AIC cannot offer any assurances that the system selected will work satisfactorily and does not support the connection or setup of the computer or modems used in such communications systems.

In “USB Direct” data must be sent as 8 bit no parity. If a USB connection with odd or even parity is required then untick the **Hide COM ports for Direct USB devices** tickbox, the USB ports available should now appear in the **Com Port** pull down window. The parity can then be chosen in the **Com Port** section.



Config Communications

Com Port COM4 - PCI Serial Port

Baud Rate: 115200 Parity: None

USB Direct

Baud Rate: 9600 Refresh List

TCP/IP 192.168.3.207

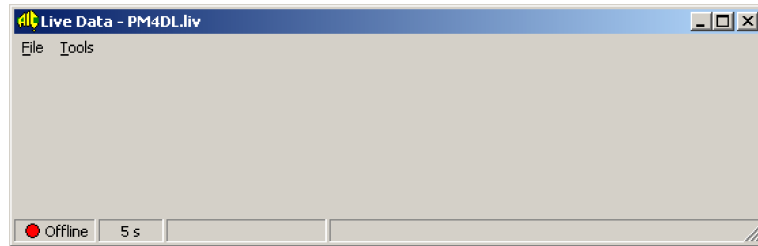
Search Network

Hide COM ports for Direct USB devices

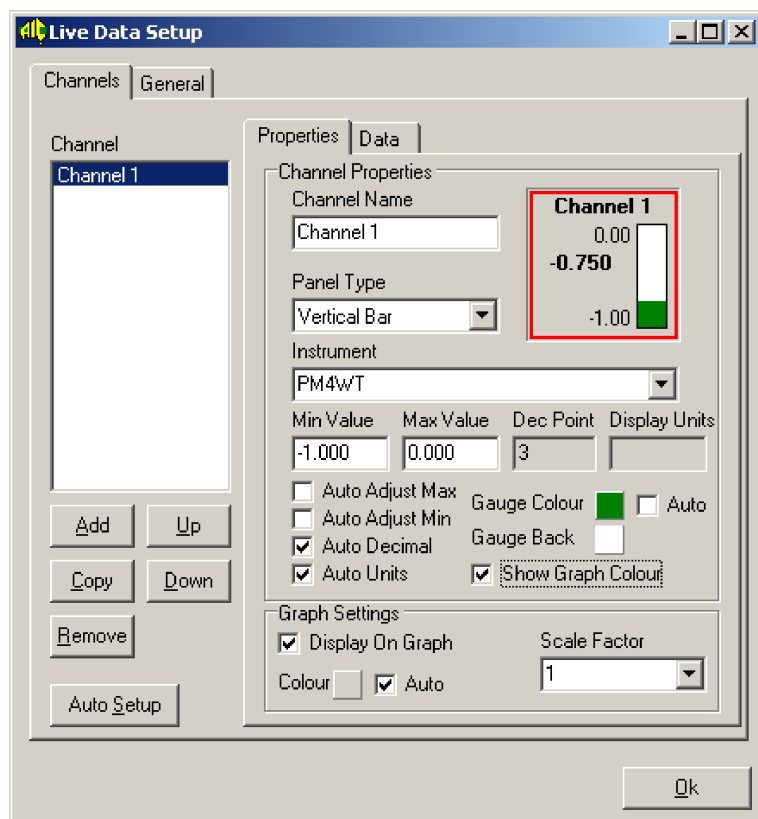
Ok Cancel

3 Viewing live data

At the **View** menu select **Live Data**. A window similar to the one below should now appear.



Select **Tools** then **Settings**, the **Live Data Setup** window should now appear, similar to the one below.



Under **Channels** add the number of channels being used. Alternatively click on **Auto Setup** (operates in both **A.b.u.S** and **POLL** modes) and the software will search and setup the channels automatically, changes to the channel names etc. can then be made manually. In the channel listing **Up** and **Down** can be used to move the selected channel. **Copy** can be used to copy the setup of the selected channel. **Add** can be used to add a channel and **Remove** can be used to remove the selected channels (more than one channel can be selected by holding the **Shift** key on the keyboard whilst selecting channels using the mouse).

Under **Properties** you can change the channel name, select the instrument (as entered in the **Instrument** box) and choose a **Panel Type** (or select <NONE>) from the selection available. Values for panel type **Min** and **Max** can be entered as can the number of decimal places. The **Max** and **Min** can be left to automatic adjustment if required by ticking the **Auto Adjust Max** and **Min** boxes. You can also select here whether or not to display the selected channel on the graph and the graph scale factor for this channel. The decimal point can also be set to **Auto**

Decimal or selected manually e.g. if a model TP488 channel is showing 3 decimal points but only 1 decimal point is required on the panel then untick **Auto Decimal** and put the value 1 in the **Dec Point** box. The display units e.g. “kPa” can be set manually in the **Display Units** box in the same manner as the decimal point settings by first unticking the **Auto Units** box. In most cases the display units will be blank unless the instrument detects a particular setting e.g. “°C”.

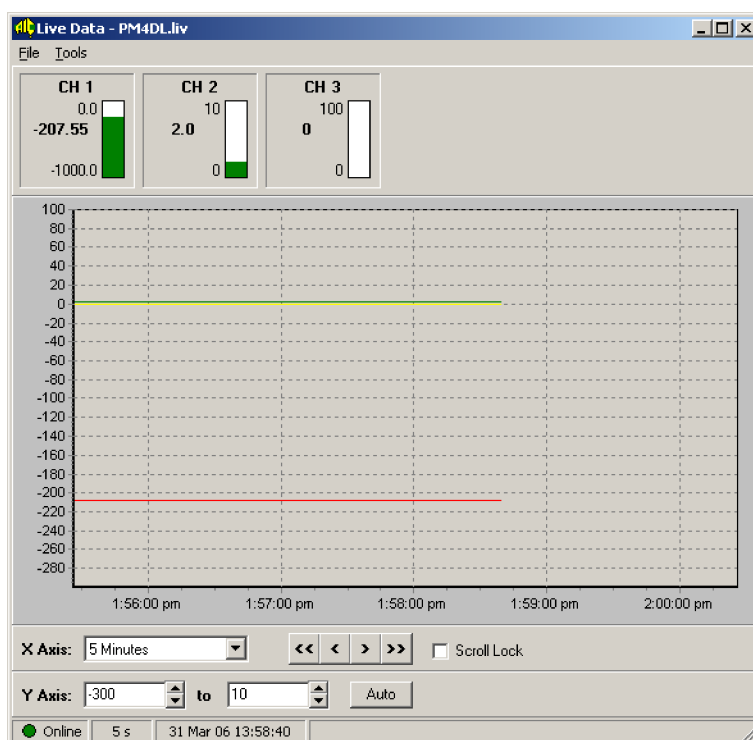
The colour of the panel gauge can be automatically selected by ticking the **Auto** box to the right of the **Gauge Color** box. Alternatively by clicking on the **Gauge Color** and **Gauge Back** boxes the colour for the gauge value and background can be manually set. The graph **Scale Factor** is useful for optimising the display area of the graph. For example if 3 channels are being used and channel 1 and 2 typical values are 0-50 but channel 3 typical values are 0-5000 then the graph range will be too wide for close viewing of all 3 channels at once. If channel 3 **Scale Factor** is set to x100 then for the purposes of the graph only channel 3 will appear in the 0-50 range rather than the 0-5000 range. The colour of the graph line for that channel can be chosen automatically (**Auto**) or can be chosen by the user by clicking on the **Color** box. Usually the graph colour will be set to match the gauge colour. Note; if multiple channels are used it may be necessary to choose some colours manually since the **Auto** colour may produce the same as the background colour. If **Show Graph Colour** is ticked the gauge box will have a border of the same colour as the graph colour selected for that channel. With multi channel graphs this **Show Graph Colour** box allows easy correlation between gauge display and graph display.

The **Properties** selections must be completed for each channel in turn. Highlight the channel and then select the **Panel Type**, **Instrument** etc. for that channel.

1. At the **Data** menu ensure that **Use AIC Binary Protocol (ABUS)** is selected if **R.buS** mode is used and is not selected if **POLL** mode is used. If using **R.buS** mode the poll command **Value Type** and **Channel** must be selected. The poll command binary value will change automatically when the **Value Type** or **Channel** is changed. The **Value Type** allows **Primary**, **Secondary**, **Tertiary** and **Quaternary** selection, these refer to the display types available in particular instruments see individual instrument manuals for details. Clicking on the **Test Cmd** box will result in the display value being returned for the selected channel if communications are successful. This test and the **Channel** window allows for up to 16 channels to be selected for individual testing. If more than one instrument is used then the same poll command values must be set but the new instrument must be selected at the **Instrument** box in the **Properties** folder.
2. If using **POLL** mode (i.e. not using **R.buS** then **Use Ascii Protocol** should be selected and the **Ascii** box should usually contain letter “P” and the channel box the channel number you are trying to communicate with. If using a single channel instrument use channel 0. In addition to letter “P” certain instruments (those with more than one display possible e.g. temperature and pH) will also respond to “S”, “T” and “Q” these letters indicate Primary, Secondary, Tertiary and Quaternary channels see individual instrument manuals for details. Clicking on the **Test Cmd** box will result in the display value being returned for the selected channel if communications are successful. Note that the **Poll Command** boxes must be set for each channel in turn i.e. select the channel to be set up, complete the **Poll Command** boxes then select the next channel and complete the **Poll Command** boxes for that channel etc.
3. At the **General** window you can also select the screen display update time and the logging interval for event logging. Note that the actual update time and logging time may be limited by the maximum update time of the instruments connected. If 0 is selected for the **Screen Display Update Time** then the display will update as fast as the PC and communications will allow. If 0 is selected as the Auto log time then the logging of the live data to the drive will be as fast as the time set at the **Update Time** window. If both **Auto** and **Update**

Time are set to 0 then the logging to drive will be as fast as the PC and communications allows, typically 8 to 10 samples per second for a single channel. If the standard gray graph background colour is not wanted clicking on the **Background Color** in the **General** window allows an alternative background colour for the graph can be chosen. If the **Log Time** is set to **Manual** then when **Start Logging** is selected and a file name given to the log file a **Store Data** button will appear on the **Live Data** window. Data will be logged to the file each time the **Store Data** button is pressed.

4. If you now select **OK** at the **Live Data Setup** window the live data should appear with the message **Online** appearing at the bottom left hand corner and a green light pulsing whenever the data is updated. If the green light does not flash at the selected update time go to the **Tools** window and select **Go Online**.
5. The colour code for each channel can be viewed and channels selected or deselected for graphing by selecting **Graph Legend** under the **Tools** window. If you right click on the **Legend** window the option of **Always On Top** will appear. This can be toggled on or off. When ticked (on) the **Legend** window will remain above the live data window.
6. When viewing the graph the X axis time frame can be chosen from a selection of times (1 minute to 1 Year). The Y axis can be manually set or auto ranged via the **Auto** button. To view more than one screen of data use the <<, <, > and >> buttons to scroll across the X axis. The **Scroll Lock** window when ticked will stop the X axis automatically scrolling to the left as new data is downloaded.



3.1 Live Data Logging to disk

The setup window for live logging to disk is under **Live Data > Tools > Settings > General**. Under **Log To File** there is the choice of **Manual** or **Auto** logging, these methods are explained below. The other choices for live logging are **Automatic Start** i.e. start logging as soon as the **Live Data** window is opened (bypassing the need to select **Start Logging**) and **Append File** i.e. add to the previous file used rather than being asked to confirm the file name/location. The directory and filename stored under **Log Filename** can be manually entered at this window but

will automatically show the last directory and filename used. Unless both **Automatic Start** and **Append File** have been selected you will still be asked for the directory and filename when logging starts.

Auto logging to disk

The basic setup procedure for **Auto** live logging is:

1. Having set up the live data display using the steps above and having selected a data logging update time at the **Live Data > Tools > Settings > General** menu select **Start Logging** under **Tools**. Note that the **Screen Display Update Time** sets the software sampling rate, the software cannot log faster than this rate even if the **Log Time** is set to a lower value.
2. You will be asked for a file name and directory for the log file.
3. The logging will automatically start at the logging rate selected if **Auto** logging was selected. When you wish to stop logging select **End Logging** at the **Tools** menu.
4. You can now view the file in word processor database or spreadsheet. The data is comma separated. An example is shown below.

Live Data Values

Application: AIC Instrument Downloader

Date: 7 Dec 07 15:20:17

Time, conductivity, Channel

7 Dec 07 15:20:00, 0, 200

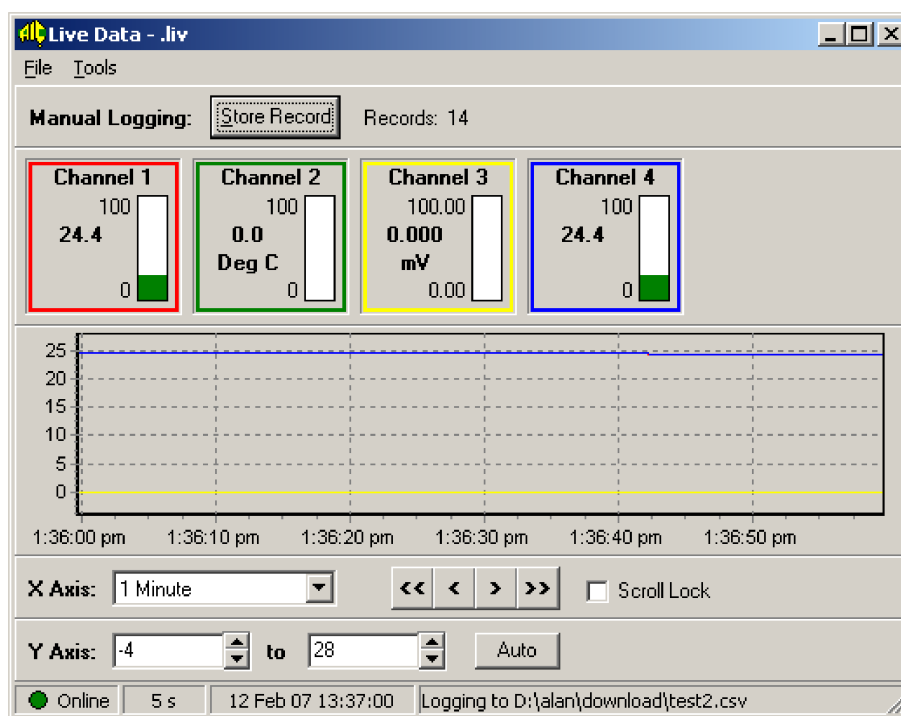
7 Dec 07 15:21:00, 0, 200

7 Dec 07 15:22:00, 0, 200

File closed: 7 Dec 07 15:22:08

Manual Logging to disk

The **Live Data** window below shows the **Manual Logging** option. This option can be selected by selecting **Tools > Settings > General** then selecting **Manual** under the **Log Time** heading. When this is selected the readings will be logged to disk each time the **Store Record** box is clicked.



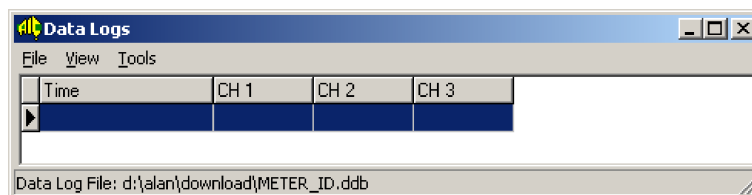
3.2 LD-WT, RM4-WT and PM4-WT peak and valley memory logging

The peak (**H_i**) and valley (**L_o**) memory of the PM4-WT, RM4-WT or LD-WT displays can be viewed live and logged to disk. The live data graph and any logged data will be updated at the rates selected in the PC software but the internal peak memory from the PM4-WT, RM4-WT or LD-WT display is updated at the sample rate selected in the instrument itself. To view and log the peak memory go to the **Live Data** window and then select **Tools > Settings > Channels** and add a new channel. With the new channel highlighted go to **Data** and change the value displayed in the **Binary** window to **0x840**. To view and log the valley memory use the same procedure but change the number to **0x850**.

In the PM4, RM4 or LD display being used either the **P** button function or one of the remote inputs must be selected to give the required **H_i** or **L_o** memory operation.

4 Downloading and viewing data logger data

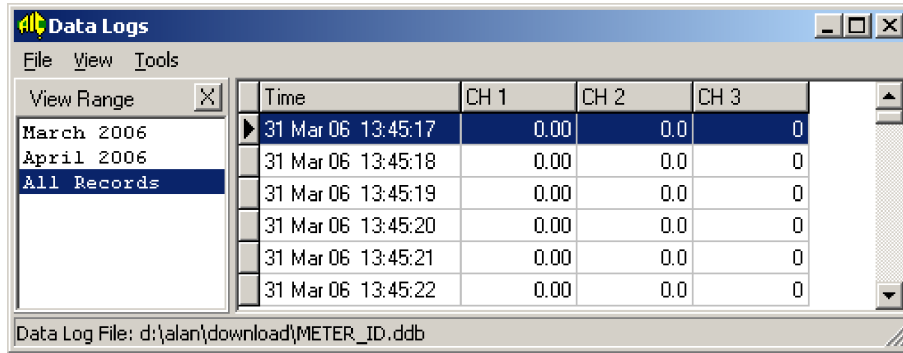
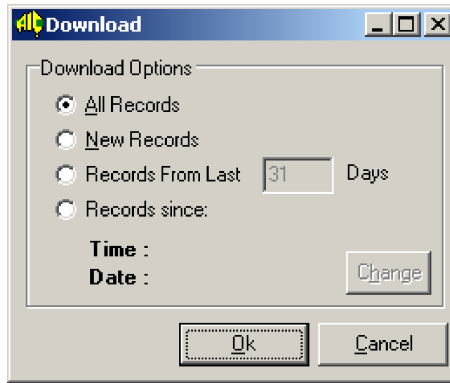
The data logger displays are only available for instruments fitted with internal data loggers or if the PM4-DL data logger is used. **ABS** communications operating mode is also required. Click on **Settings > Instrument Setup > Datalogger**. Tick the **Enable Data Logger** box then use the **Browse** button to select a location and file name for the data logger file. Click on the **Properties** button. Details of the instrument, channels etc should appear in a new window. If the details are not correct close this window and go back to the **General** window and click on **Auto Setup** again. When this has been done go back to **Datalogger > Properties** and check the data. Close the **Instrument Setup** window and if more than one data logging instrument is connected select the required instrument in the box under the **View** command then click on **View > Datalogger Properties**. The **Datalogger Properties** window will then appear, at this window you can choose to **Reset Datalogger** (clear the internal datalogger chip memory) and change the logging period. If a change is made to the logging period you must click on the **Set** button to send the new period to the instrument. The **Reload** button allows the updated settings in the instrument to be uploaded to the window. To view the logged data click on **View > Data Logs**. A **Data Logs** window will appear. Under **File** you can choose to start a new file, open an existing file or close the window. Under **View** you can check the data logger details and select the data logger required if more than one is connected.



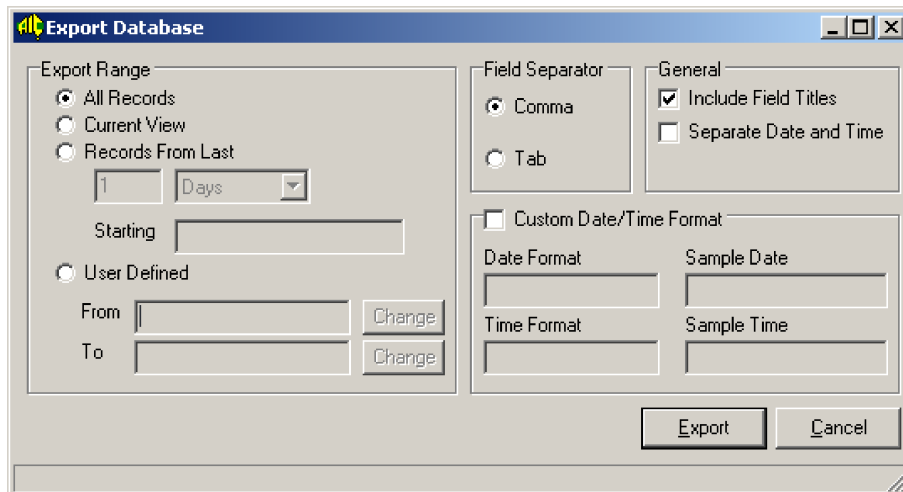
The **Tools** menu allows the downloading of files from the instrument, the exporting of files for use in another program such as a database or spreadsheet, viewing of downloaded data in graph form or you can select Settings to check the settings of the data logger.

Example: Setting up a new file, downloading and viewing the data.

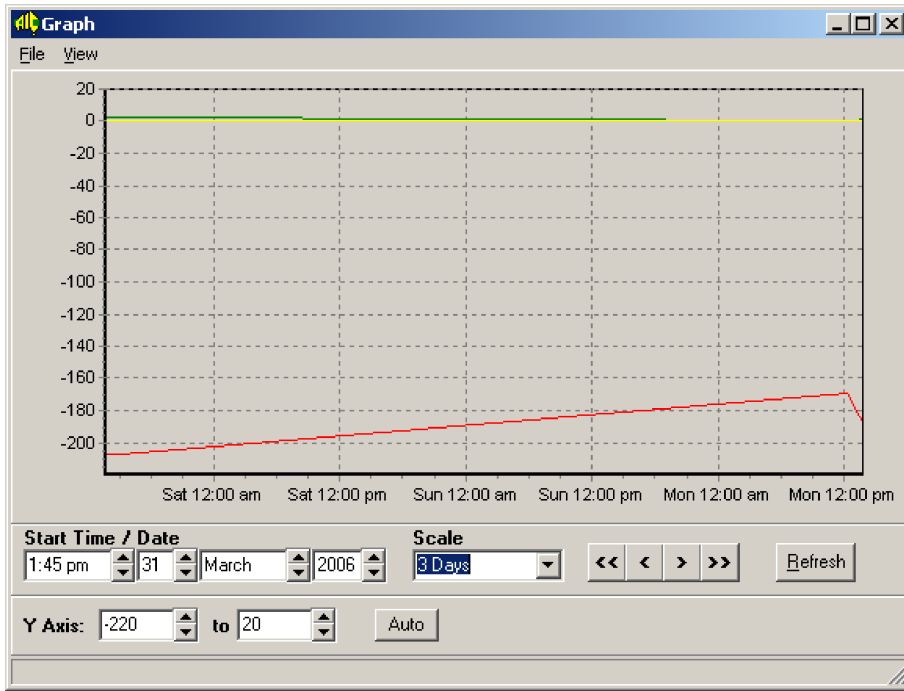
1. Follow the instructions in section 2 “Setting up the software for communication”
2. Click on **Settings > Instrument Setup > Datalogger**. Tick the **Enable Data Logger** box then use the **Browse** button to select a location and file name for the data logger file.
3. Click on the **Properties** button to check the data logger properties. You can check the data logger property details at this window and change the channel names, units and decimals if required. No other data on this window, other than removal of the instrument, can be changed.
4. Close the **Instrument Setup** window and click on **View > Data Logs**. A **Data Logs** window will appear.
5. Click on **File** then **New** and select a new filename, note that the “.ddb” extension must be retained on all file names.
6. Click on **Tools > Download**. The window below will appear asking what records you wish to download. Choose the required download type then click on Ok. The data should be downloaded and a window similar to the one below will appear.



- Clicking on **Tools > Range List Options** will bring up the **Range List Options** window. This window allows you to choose what range of records is displayed in the **Data Logs** window. Untick the **Enable Range List** box if all records are required on screen or choose which time interval is required. Click on **Ok** when the selection has been made.
- The data in this file is automatically saved in the “.ddb” file chosen. To export this data in a format suitable for viewing in a word processor, database etc. click on **Tools** then **Export**. A window similar to the one below should appear.



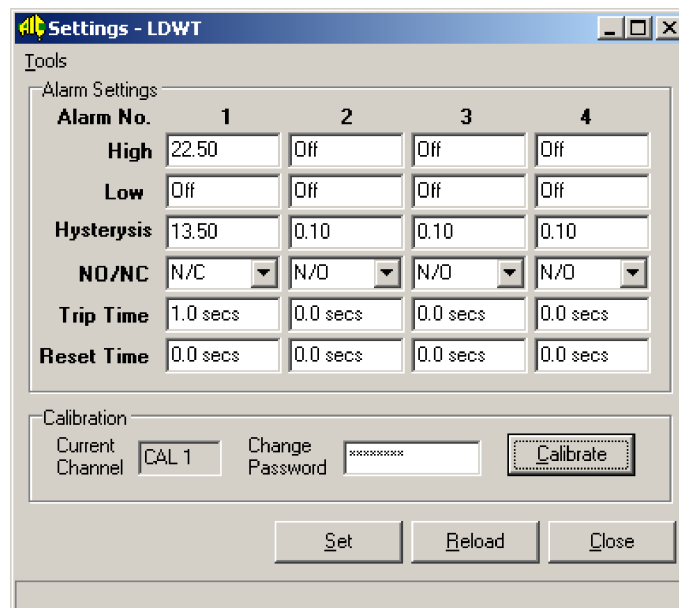
- To view this data in graph form click on **View > Graph**. A typical graph is shown below. If any changes to the start time/date, scale or Y axis is made click on the **Refresh** button to redraw the graph. At present there is no choice of line colours for the datalogger graph. If multiple channels are used and colours duplicated it may be necessary to split the channels into more than one datalogger file, thus producing two or more separate graphs.



5 Large digit display model LD-WT plugin software

The LD-WT plug in software allows various alarm relay and calibration parameters to be set via the serial port (**RS232** code only), see window below. Either the optional serial screw terminal connector can be used (connector P3 when this option is fitted) or the standard 9 pin D connector (RS232 only) can be used (connector P12). When the 9 pin D connector is used the **SERIAL TYPE** function must be set to **NONE**.

The LD-WT plugin file must first be located by clicking on **Settings > Plugin Path**. Choose the directory in which the plug in is located, the plug in file will have the extension “.bpl” e.g. “ldwt_01_pk.bpl”. If the plugin file is in the directory chosen the download software will automatically insert a new LD-WT selection on the top menu bar. Go to the LD-WT selection then choose **Settings**, a window similar to the one below should appear. By default no password is needed and the password can be ignored but if password protection for the calibration is required go to the **Tools** selection at the top of the window, select **Enter Password** and type in the password. Once a password has been entered none of the **Calibrate** functions in this window can be altered via the serial port until either the correct password has been entered or the LD-WT is powered up in **CAL** mode. Once a valid password has been entered it can be changed at any time by overwriting the **Change Password ******* window value. If the password has been forgotten, the memory of the instrument will have to be cleared or the instrument returned to the manufacturer for resetting, contact the instrument supplier for instructions.



The screenshot shows a window titled "Settings - LDWT" with a "Tools" menu. The "Alarm Settings" section contains a table with columns for Alarm No. 1, 2, 3, and 4, and rows for High, Low, Hysteresis, NO/NC, Trip Time, and Reset Time. The "Calibration" section includes a "Current Channel" dropdown set to "CAL 1", a "Change Password" field with asterisks, and a "Calibrate" button. At the bottom are "Set", "Reload", and "Close" buttons.

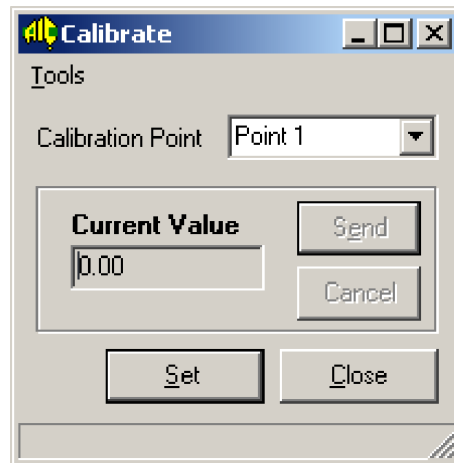
Alarm No.	1	2	3	4
High	22.50	Off	Off	Off
Low	Off	Off	Off	Off
Hysteresis	13.50	0.10	0.10	0.10
NO/NC	N/C	N/O	N/O	N/O
Trip Time	1.0 secs	0.0 secs	0.0 secs	0.0 secs
Reset Time	0.0 secs	0.0 secs	0.0 secs	0.0 secs

The window above allows you to over type any of the alarm functions e.g. to set alarm relay 1 high to a value simply type the value into the appropriate box. To turn a relay off simply type “Off” in the appropriate box. Once the required changes have been made click on the **Set** button to send the data to the LD-WT memory.

5.1 LD-WT Calibration using plug in software

Live calibration can be carried out via the plugin software. For most applications a two point calibration is sufficient but for linearisation purposes up to 5 calibration points can be entered. Note: whilst the plug in software will show up to 5 calibration points it will reject any attempt to calibrate more points than are set at the LD-WT **POINTS** function. e.g. If the **POINTS** function is set to 3 points then the plugin software will reject any attempt to calibrate the 4th and

5th points. If a password has not already been entered it can be entered at this window via the Tools button. When you are ready to calibrate click on the **Calibrate** button of the **Settings LDWT** window, a window similar to the one below will appear.



The procedure for a two point calibration is as follows:

1. Apply a known load to the input e.g. zero load.
2. Select Point 1 at the **Calibration Point** window.
3. Watch the value in the **Current Value** window. When the reading is stable click the **Set** button.
4. The **Current Value** window will now change to a **Enter New Value** window. At this point you can type in the value which should be displayed for the current load then click on the **Send** button to send the new calibration point to the LD-WT memory.
5. Apply a different load to the input, the change in load from the previous load should be at least 20% of the rated capacity of the load cell, ideally the change in load should take the input close to the rated capacity of the load cell. e.g. for a 1000 kg capacity cell the change in load between the first point and second point calibration should be at least 200 kg but ideally the second point should be close to 1000 kg.
6. Watch the value in the **Current Value** window. When the reading is stable click the **Set** button.
7. The **Current Value** window will now change to a **Enter New Value** window. At this point you can type in the value which should be displayed for the current load then click on the **Send** button to sent the new calibration point to the LD-WT memory. Calibration is now complete. For more than 2 points continue on to select the next point and apply the new load. If more than 2 points are calibrated it is essential that the points are rising in value i.e. Point 3 must have a higher input than Point 2.

5.2 LD-WT Calibration error message

An error window such as the one below will appear if calibration has failed.

Common calibration errors are:

1. The calibration points entered were too close together. Either calibrate again with the points further apart or change the mV/V (**FNSE** function) setting to make the instrument more sensitive. The calibration points need to be at least 20% of full scale apart. It may be necessary when re-calibrating to ignore the warning window and proceed with the calibration points again.
2. If the Current Value window shows a value of 10000 for a 4 digit display or 1000000 for a 6 digit display then this indicates an overrange value. Look at the LD-WT display, if it is showing a message “- - - -” then this indicates that the mV/V input is higher than the **FNSE** function setting. If the LD-WT display is showing the message “- or -” then this indicates that with the calibration scaling values entered the value is higher than the LD-WT is capable of displaying e.g. higher than **9999** for a 4 digit display.

Note: the LD-WT **FNSE** function setting should not be changed outside the rated mV/V value for the load cell. For example if the mV/V value for the load cell is 2.00 then the **FNSE** setting should not be greater than 2.5. If it is necessary to change the **FNSE** setting to a higher value to allow the calibration points to be accepted this indicates a faulty load cell or faulty load cell installation.

6 PM4-DL and PM4-OPT-DL data logger option plugin software

The PM4 model data logger is available as either a standalone data logger or can be fitted internally into most of the PM4 range of instruments. This section describes the plugin software which provides a setup window for communication with the datalogger.

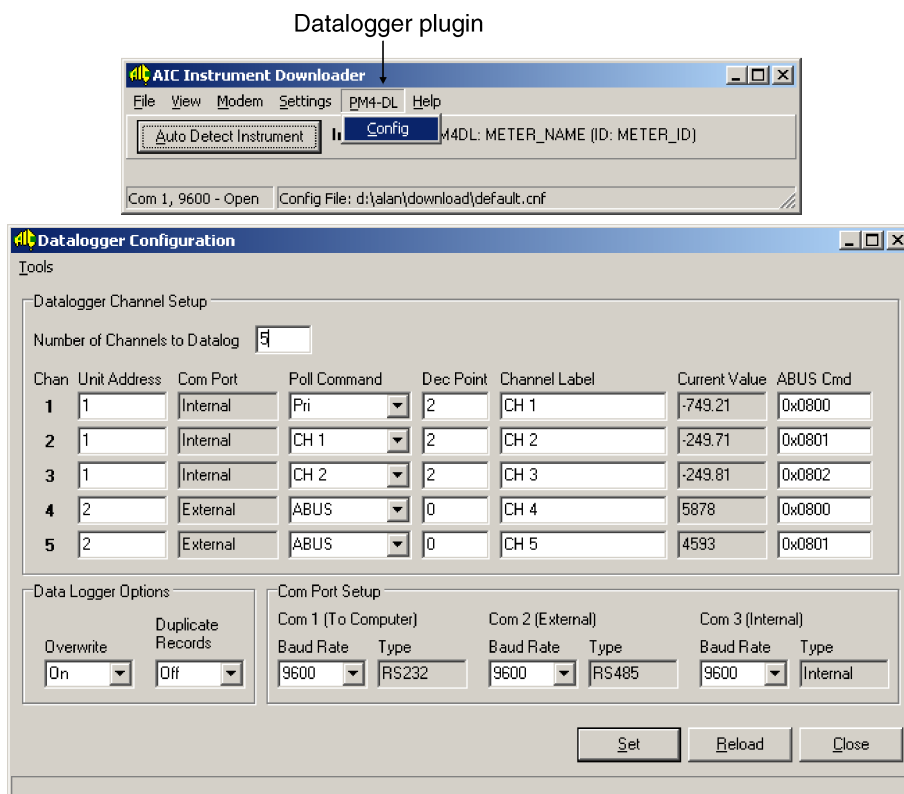
The datalogger also contains inbuilt event logger memory which automatically records dates and times of events such as power on/off, changes to setup, software and hardware errors and eventlog memory clearance. The **Event Logs** and **Eventlogger Properties** windows can be accessed via **View** in the main **AIC Instrument Downloader** window. The eventlogger will hold up to 510 records i.e. Datalogger memory size shown in the **Eventlogger Properties** window minus 1.

The number of records the datalogger can hold will vary with the number of channels selected and the memory size, see page 3.

Important - instruments connected to the data logger must have their **Output** function set to **POLL** or **ABUS**, this includes any instruments to which the datalogger is fitted as an option board. The download PC software must be set for **ABUS** operation i.e. **Supports AIC Binary Protocol** box must be ticked in the **Settings > Instrument Setup** window and in this same window the **Single Instrument Mode** box must be ticked as the software is only communicating with a single instrument i.e. the datalogger irrespective of how many external instruments are connected to the datalogger.

Install the PC software and connect to the datalogger and power up the datalogger then click on the **Auto Detect Instrument** window. When this plugin software is provided the main menu will show the datalogger plugin as shown below.

Note: certain changes such as the number of channels in this window will not detect the change until the datalogger is powered down then powered up again or until the data logger memory is cleared using the **Reset Datalogger** button in the **View > Datalogger Properties** window.



The **Datalogger Configuration** menu which appears when this **Config** is selected at the **PM4-DL** window contains the following:

Set button - if any changes to the items in this window are made the changes will only be stored and become active when the **Set** button is clicked.

Reload button - Clicking on the **Reload** button will refresh the values displayed in the **Current Value** window.

Close button - closes the configuration window.

Number of channels to datalog - up to 16 channels can be selected.

Unit address - this must be set to match the **Addr** function setting in the instrument being communicated with on that channel. Address 1 is reserved for use when the datalogger is housed internally in a PM4 display.

Poll Command - allows the selection of **Pri** (primary) **Sec** (secondary), **Ter** (tertiary) or **Quad** (Quaternary) or **CH 0** to **CH 8** or **ABUS**.

If the instrument being communicated with has more than one channel available then this section allows selection of which of these channels is actually polled for data. The table which follows shows the various channels used for PM4 instruments, the same commands would be used for the equivalent LD and RM4 range instruments. If the instrument is not shown in the table below then only the primary **Pri** channel and in some cases the remote input value is available. Where remote inputs are used the secondary **Sec** poll command will return the value of the selected remote input function.

The instrument selected must have its **O.Put** function set to **POLL** unless **ABUS** is selected.

If **ABUS** is selected then the **ABUS Cmd** section of this window must have the channel value entered and the **O.Put** function of the instrument being polled must be set to **A.buS**. The **ABUS Cmd** values may vary slightly depending on the instrument connected generally 0x0800 is used for channel 1 (or for the arithmetic result in arithmetic units), 0x0801 is used for channel 2 (or channel 1 in arithmetic units) 0x0802 is used for channel 3 (or channel 2 in arithmetic units) etc.

If a poll command other than **ABUS** is selected for a channel the **ABUS Cmd** window will still be seen but will not have any effect on the communication to that channel.

Model	Poll Comand
PM4-CO	Pri for main display value (conductivity or resistivity) Sec for temperature value
PM4-2CO	Pri for channel 1 display value (conductivity or resistivity) Sec for temperature value Ter for channel 2 display value (conductivity or resistivity)
PM4-IV3	CH 0 for the arithmetic result value CH 1 for channel 1 display value CH 2 for channel 2 display value CH 3 for channel 3 display value
PM4-LN2	CH 1 for channel 1 display value CH 2 for channel 2 display value
PM4-IVT	Pri for rate value Sec for total value
PM4-LNT	Pri for linearised rate value Sec for linearised total value
PM4-PH	Pri for main display value (pH or Redox) Ter for temperature value
PM4-RT8	Pri for highest value Sec for lowest value Ter for average of all channels Quad for maximum difference between all channels CH 1 to CH 8 for individual channel values
PM4-TR	Pri for rate value in FAbE or both mode or total in totl mode Sec for total value in both mode
PM4-QC	Pri for rate value in FAbE or both mode or total in totl mode Sec for total value in both mode

Dec Point - selects the decimal point place for the channel. Note that if the decimal point is changed it will be altered for all records.

Channel Label - allows each channel to be named for identification purposes.

Current Value - shows the value for that channel at the time the window was opened or at the time the window was last updated by clicking on **Reload** button or by the automatic refresh, see “Datalogger Configuration Tools Menu” which follows.

The **Com Port** section of this menu allows the setup of the baud rate for communications to the computer (Com 1) to external instrument (Com 2) and for internal communication (Com 3) when the datalogger is housed inside a PM4 display.

The **Data Logger Options** section of this menu allows choices for **Overwrite** and **Duplicate Records**.

Overwrite - Set the **Overwrite** to **Off** if you do not want to overwrite existing records in memory i.e. logging stops when memory is full. Set the **Overwrite** to **On** if you want to enable overwriting of existing records in memory i.e. when memory is full the logger overwrites earliest records.

Duplicate Records - The datalogger can be set to always store records when the logging period is reached or to only log records if the values on the input channels have changed since the last logging period. Set the **Duplicate Records** to **On** if you wish to log a record every time the log update time is reached i.e. even if the readings have not changed records will be stored in memory. Set the **Duplicate Records** to **Off** if you do not want to store duplicate

records. If set to **Off** then the data will only be added to the memory if data on one or more of the channels changes. The date/time and value of the first steady records will be saved and the date/time and value of the last steady records will also be saved. For example if a single channel is being logged and the values at that channel are 1, 2, 3, 4, 4, 4, 4, 4, 4, 4, 2, 3 at the time logging is scheduled then with the **Duplicate Records** set to **On** all of the records will be stored together with date and time. If **Duplicate Records** is set to **Off** then the records stored together with date and time would be 1, 2, 3, 4, 4, 2, 3. i.e. the 4 at the beginning of the unchanged string and the 4 at the end are stored but those in the middle are not. If multiple channel inputs are used then the record for all channels will be logged if one or more channels changes value.

6.1 Datalogger Configuration Tools Menu

The following selections are available under the Datalogger Configuration window Tools menu:

Enter Password - the password is not implemented in this version. Click on **Cancel** if you are in this window.

Form Capture - allows the **Datalogger Configuration** window to be saved as a bitmap or sent to a printer connected to the PC.

Auto Refresh - the auto refresh can be disabled or set to update once per second or once per ten seconds. If the window is not auto refreshed the values shown under **Current Window** will not update until the **Reload** button is clicked or until the **Datalogger Configuration** window is closed and opened again.

7 TP488 scanning monitor plugin software

When a TP488 scanning monitor is connected using **R.b.u.S** communications the main **AIC Instrument Downloader** window will show a heading **TP488**. Under this heading the the selection choices are **Alarms** and **Settings**.

7.1 The “Alarms” window

This window allows the TP488 alarm settings to be viewed and altered. An example of this window is shown below.

The screenshot shows the 'Alarm Configuration' window with the following settings:

Alarm	1	2	3	4	5	6	7	8
High	Off	Off	Off	Off	Off	Off	Off	Off
Low	Off	Off	Off	Off	Off	Off	Off	Off
Hysteresis	1.0	1.0	1.0	10	1.0	10	1.0	1.0
ND/NC	N/O	N/O	N/O	N/O	N/O	N/O	N/O	N/O
Trip Time	0 secs	0 secs	0 secs	0 secs	0 secs	0 secs	0 secs	0 secs
ResetTime	0 secs	0 secs	0 secs	0 secs	0 secs	0 secs	0 secs	0 secs
Mode	Auto	Auto	Auto	Auto	Auto	Auto	Auto	Auto
Channel Select	<input checked="" type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input checked="" type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input checked="" type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input checked="" type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input checked="" type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input checked="" type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input checked="" type="checkbox"/> CH7 ON <input type="checkbox"/> CH8 ON	<input type="checkbox"/> CH1 ON <input type="checkbox"/> CH2 ON <input type="checkbox"/> CH3 ON <input type="checkbox"/> CH4 ON <input type="checkbox"/> CH5 ON <input type="checkbox"/> CH6 ON <input type="checkbox"/> CH7 ON <input checked="" type="checkbox"/> CH8 ON

Alarm Mode: Single

F Relay Enable:

- CH1 ON
- CH2 ON
- CH3 ON
- CH4 ON
- CH5 ON
- CH6 ON
- CH7 ON
- CH8 ON

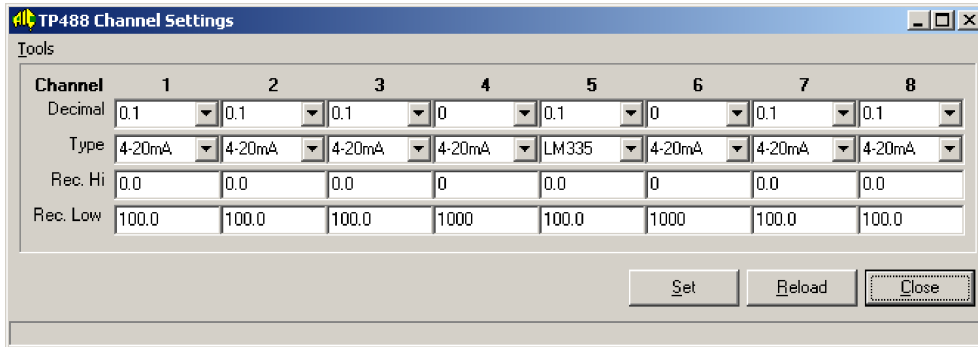
Buttons: Set, Reload, Close

To change values simply overwrite the value on the screen and then hit the **Enter** button on the keyboard or click on the **Set** button in this window. To turn off an alarm simply type **Off** in the required box and then hit the **Enter** button on the keyboard or click on the **Set** button. The same procedure can be used to change tick boxes or alter any pull down menu setting. You can check that any changes have been accepted by clicking on the **Reload** button.

Refer to the TP488 instruction manual for details of each of the functions which can be altered at this window.

7.2 The “Settings” window

An example of this window is shown below.



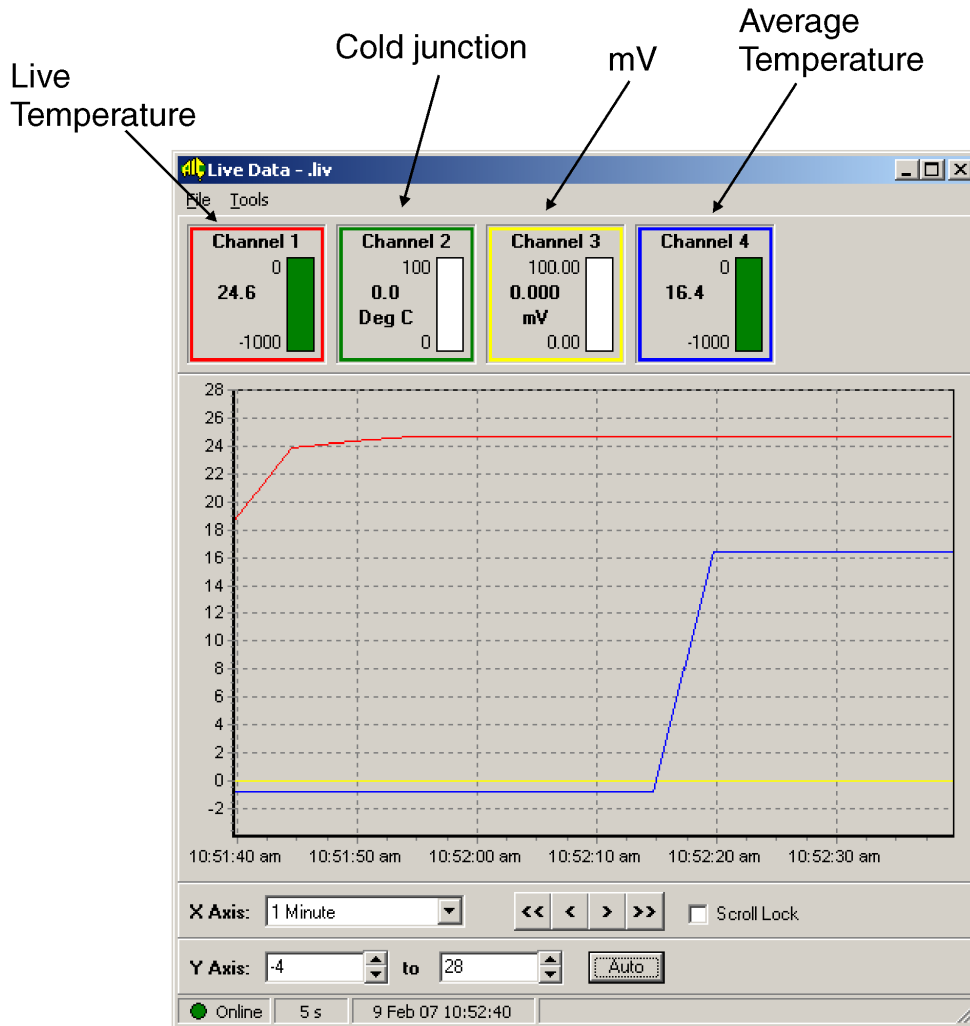
The decimal points for each channel can be altered in the **Decimal** boxes and the input type can be altered in the **Type** boxes. Some TP488 versions also require input links on the main pcb to be moved if the input type is altered, refer to the TP488 instruction manual for details. To change **Decimal** values simply overwrite the value on the screen and then hit the **Enter** button on the keyboard or click on the **Set** button in this window. To change the input type simply select the new type from the pull down selection.

You can check that any changes have been accepted by clicking on the **Reload** button.

The **Rec. Hi** and **Rec. Low** windows are not applicable since this option is not available when serial communications are fitted.

8 LD-TM setup

A typical **Live Data** window for model LD-TM is shown below. Note that only one channel (live or average when averaging is used) can be selected for storage in the optional internal datalogger. If logging directly to disk all channels selected will be logged



Channels 2 & 3 shown after Auto Setup for all inputs but Cold junction only applicable to thermocouple inputs. mV only applicable to thermocouple and mV inputs. If **AUSE SECS** is set to 0 then Live and Average temperatures will be the same. Live or average value will be logged (not both) depending on the **dl09** function setting.

9 Trouble shooting

1. **Instrument Setup** window - If an **Instrument Change ?** window appears stating that a response has been found from another instrument click **Yes** to the question **Do you want to use this instrument instead ?**. The **Instrument Identity** information may change following this but can be re-entered by selecting **View** then **Instrument Properties**. The **Internal Name** , **Location** and **Serial Number** can be changed and stored in the instrument when the **Set** button is clicked.
2. Data logger properties incorrect If the data logger file name has been changed or a new file opened it may be necessary to download the new information to the instrument by clicking again on the **Auto Setup** button under **Settings, Instrument Setup**.
3. Data logger channel names incorrect These can be changed by the user at the datalogger setup reached by selecting **Settings, Instrument Setup, Data Logger** then **Properties**.
4. Live data channel names incorrect These can be changed by the user at the **Channel Name** window reached by selecting **View, Live Data, Tools** then **Settings**.
5. The graph **Legend** box disappears when a new command is selected - you can force the **Legend** box to appear permanently in front of the graph by right clicking on the **Legend** window (not on the header part of the window) and tabbing **Always On Top**. This action can be reversed by the same method.
6. Software incompatibility warning messages. If there is a mismatch between the software version in the instruments and the PC software a warning window may pop up, see example below. If this type of message is encountered contact your supplier with details of the warning message.

