



Analysar Data Manager

Operating Manual

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1.0 Manual Guidelines

1.1 Document History

Issued By	Issue Date	Change Control ID	Issue No.	Reason for Change
RM	June 2009	OMG100SW1	3	Added to support for G110 and G150 to software
LA	Sept 2009	OMADM SW1.1	4	New functionality to support software V1.1
LA	Oct 2009	OMADMUKSW1.1	5	New functionality to support software V1.1

1.2 Notes

Important/useful information and instructions are shown clearly throughout the manual in a note format.

For example:

✍ Note: For further information please contact Technical Support at Geotech (UK) Limited on +44(0)1926 338111 or email technical@geotech.co.uk.

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Sample Documentation

2.0 Introduction

This manual explains how to use the Analyser Data Manager software for the CO₂ Incubator Analyser model types listed below:

- G100 CO₂ 0-20%
- G110 CO₂ 0-100%
- G150 CO₂ 0-10,000ppm

The G100 analyser is specifically designed to monitor CO₂ for the verification of incubators in research and pharmaceutical markets. This unit has been developed to incorporate the latest technology and specification requirements, which provide the user with a fast, simple-to-use and accurate piece of laboratory instrumentation.

The G110 analyser is specifically designed for general CO₂ storage and is applicable to brewing applications.

The G150 analyser is designed for low level CO₂ monitoring. Applications include indoor air quality monitoring and legal immigration detection.

✍ Note: The range of G100 instruments are sensitive pieces of scientific equipment, and should be treated as such.

2.1 Analyser Data Manager

Analyser Data Manager provides a comprehensive set of features that enable the user to manage the G100 range of CO₂ gas instruments. In summary, the software provides the user with the ability to:

- Obtain instrument status.
- View the instrument readings and event log data.
- Download and store readings for further analysis.
- Graph downloaded instrument readings.
- View, import and export the instrument configuration.
- Update the instrument's firmware.
- Copy data from the G100 Client into other packages such as MS Excel.
- Email data directly from the application.
- Configure remote access to a central database.
- Print graph and tabular data.

2.2 Computer Requirements

The software is compatible with the 32-bit editions of the following Microsoft operating systems; Windows XP with Service Pack 3, Windows Vista with Service Pack 2 and Windows 7.

- The PC must have two spare USB ports available.
- It is highly recommended that the system has at least 1GB RAM and a 2GHz processor.
- Microsoft .NET Framework 3.5 SP1 (supplied)
- Microsoft SQL Server Express 2005 SP3 (supplied)

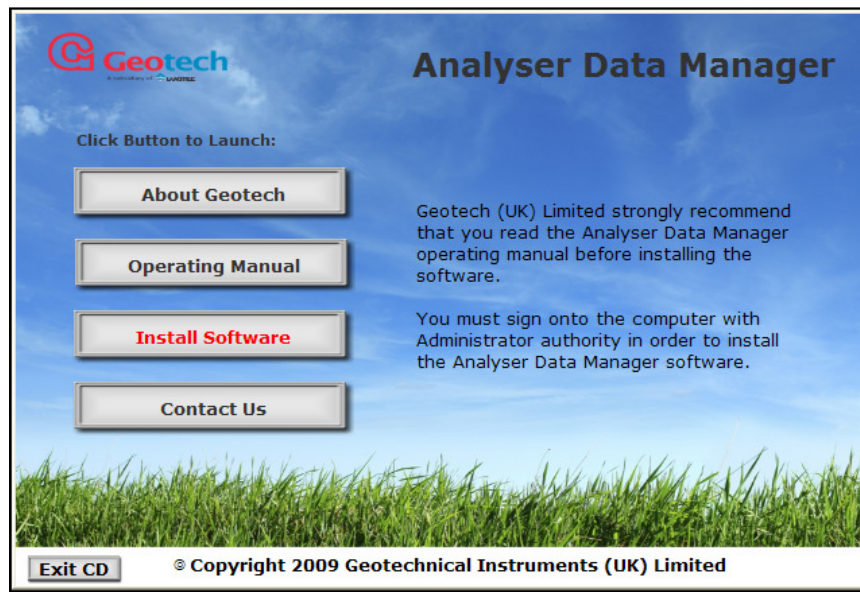
✍ Note: The software will run on machines with a lower specification, but performance may be slower.

3.0 Software Installation and Removal

3.1 Software Installation

The Analyser Data Manager software is provided on CD. The user installing the software must sign onto the PC with 'Administrator' privileges.

- 1) Insert the CD into the CD/DVD drive. The CD will automatically start up (autorun) and the following screen is displayed:



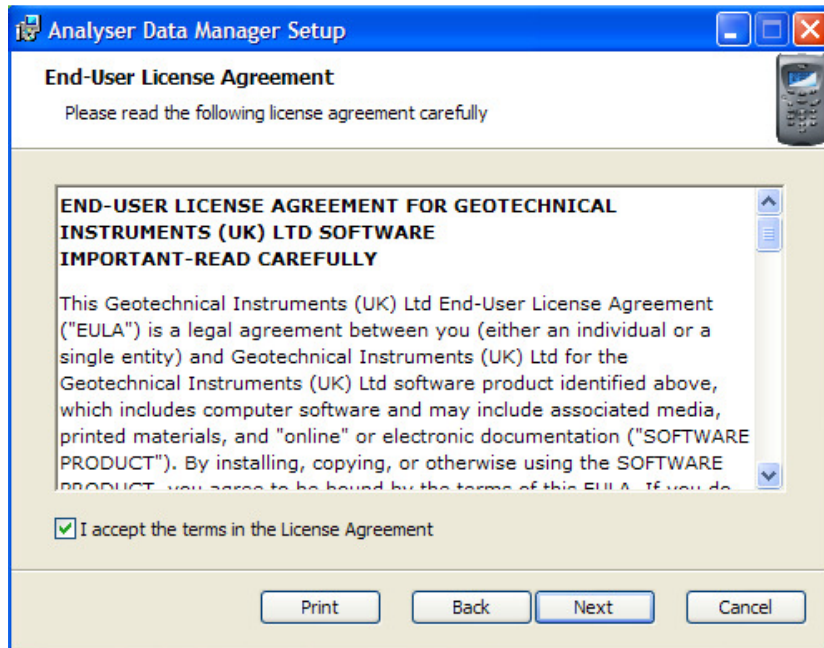
Analysers Data Manager CD Home Page

- 2) To install the Analyser Data Manager software programs select the 'Install Software' button and the following screen is displayed:



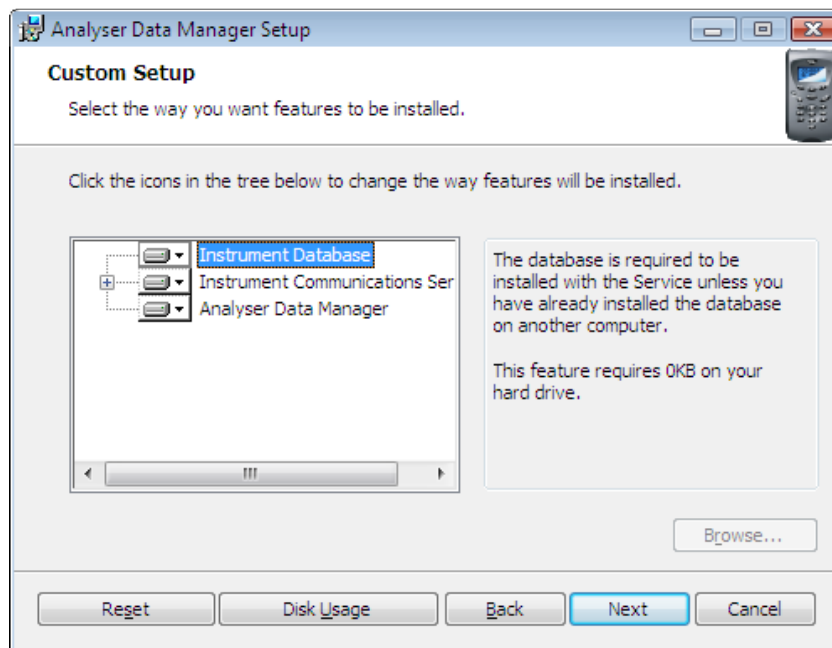
Install Analyser Data Manager

- 3) The next screen displayed asks the user to accept the terms of the User Licence Agreement.



End-User License Agreement

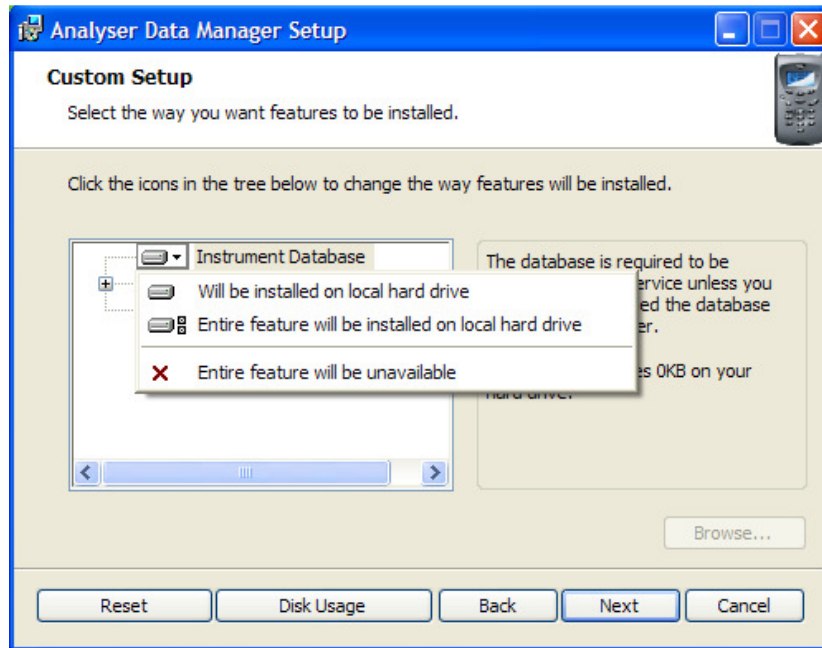
- 4) Accept the terms of the licence agreement by ticking the appropriate box and select the 'Next' button to continue and the following screens is displayed:



Custom Setup

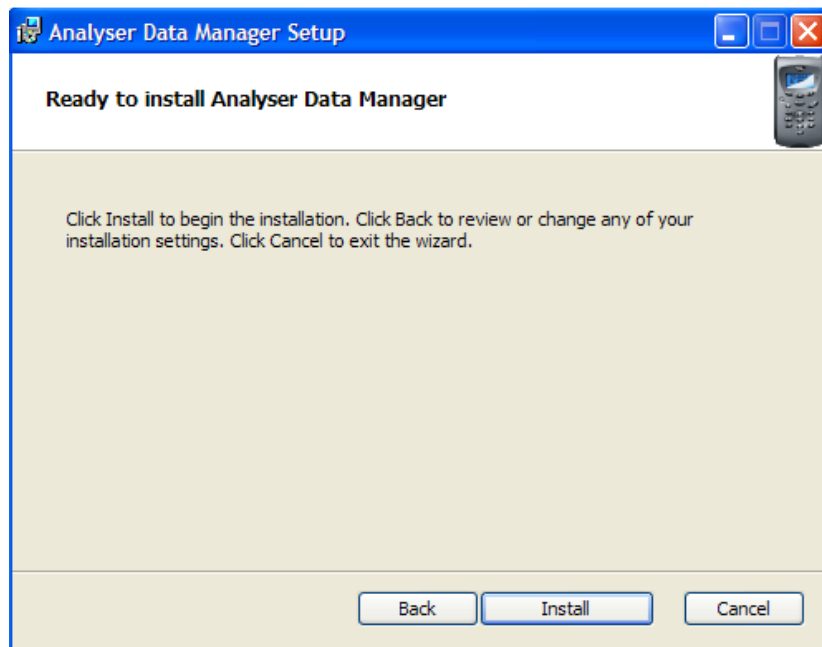
- 5) It is recommended that all of the program features listed above are installed. If you wish to install all programs, simply select the 'Next' button to continue.

It is possible to select each program. 'Right-click' on the program drop-down box to select if the program is to be installed or not.



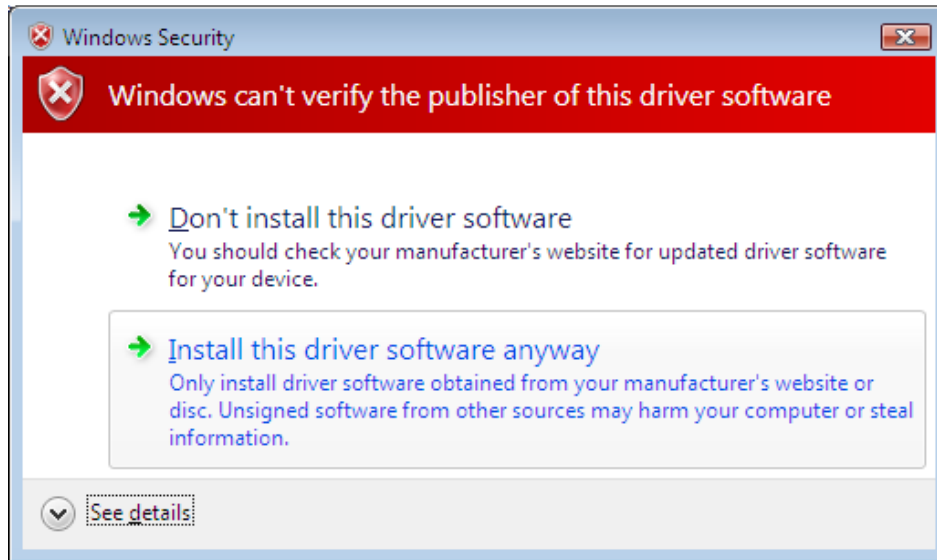
Custom Setup

- 6) After selecting the 'Next' button to continue, select the 'Install' button and the software installation will continue until the installation is complete.



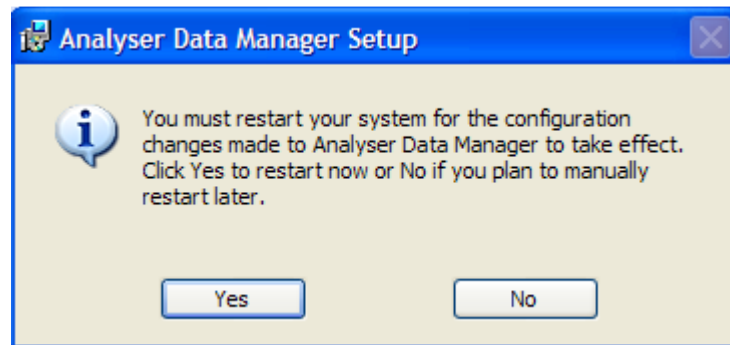
Install Analyser Data Manager

- 7) If running Microsoft Windows Vista or Windows 7 operating system 'Windows Security' will prompt the user to verify the software installation.



Windows Vista or Windows 7 Security Verification

- 8) Once installation is complete the user must restart the PC.

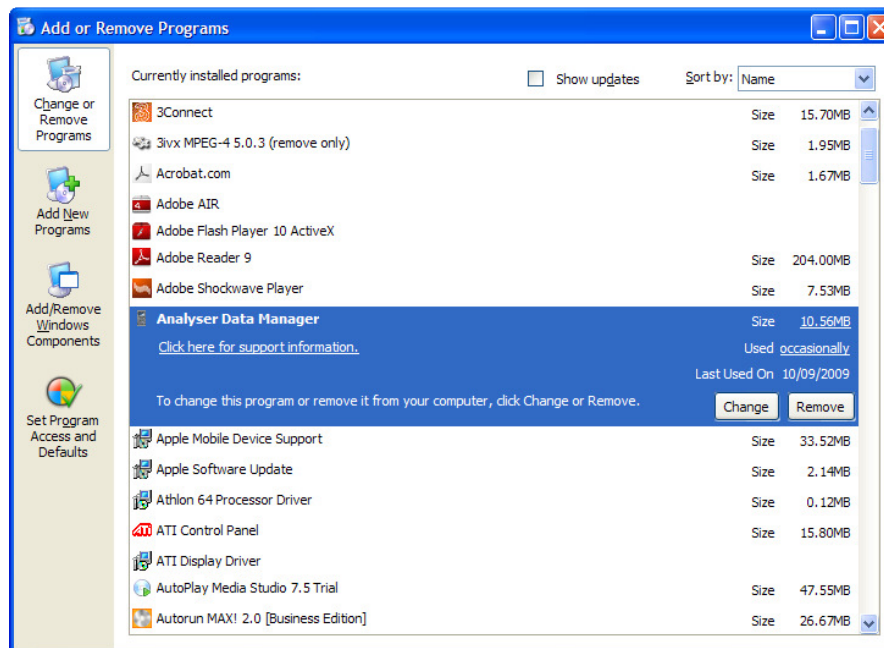


- 9) The operating manual can also be viewed and installed to your computer from the 'Install CD'.
- 10) To exit the software installation CD select the 'Exit CD' button from the CD 'Home Page'.

3.2 Software Removal

To remove the Analyser Data Manager software and all associated files the user must sign onto the PC with 'Administrator' privileges, otherwise the removal request is denied by the operating system.

- 1) To remove the software once installed select 'Start' from the desktop and then 'Control Panel'.
- 2) When using Microsoft Windows XP, select the 'Add/Remove programs' icon, highlight 'Analyser Data Manager' from the program list and select 'Remove'.



Add or Remove Programs

When using Microsoft Vista or Windows 7, select 'Programs and Features' and choose 'Analyser Data Manager', then select 'Uninstall'.

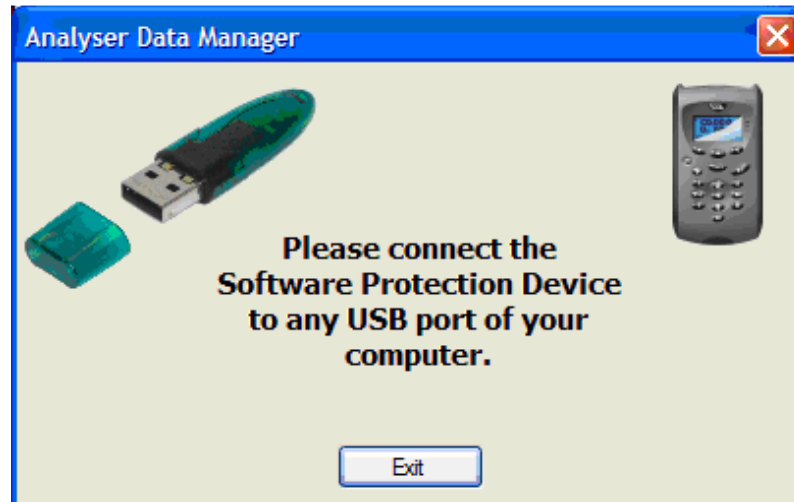
Note: Java and Microsoft .NET Frameworks will not automatically be deleted when removing the system.

- 3) The user should restart the PC after the software has been removed. The database is not deleted when the software is uninstalled.

4.0 Getting Started

4.1 Copy Protection

Copy protection is provided by a USB software protection device giving only the licence holder the security rights to run the software. When the application starts up, the presence of the protection device is checked and if present the application starts. If not, the application displays a notification message until the protection device is connected to the USB port.



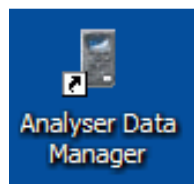
Software Protection Message

4.2 Running the Software for the First Time

Once the software is installed, plug the software protection device into a USB port and connect the analyser to the PC via the USB cable into another USB port.

The analysers are USB 2 devices so attaching the instrument to a USB 2 port on the PC will improve the overall performance of the software, in particular, when using the 'Data Tracing' tab and tracing multiple channels in real-time.

- 1) To start the application 'double-click' the desktop shortcut 'Analyser Data Manager'.



Desktop Icon

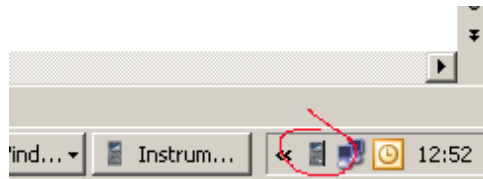
- 2) Alternatively, select 'Start' from the desktop, then 'All Programs' and select 'Analyser Data Manager' from the Geotechnical Instruments program folder.

4.3 Terminating the Application

Analysers Data Manager keeps running even when the user chooses to close the application in the normal way, i.e. by selecting 'Close' from the system menu, 'ALT F4' or the 'X icon' at the top right of the application window.

✍ Note: All of the above options hide the application and keep it running.

- 1) To re-open the application once hidden, the user should 'double-click' the mouse left button on the icon in the 'Task Bar' as shown below and the application will reappear.



Icon – Task Bar

- 2) To close the application completely, the user must 'right-click' the icon in the 'Task Bar' and select 'Quit' from the context menu.



Task Bar Icon – Right Click Quit

✍ Note: If Analysers Data Manager is running and the user attempts to open another instance of the application, a warning message is displayed giving the user the option of closing the new application and switching to the hidden application or continuing to open a second instance. It is possible to run two applications, however this is not recommended as one application may not display the current values.

5.0 User Interface

5.1 Instrument Selection

To the left hand side of the application window there are two lists of devices (instruments). The top list is of physically 'Connected Devices' attached via a USB cable. The bottom list is of devices that have been connected to the system in the past and have 'Historical Data' to view.

The instrument icons change depending on whether the instrument is past its 'Service Due Date'. An instrument past its service due date is highlighted with a 'red' background. Hover over the highlighted instrument and the service due date is displayed.

Select an instrument from either 'Connected Devices' or 'Historical Data' and the application will present data readings if available for the selected tab.

5.2 Default Application Screen

The default application screen is the 'Device Readings' tab. This screen is split into two halves, the top half displays the live data for the selected instrument and the bottom half displays the historical data transferred for the selected instrument.

Menu Tabs

Connected Devices

Live Data

Previously Attached Devices

Close Application

Instrument Information (selected device)

Action Buttons

Filter Records

Historical Data (displayed after transfer)

Default Application Screen

By default the application displays the 'Device Readings' tab unless the user has an alternative tab selected. In either case the data for the selected tab is updated when the instrument is connected.

6.0 Connected Devices

6.1 Main Application Screen

The top half of the screen displays data readings from the instrument. The lower half shows data already stored to the database.

Readings in Instrument

ID Code	Date Time	CO2	O2	Baro	T1	T2	H1	Reading Type
818	10/09/2009 11:44:29	0.0	19.9	1,025.0	24.2	31.9	-	Auto
818	10/09/2009 11:45:39	0.0	19.9	1,025.0	24.2	32.3	-	Auto
818	10/09/2009 11:46:49	0.0	19.9	1,025.0	24.2	32.4	-	Auto
818	10/09/2009 11:47:59	0.0	20.0	1,025.0	24.2	32.7	-	Auto
818	10/09/2009 11:49:09	0.0	20.0	1,025.0	25.3	32.4	-	Auto
818	10/09/2009 11:50:19	0.0	20.0	1,025.0	30.5	27.2	-	Auto
818	10/09/2009 11:51:29	0.0	20.0	1,025.0	28.0	27.9	-	Auto
818	10/09/2009 11:52:39	0.0	20.0	1,025.0	31.1	33.0	-	Auto
818	10/09/2009 11:53:49	0.0	20.0	1,025.0	33.3	28.6	-	Auto
818	10/09/2009 11:54:59	0.0	20.0	1,025.0	30.8	28.0	-	Auto

Historical Device Readings

ID Code	Date Time	CO2	O2	Baro	T1	T2	H1	Reading Type
811	23/02/2009 12:01:11	0.1	20.4	1,025.0	20.8	21.9	50.9	Auto peak
811	23/02/2009 12:02:12	0.1	20.5	1,024.0	20.9	21.9	49.6	Auto peak
811	23/02/2009 12:03:13	0.1	20.5	1,025.0	21.0	22.0	49.5	Auto peak
811	23/02/2009 12:04:14	0.1	20.5	1,025.0	21.4	22.0	49.7	Auto peak
811	23/02/2009 12:05:15	0.1	20.6	1,025.0	21.7	21.9	91.7	Auto peak
811	23/02/2009 12:06:16	0.1	20.6	1,024.0	2.8	44.7	97.8	Auto peak
811	23/02/2009 12:07:17	0.1	20.6	1,024.0	1.4	>>	99.2	Auto peak
811	23/02/2009 12:08:18	0.1	20.6	1,025.0	4.1	>>	98.8	Auto peak
811	23/02/2009 12:09:19	0.1	20.6	1,024.0	21.3	26.2	97.2	Auto peak

Connected Devices

When an instrument is selected from the 'Connected Devices' list the user can:

- Inspect live and historical instrument readings.
- Inspect live and historical event log data.
- Inspect the settings for the connected instrument.
- Perform real-time data graphing for a number of data channels.
- Enter default configuration settings.
- Obtain web-based support via the Internet.

6.2 Summary Instrument Details

A summary of the selected instrument details is displayed in the top right area of the main application screen.

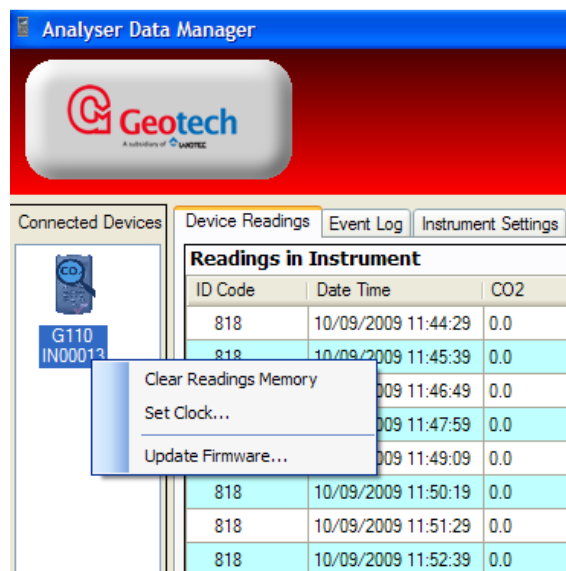
Product Version V1.03 - 090721
 Next Service Due 18/02/2010
 Last Factory Calibration 18/02/2009
 Device Date/Time 16/09/2009 11:28:25
 Battery 100%
 Memory

Summary Instrument Details

- Product Version - The version number and release date of the instrument's internal software 'Firmware'.
- Next Service Due - The date the next service is due for the connected device.
- Last Factory Calibration - The date the last factory calibration was performed on the connected instrument.
- Device Date/Time - The date and time set and stored on the connected device.
- Battery - A percentage of battery life left before recharge is necessary. The battery indicator will show how much life the battery has and an image of a plug will flash whilst the unit is charging and connected to external power. When connected to external power or charging, the battery will read 100% regardless of the battery condition.
- Memory - The amount of memory the application has remaining for live readings. The indication bar indicates how full the memory is (maximum of 1000 readings).

6.3 Connected Instrument Actions

There are a number of actions the user can perform on the 'Connected Devices' screen which are available from a context menu accessed by a 'right-click' on the selected connected instrument.



Connected Instruments Context Menu

6.3.1 Clear Readings Memory

This option deletes all readings from the readings memory. Performing this action means that all current instrument readings are discarded.

Note: Readings are cleared from the instrument automatically when the user clicks the 'Transfer' button to save readings to the database.

6.3.2 Set Clock

This option sets the date and time of the connected instrument to the date and time of the PC system clock.

Note: The user should be aware that this can cause operational issues. Consider the scenario where the date/time of the instrument is in the future and has stored instrument readings that from the user's point of view were taken recently. Changing the instrument date/time may cause new readings to be interspersed (from a time perspective) with the previous readings.

The user should consider it best practice to clear the readings memory immediately after resetting the date/time.

6.3.3 Update Firmware

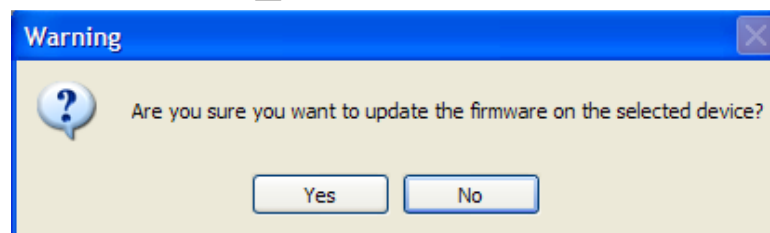
This option enables the user to update the program code in the instrument.

Note: Please read this complete section before applying a firmware update.

Firmware updates are occasionally supplied by the instrument manufacturer to improve performance of the instrument. The update file (file extension .a90) will be provided by email. When an email is received, save the attachment to a location on your computer, for example 'My Documents' or 'Desktop'.

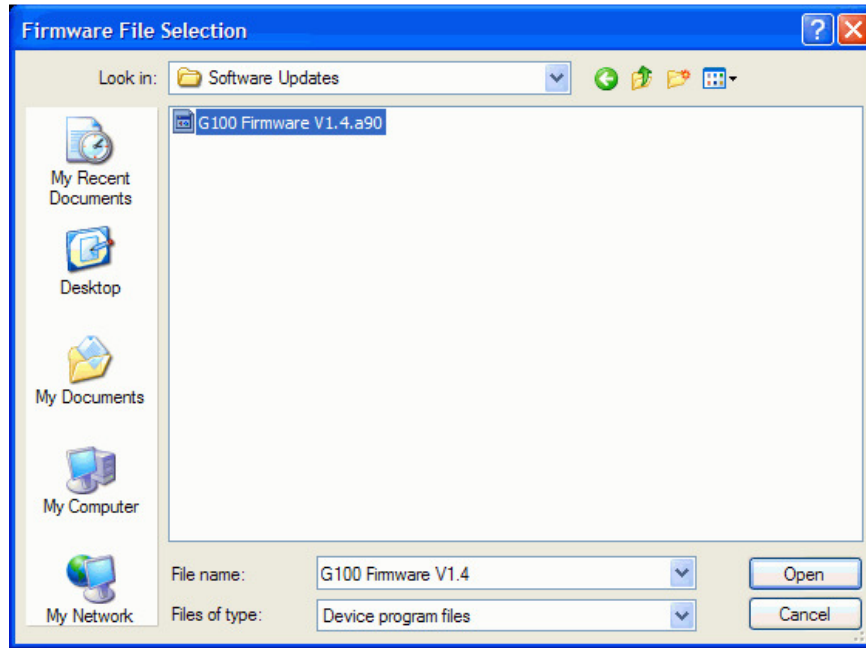
Great care should be taken when performing this action as it is possible to render the instrument inoperable. If this occurs the instrument will need to be returned to the factory. Please contact Technical Support on +44(0)1926 338111 or email technical@geotech.co.uk.

When the 'Update Firmware' option is selected the system will challenge the user to confirm the action as follows:



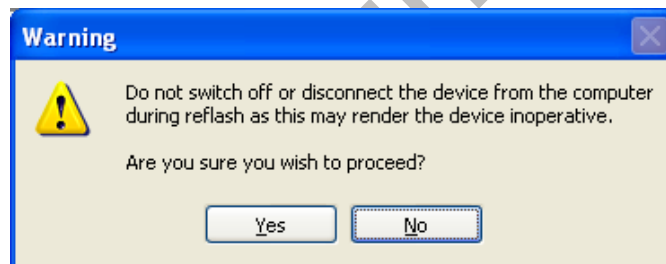
Update Firmware Confirmation

If the user selects 'Yes' the system offers the user an open file dialog screen to enable the user to select the new program code. This file is an .a90 file, for example:



Firmware File Selection

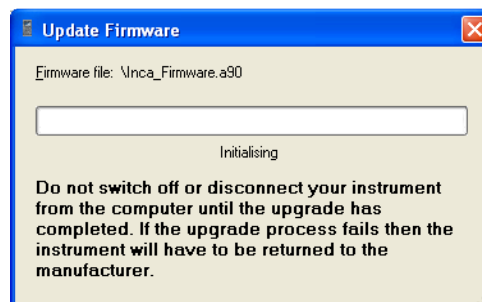
Once the relevant program file has been chosen the final confirmation dialog is offered to the user and the following screen is displayed:



At all points up to this final dialog the user can cancel with no detrimental effect to the system or instrument. If the user selects 'Yes' the device is programmed with the code contained in the selected file.

The user **MUST NOT** unplug the device during firmware update as this is highly likely to render the instrument inoperative. If this occurs the instrument will need to be returned to the factory. Please contact Technical Support on +44(0)1926 338111 or email technical@geotech.co.uk.

During the update the progress is indicated:



When the upgrade is complete the progress indicator will display 'Completed OK'.

6.3.3.1 Firmware Update Device Drivers

When updating the firmware of an instrument for the first time the user will be prompted by the Windows 'Found Hardware Wizard' to install new drivers. Follow the on-screen instructions.

When prompted for 'Windows to Connect to Windows Update' select 'No, not this time'.

When prompted select 'Install the software automatically (recommended)'.

6.3.3.2 Failed Updates

If the upgrade fails or if it is aborted it may be possible to recover your instrument.

When the instrument displays the 'Update Flash' message, hold the instrument power button for at least 15 seconds and release. Leave the instrument for 15 seconds and the instrument should restart automatically. If not, press the power button again, repeating the hold and release steps above and wait for the instrument to start.

6.4 Device Readings Tab

The live device readings from the connected instrument are displayed by default in the upper section of the application screen. The user can elect to transfer the readings from the instrument to PC storage as 'Historical Data'.

The list of readings displayed can be updated by selecting the 'Refresh' button.



Device Readings Context Menu

6.4.1 Print Device Readings

This option enables the user to print live device readings from the data table displayed. The selected data can be one cell, a selection of individual cells, a selection of columns or a selection of rows (usually between a date range).

- 1) To print live device readings, highlight the rows and column cells required for printing, 'right-click' and select 'Print' from the context menu.
- 2) A print dialog box will open. To print, select the printer icon followed by the attached default Printer ID.

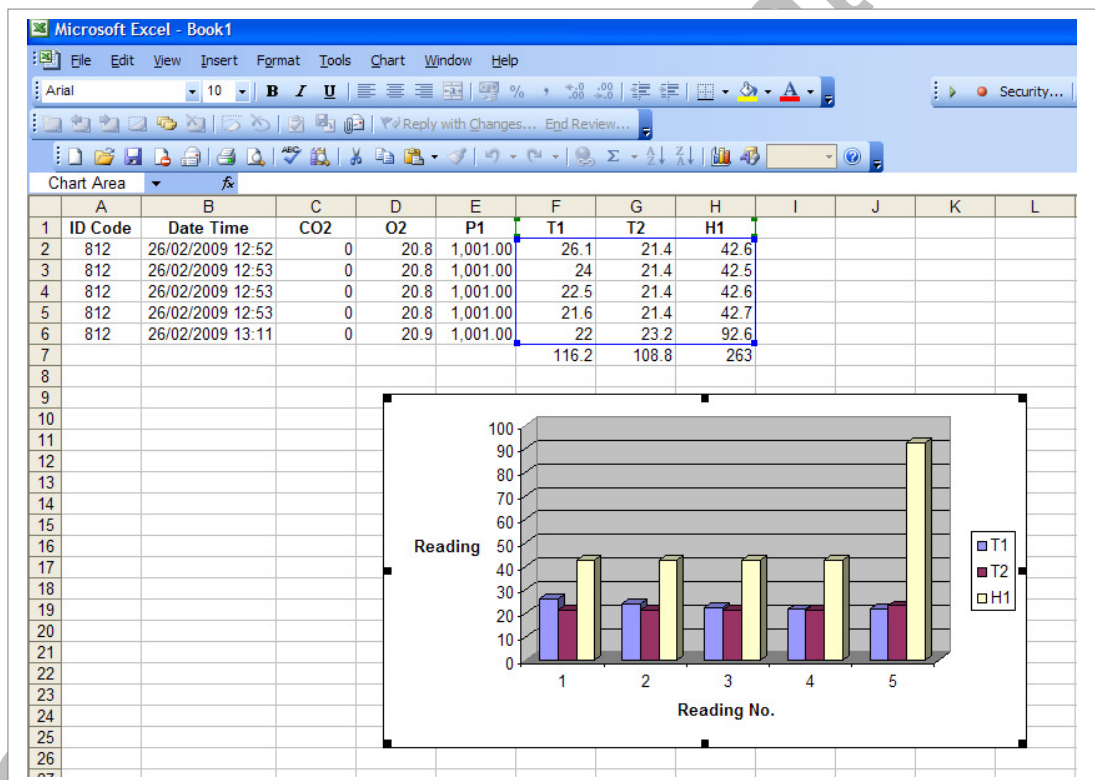
6.4.2 Copy Device Readings

This option enables the user to copy live device readings from the data tables displayed and provides the capability of enhanced analysis of data or the ability to generate reports. The readings are copied to the clipboard enabling the user to paste the copied cells into an alternative application, such as Microsoft Excel for further analysis.

The selected data can be one cell, a selection of individual cells, a selection of columns or a selection of rows (usually between a date range).

- 1) To copy live device readings, highlight the rows and column cells required, 'right-click' and select 'Copy' from the context menu.
- 2) Open the alternative application and select 'Edit' then 'Paste' to copy the data from the clipboard into the application.

✍ Note: For some version of Microsoft Office when pasting data into MS Excel you may need to choose 'Paste Special ...' and select 'CSV' as the data type.



Example of Copied Device Readings into MS Excel

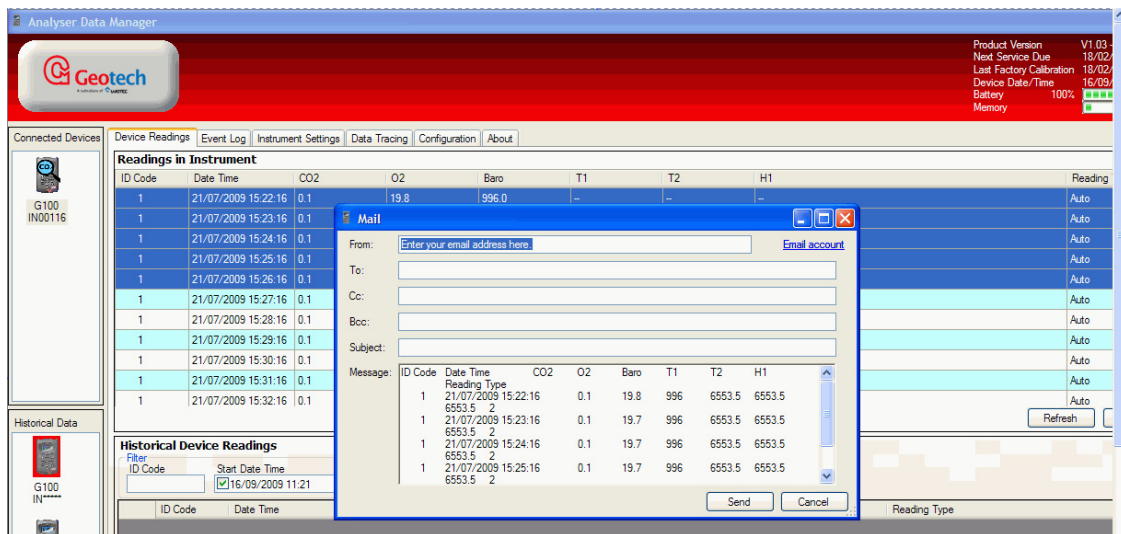
In the example shown above the copied cells have been pasted into MS Excel and then graphed.

✍ Note: The copied cells may be pasted into applications such as MS Word, MS Excel as well as into email.

6.4.3 Email Device Readings

Whilst the data copied in the previous section can be pasted into an email and sent to a recipient, this option provides an email facility for customers who have lab equipment that may not be configured with email clients.

- 1) To email live device readings, highlight the rows and column cells required, 'right-click' and select 'Email' from the context menu and the following screen is displayed:

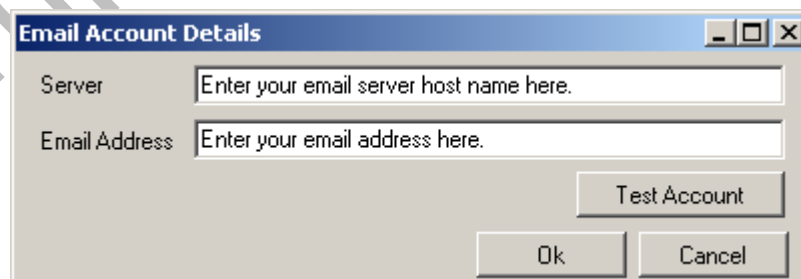


Email Device Readings – Mail Dialog Box

- ✍ Note: The selected data from the 'Connected Device Readings' are copied into the body of the email.
- 2) The 'Mail' dialog box requires the user to enter the 'To, Subject, Cc and Bcc' if required. The user can enter a number of email addresses into the fields separated by a semi-colon (;) character.
 - 3) The system defaults the 'From' email address to the address entered when the system was configured. Please refer to the next section for 'Email Configuration'.

6.4.3.1 Email Configuration

The very first time the mail feature is used the user is required to setup the email server and sender's email address. This is achieved by selecting the 'Email account' hyperlink at the top right of the 'Mail' dialog box and the following dialog box is displayed:

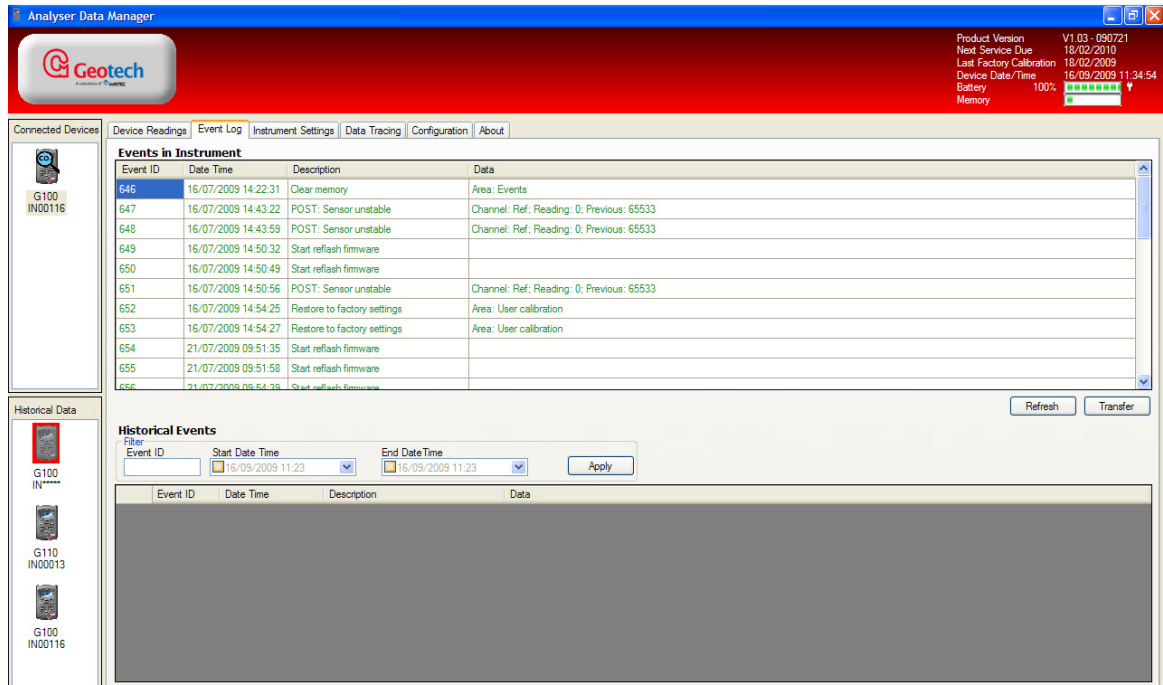


Email Account Details

The email address is your usual internet email address. Once the 'Server' and 'Email Address' are setup the 'Test Account' button can be used to send a test email to the email address. The system will inform you if the send was successful and the test email should arrive as normal email in the recipient's inbox.

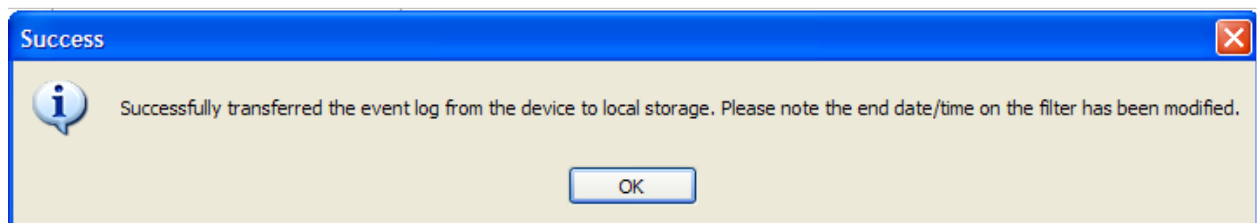
6.5 Event Log Tab

The live event log displays the events raised on the selected instrument. This includes information such as user calibration and changing of the time and date settings on the analyser.



Instrument Event Log – Live Device

- 1) The user can select the 'Refresh' button to update the live events from the instrument in the 'Events in Instrument' list. To permanently save the event log to PC storage, select the 'Transfer' button and the following message will display:



- 2) Select the 'OK' button and the event log data will display in the bottom (historical) part of the screen.

Product Information:
 Product Version: V1.03 - 090721
 Next Service Due: 18/02/2010
 Last Factory Calibration: 18/02/2009
 Device Date/Time: 16/09/2009 11:46:01
 Battery: 100%
 Memory: [Progress Bar]

Events in Instrument

Event ID	Date Time	Description	Data
679	16/09/2009 11:37:10	Clear memory	Area: Events

Historical Events

Filter: Start Date Time: 16/09/2009 11:23 End Date Time: 16/09/2009 11:23 [Apply]

Event ID	Date Time	Description	Data
646	16/07/2009 14:22:31	Clear memory	Area: Events
647	16/07/2009 14:43:22	POST: Sensor unstable	Channel: Ref: Reading: 0; Previous: 65533
648	16/07/2009 14:43:59	POST: Sensor unstable	Channel: Ref: Reading: 0; Previous: 65533
649	16/07/2009 14:50:32	Start reflash firmware	
650	16/07/2009 14:50:49	Start reflash firmware	
651	16/07/2009 14:50:56	POST: Sensor unstable	Channel: Ref: Reading: 0; Previous: 65533
652	16/07/2009 14:54:25	Restore to factory settings	Area: User calibration
653	16/07/2009 14:54:27	Restore to factory settings	Area: User calibration
654	21/07/2009 09:51:35	Start reflash firmware	

Transferred Instrument Event Log

- 3) Should there be a large quantity of events in PC storage the user can filter the data to view using the 'Event ID' and 'Start Date Time' and 'End Date Time'.

6.5.1 Print Event Log

The process of printing event log data is exactly the same as for device readings. Please refer to section 'Print Device Readings' for connected devices.

6.5.2 Copy Event Log

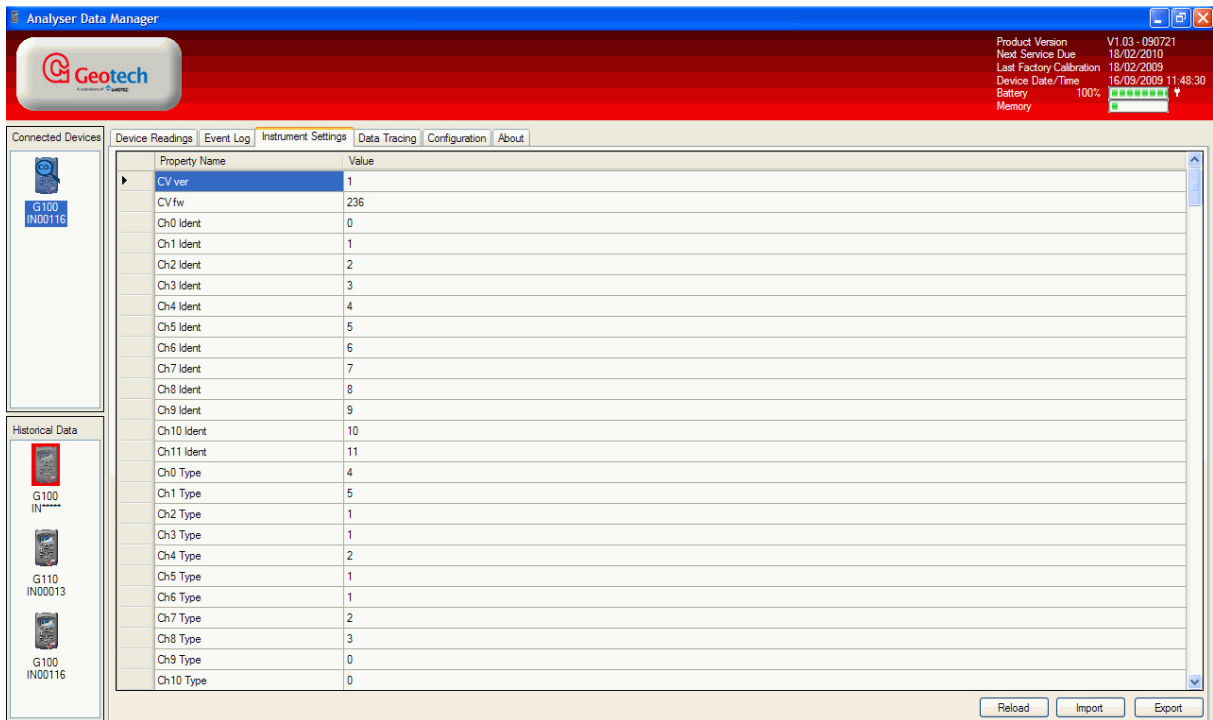
The process of copying event log data is exactly the same as for device readings. Please refer to section 'Copy Device Readings' for connected devices.

6.5.3 Email Event Log

The process of emailing event log data is exactly the same as for device readings. Please refer to section 'Email Device Readings' for connected devices.

6.6 Instrument Settings Tab

The instrument settings tab displays the detail of the configuration parameters for the connected instrument. For example:



Instrument Settings

The user cannot edit or modify the configuration. However, the user can export the settings to a *.ge2 file, send the file to Geotech (UK) Limited for analysis/modification and then import the settings back into the instrument.

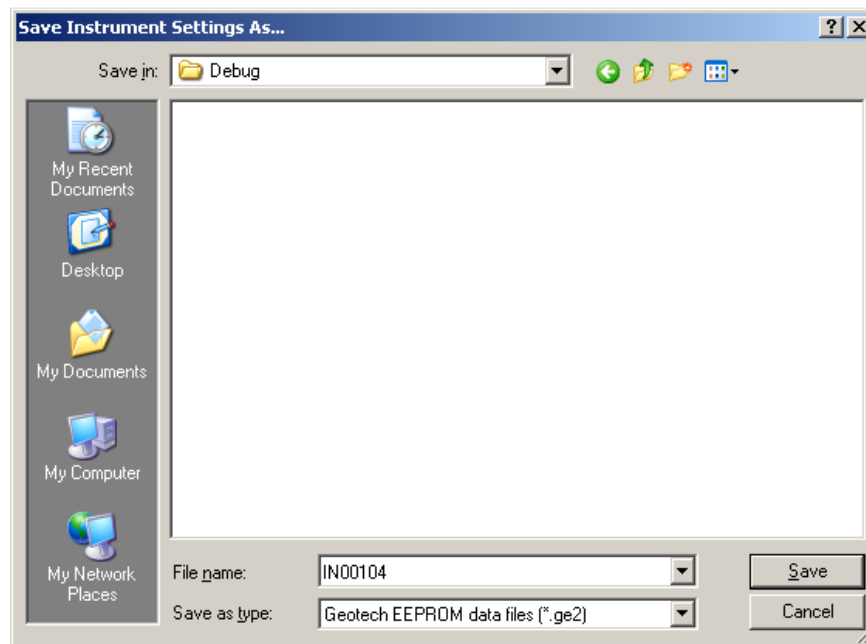
This feature is provided to enhance the support opportunities that Geotech (UK) Limited can provide to its customers.

✉ Note: For further information please contact Technical Support at Geotech (UK) Limited on +44(0)1926 338111 or email technical@geotech.co.uk.

The following sections outline how to export and import the configuration settings:

6.6.1 Exporting the Configuration Settings

Export the configuration settings by selecting the 'Export' button from the 'Instrument Settings' tab. The system will offer the 'Save Instrument Settings As ...' dialog box to the user as follows:



Export Settings File Name

By default, the user is offered a filename that is the serial number of the instrument with the extension of .ge2. In the above scenario the exported configuration settings will be stored in a file named IN00104.ge2.

With the configuration settings exported the user can then email the file to the Technical Support Team at technical@geotech.co.uk.

If the configuration requires modification it will need to be imported back into the instrument, therefore the technical support staff will email the configuration file back to the user. The user then saves the attachment to disk and selects the 'Import' button on the 'Instrument Settings' tab to import the configuration into the instrument.

6.6.2 Importing the Configuration Settings

Select the 'Import' button and the system displays the 'File Selection' dialog box.

The user should select the directory in which the configuration settings file was saved, selecting the file that was returned from the Technical Support Team. Once the user selects the file, the system will load the settings from the file and update the instrument. The instrument settings screen will also update to reflect any changes.

6.6.3 Print Instrument Settings

The process of printing instrument settings is exactly the same as for device readings. Please refer to section 'Print Device Readings' for connected devices.

6.6.4 Copy Instrument Settings

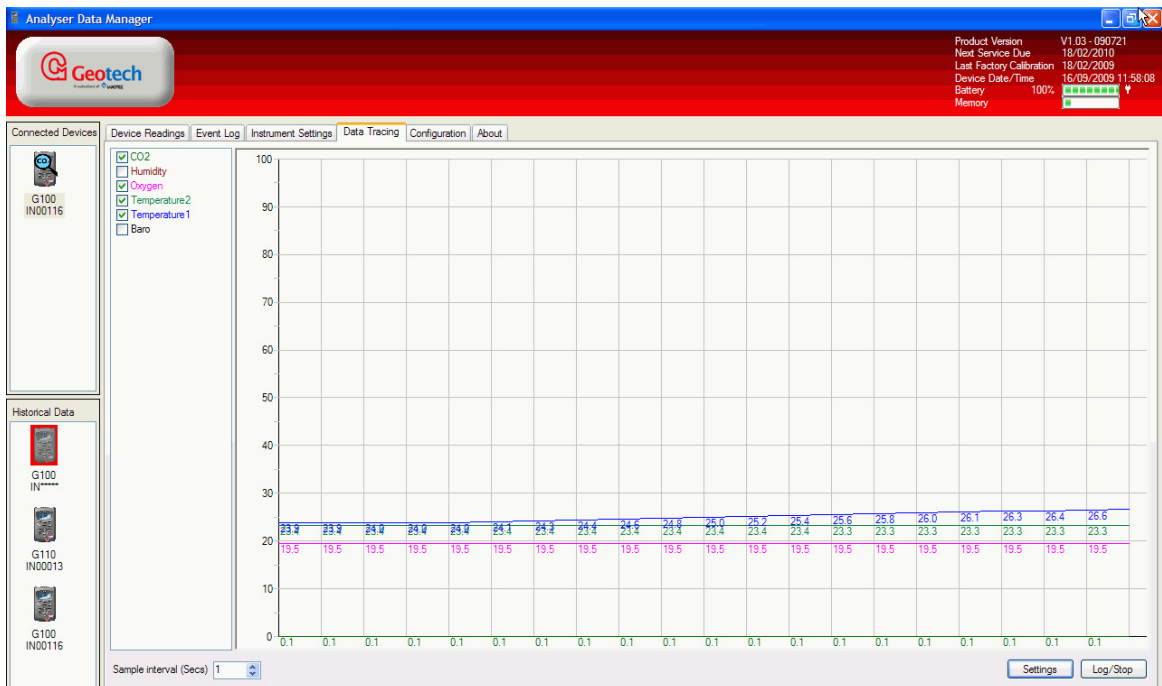
The process of copying instrument settings is exactly the same as for device readings. Please refer to section 'Copy Device Readings' for connected devices.

6.6.5 Email Instrument Settings

The process of emailing instrument settings is exactly the same as for device readings. Please refer to section 'Email Device Readings' for connected devices.

6.7 Data Tracing Tab

The data tracing option offers a real-time graphical data display capability. Select the 'Data Tracing' tab and the following screen is displayed:



Live Data Tracing

This screen gives the user the ability to select the values that can be traced from the selected instrument. The screen above shows a trace of the CO₂, Oxygen, temperature probe 1 and temperature probe 2 readings for instrument IN00116.

The reader should note that the tracing capability shows the real-time data values for a number of discrete points in time (i.e. for the previous 20 seconds depending on the 'Parameter Configuration').

Note: The data retrieved for tracing is not stored and therefore can not be analysed at a later time. The system supports tracing data from one instrument at a time.

6.7.1 Parameter Configuration

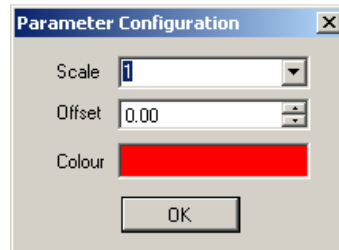
'Double-clicking' a value, i.e. humidity etc, that is to be traced, presents the 'Parameter Configuration' dialog box. From this the user can change the 'scale, offset and colour' of the trace.

To change the colour, 'double-click' the colour box in the 'Parameter Configuration' dialog

box. The Windows colour picker is presented and the user can choose the colour required.

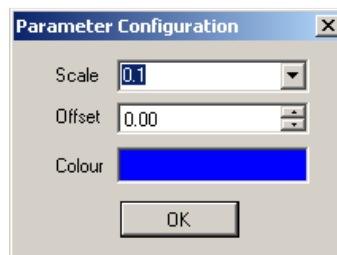
6.7.1.1 Examples of Parameter Configuration

'Double-clicking' the 'Temperature 2' channel from the displayed graph presents the user with the following dialog. The 'Scale' and 'Offset' are 1 and 0.00 meaning add or subtract nothing from the actual value and multiply the result by 1.



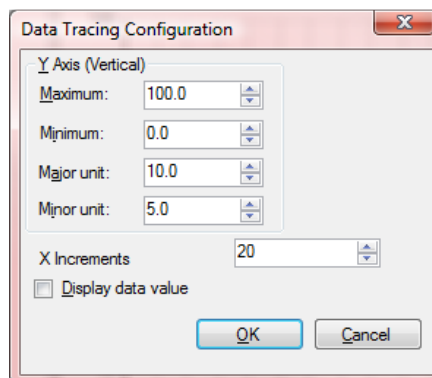
Example of Parameter Configuration – Temperature 2

The second example is for the 'Humidity' channel. The 'Scale' and 'Offset' are set to 0.1 and 0.00. This is useful for displaying large signals on the same graph as smaller signals.



Example of Parameter Configuration - Humidity

The scale for the trace can also be changed via the 'Settings' button, which enables the user to modify the Y scale of the trace and the number of X increments on the trace. The user can change the X Increments from 2 to 100, this represents the number of sample intervals displayed. The user can also choose to display the numeric value of each reading next to the plot point.



Trace Settings

The user can change the sample interval from 1 to 120 seconds. This represents the interval that each X increment on the trace represents. So selecting 20 'X Increments' with 1 second sample interval means that the trace will display 20 seconds of data.

6.7.2 Print a Data Trace

The process of printing a data trace is exactly the same as for device readings. Please refer to section 'Print Device Readings' for connected devices. The content of the printout is shown as graphical rather than tabular data.

6.7.3 Copy a Data Trace

The process of copying the data trace is exactly the same as for device readings. Please refer to section 'Copy Device Readings' for connected devices.

6.7.4 Email a Data Trace

The process of emailing a data trace is exactly the same as for device readings. Please refer to section 'Email Device Readings' for connected devices.

6.8 Configuration

The configuration option enables the user to access instrument(s) live and historical data readings that are connected or stored on another computer. For example, a user may have one or several analysers in operation in a laboratory and wish to monitor live readings from a central office.

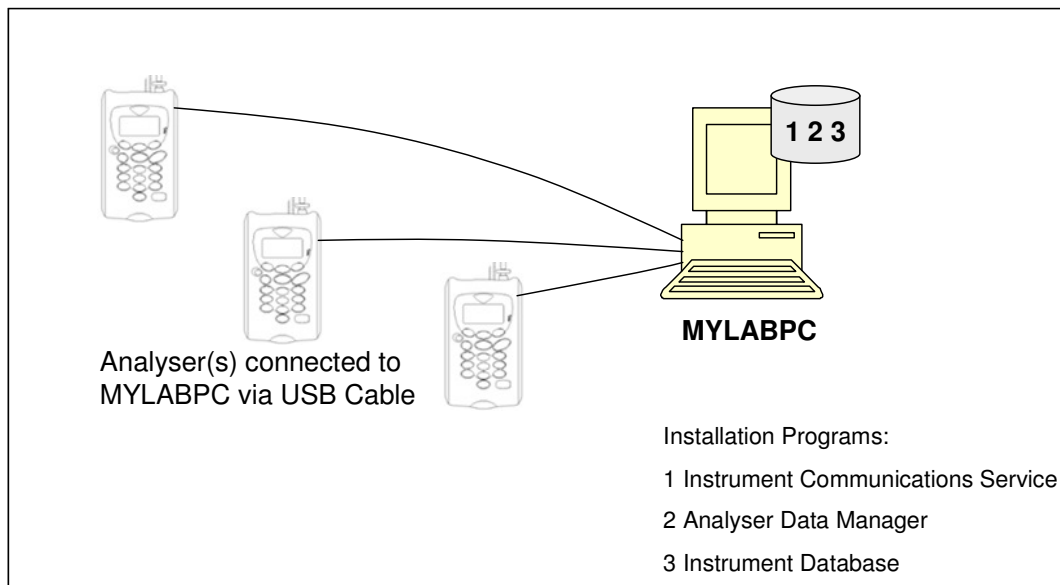
Analyser Data Manager may also be configured to connect to an Instrument database stored on another computer, such as a corporate database server. This enables data to be stored and gathered from separate computers into a single repository.

When installing the Analyser Data Manager software the user is prompted to confirm which programs files are to be installed. The default selection is ALL programs, however the user may specify individual program installations if preferred. These programs include the Instrument Database, Instrument Communications Service and Analyser Data Manager.

The following examples outline three different configuration possibilities:

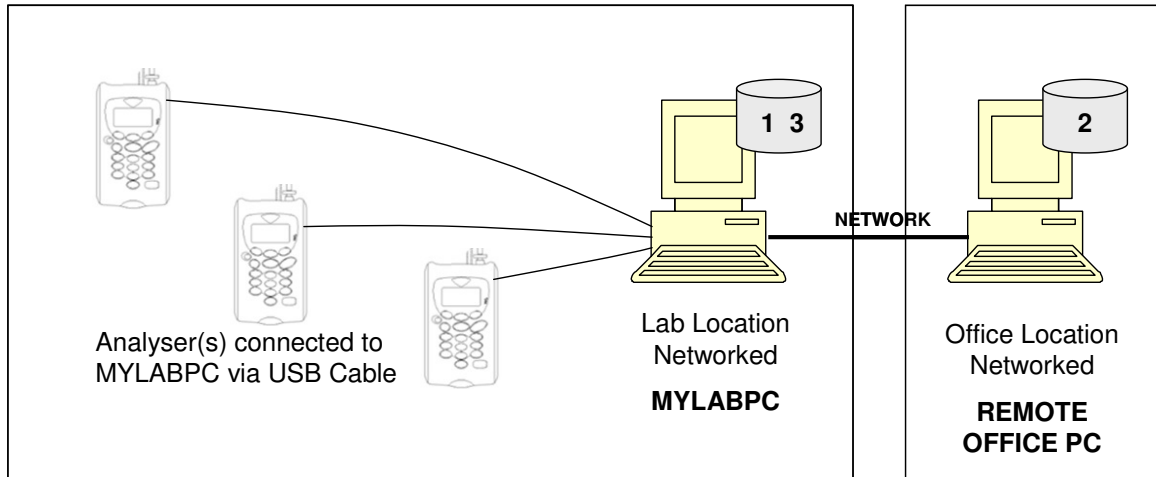
Configuration A:

One or more analysers linked directly to a PC with local data storage. Analyser Data Manager has all the installation programs installed and configured which run on 'MYLABPC'. 'MYLABPC' collects and stores the data readings.



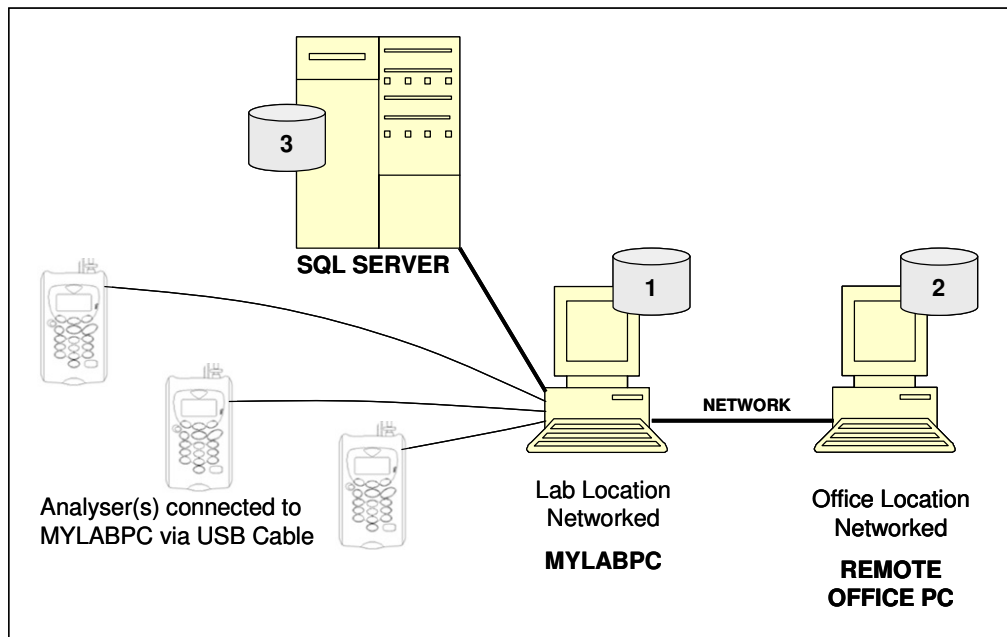
Configuration B:

One or more analysers linked to a PC in a laboratory environment 'MYLABPC' running the 'Instrument Communications Service' and 'Instrument Database' programs with a remote office PC running the 'Analysers Data Manager' program acting as 'LOCAL HOST' to 'MYLABPC'. 'MYLABPC' collects and stores the data readings. 'REMOTE OFFICE PC' views and monitors the readings collected on 'MYLABPC'.



Configuration C:

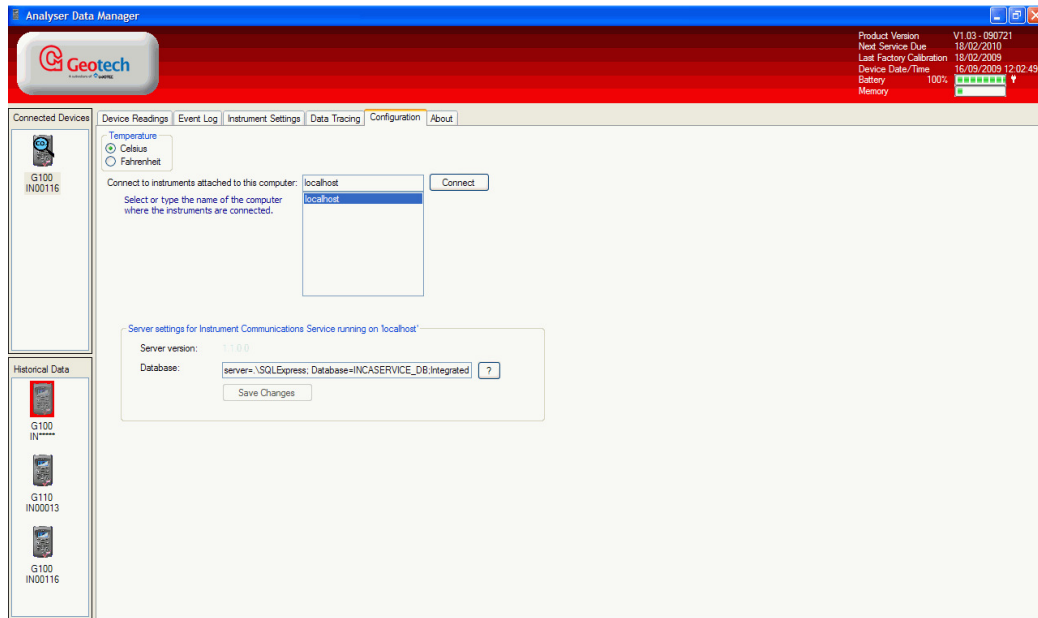
One or more analysers linked to a PC in a laboratory environment 'MYLABPC' running the 'Instrument Communications Service' program with a remote office PC running the 'Analysers Data Manager' program acting as 'LOCAL HOST' to 'MYLABPC' and an SQL Server hosting the 'Instrument Database' programs. 'MYLABPC' collects the data readings from the analyser(s). 'REMOTE OFFICE PC' views and monitors the readings collected on 'MYLABPC'. The SQL Server acts as a central repository for all data readings collected from 'MYLABPC' along with other networked PC's.



⚠ Note: Microsoft SQL Server 2005 SP3 is not supplied and supported by Geotech (UK) Limited.

Configuration Settings:

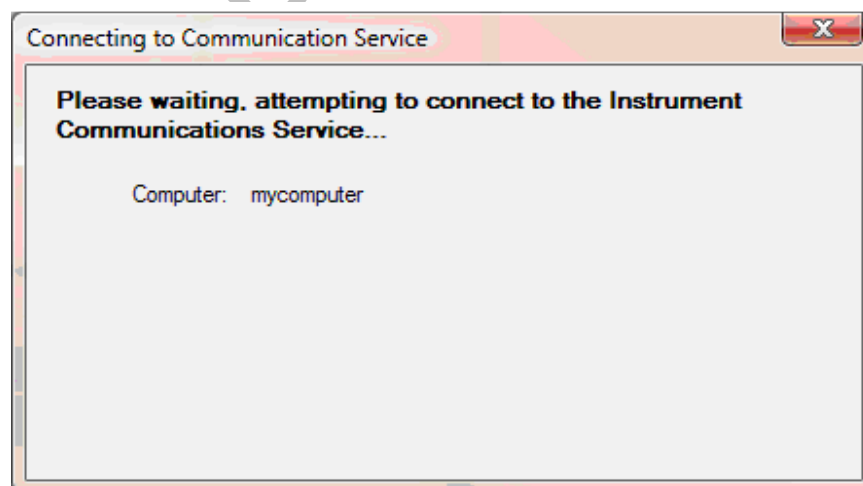
- 1) Select the 'Configuration' tab for the connected device and the following screen is displayed:



Configuration Tab

- 2) Select or type the computer name or the IP address in the field 'Connect to instruments attached to this computer' field, i.e. in the example shown in configuration B 'MYLABPC' and then select the 'Connect' button.

When the software attempts to connect to the service the following dialog is shown:



If a successful connection is made the window closes and the user can continue operating the software.

Connecting to a Different Instrument Database:

As outlined in configuration C to enable the software to store and retrieve data from a different database edit the 'Database connection string' or click the '?' button next

to the connection string and select a database server from the list.

- Once a connection is made click on the 'Save Changes' button to confirm the changes.

⚠ Note: Connection will only take place providing the central database (server) has been configured with a copy of the database and the correct authority rights have been given. Please refer to your IT department for assistance.

- In addition, the 'Configuration' tab also enables the user to change the temperature default between Celsius and Fahrenheit.

6.9 About Tab

The 'About' tab when selected shows the current software version and defaults to the manufacturer's website, i.e. www.geotech.co.uk.

This feature enables the user to gain access to the user manual, technical specification and latest software release information for the G100 range of products. For example:

The screenshot displays the 'About' tab of the Geotech website. At the top right, a status bar shows: Product Version V1.00 - 18/12/08, Next Service Due 01/01/0001, Last Factory Calibration 01/01/2000, Device Date/Time 18/12/2008 16:12, Battery 100%, and Memory. The navigation menu includes 'home', 'links', 'news', 'contact', 'my account', 'products', 'downloads', 'case studies', 'service', 'support', and 'about us'. The main content area features a 'Welcome' message, a 'Why Choose Geotech?' section with five bullet points: 'Excellent Customer Service', 'High quality, reliable products', 'Experienced and knowledgeable staff', 'Responsive Action', and 'Global Support Network'. Below this is the 'Latest News' section with two articles: 'August 2008 Newsletter' (Monday 21st July 2008) and 'MCERTS-CIRIA = Win-Win for Gas Analysers' (Tuesday 15th July 2008). The 'Catalogues' section includes a 'CO2 Product Catalogue' and a 'Remediation Product Catalogue'. The sidebar on the left contains a 'Product Search' box and a 'browse products:' section with categories: Landfill, Biogas, Fixed Position Gas Monitoring, Water, CO₂ Monitoring, and Remediation. A 'Contact Us' section is also present in the sidebar.

About Tab

⚠ Note: If the PC is not connected to the Internet then a default page is offered.

7.0 Historical Data

7.1 Main Application Screen

The bottom half of the screen displays stored data readings when an instrument from 'Historical Data' is selected.

ID Code	Date Time	CO2	O2	Baro	T1	T2	H1	Reading Type
	10/09/2009 11:20:32	0.1	19.5	1,026.0	24.3	--	--	Auto
	10/09/2009 11:21:42	0.2	19.5	1,026.0	32.4	25.3	--	Auto
	10/09/2009 11:22:52	0.2	19.5	1,026.0	31.5	25.1	--	Auto
	10/09/2009 11:24:02	0.2	19.4	1,026.0	27.2	24.7	--	Auto
	10/09/2009 11:25:12	0.2	19.4	1,026.0	24.9	24.5	--	Auto
	16/09/2009 11:55:06	0.1	19.4	1,016.0	--	--	--	Auto
	16/09/2009 12:25:16	0.1	19.6	1,016.0	25.2	22.3	--	Auto
	16/09/2009 12:55:26	0.1	19.7	1,016.0	25.1	22.3	--	Auto

Previously Connected Instruments

When an instrument is selected from the 'Historical Data' list the user can:

- Inspect historical instrument readings.
- Inspect historical event log data.
- Graph the historical readings.
- Maintain configuration settings.
- Obtain web-based support via the Internet.

7.2 Summary Instrument Details

From the top right area of the application the user is presented with a summary of details regarding the disconnected instrument as follows:

Product Version	V1.03 - 090721
Next Service Due	18/02/2010
Last Factory Calibration	18/02/2009
Last Download	16/09/2009 12:55
No. of Readings	8

Summary Offline Instrument Details

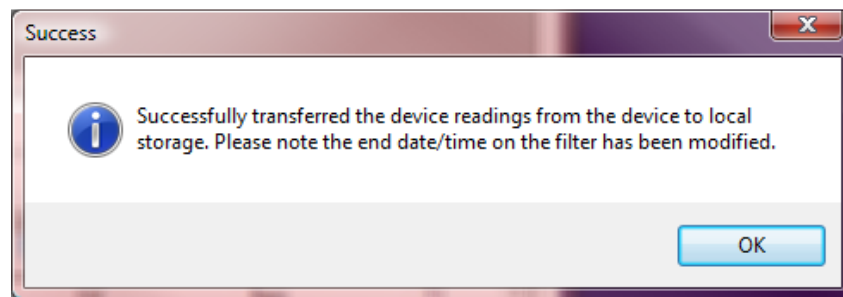
This differs from 'Connected Devices' as it replaces the instrument date/time, battery condition and available memory with 'Last Download' and 'No. of Readings'.

- Last Download - The date and time of the last readings download.
- No. of Readings - The number of readings indicates the number of device readings held on the database for that instrument.

7.3 Device Readings Tab

Historical device readings are created when live device readings from the top display window are transferred to 'Historical Data'.

- 1) Select the 'Transfer' button to transfer all live readings for the selected device.
- 2) The instrument manager displays a dialog box informing the user that the transfer was successful.



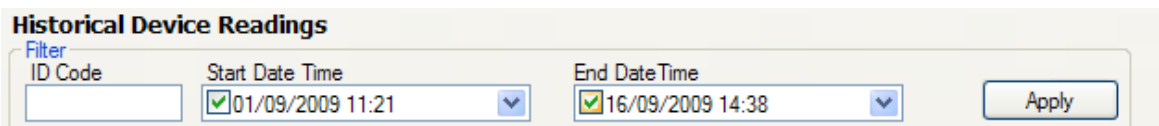
Transferred Device Readings

This data is now contained in a local database and is present until the user decides to delete it.

At this point the software will remove the readings from the instrument and the 'Device Readings' display is updated to reflect the fact that there are no readings on the instrument.

The 'Historical Data' list is updated to show that the database has data pertaining to the instrument.

If a large amount of data has been retrieved from the instrument the user can focus in on the data that is of interest by filtering the data by 'ID Code', 'Start Date Time' and 'End Date Time'.

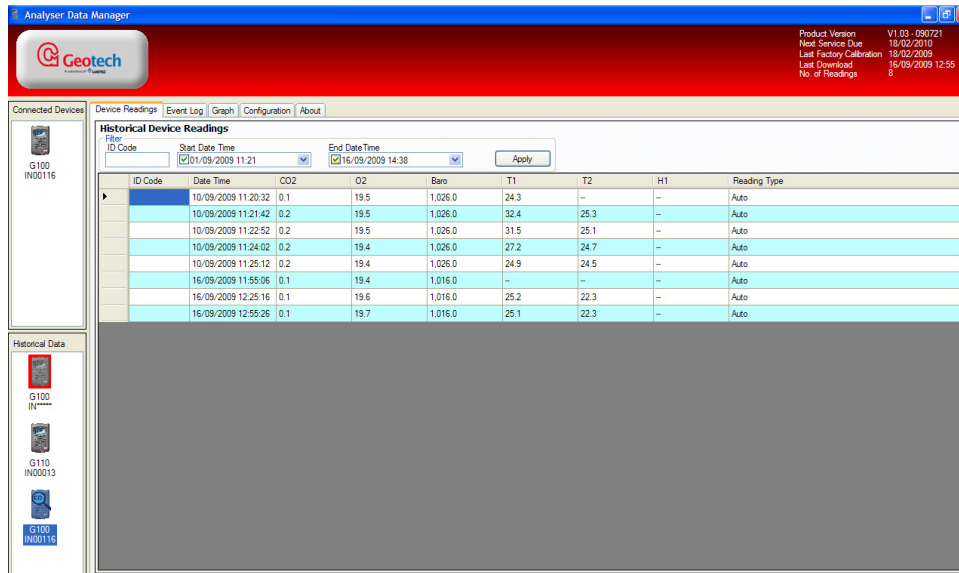


Filter

- 3) The 'ID Code' is an 8 digit character tag that can be set on the instrument when storing readings and used to identify the source of a reading.
- 4) The 'Start Date Time' and 'End Date Time' can be set such that only today's data or data within a date range is displayed. Select the 'arrow down' key in the 'Start Date Time' and 'End Date Time' filter window and a calendar facility is displayed.

- 5) Click on the date to select.
- 6) Clearing the tick box against 'Start Date Time' and 'End Date Time' removes the filtering.

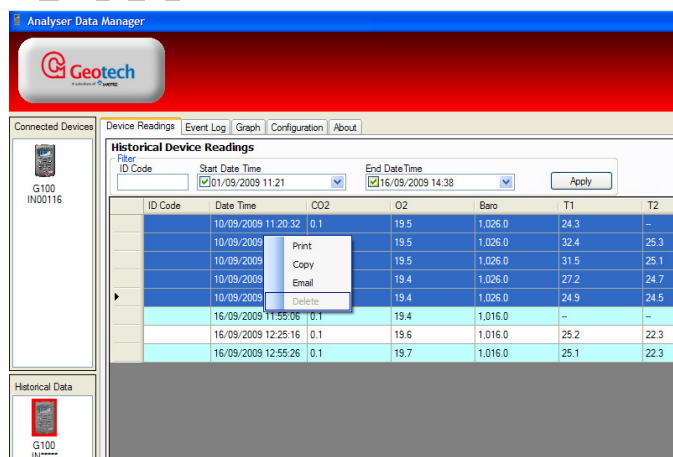
When the user selects the instrument from the 'Historical Data' list the display changes to reflect that no live data is being analysed as follows:



Offline Device Readings

The shaded cells to the left of the device readings list are used for selecting rows of readings.

Using the mouse 'left-click' to select and then 'right-click' and a context menu is displayed Print/Copy/Email/Delete options are available:



Device Readings Context Menu

7.3.1 Print Device Readings

From either the live device readings or offline device readings data tables the user can elect to print the selected data from the tables. The selected data can be one cell, a selection of individual cells, a selection of columns or a selection of rows (usually

between a date range). The user simply uses the print option on the context sensitive menu to print the details. Please refer to section 'Device Readings' for connected devices for more information.

7.3.2 Copy Device Readings

From either the live device readings or offline device readings data tables the user can elect to copy the selected data from the tables. The selected data can be one cell, a selection of individual cells, a selection of columns or a selection of rows (usually between a date range). The user simply uses the copy option on the context sensitive menu to copy the details to the clipboard. Once the data has been copied it can be pasted into applications such as MS Word or MS Excel. This provides the user the capability of enhanced analysis of data or the ability to generate reports. Please refer to section 'Copy Device Readings' for connected devices for more information.

7.3.3 Email Device Readings

Whilst the data copied in the above section can be pasted into an email client and simply sent to a recipient, this option provides an email facility for customers who have lab equipment that may not be configured with email clients. Please refer to section 'Email Device Readings' for connected devices for more information.

7.3.4 Delete Device Readings

The historical data stored may hold obsolete data or the user may simply wish to delete some of the records. This is performed by selecting the row(s) to delete and 'right-clicking' to open the context menu.

From the context menu select 'Delete'. The system will move the device readings data to archive and the display will refresh to reflect the data.

7.4 Event Log Tab

The event log displays the historical events raised for the selected instrument. This includes historical information such as user calibration and changing of the time and date. When the user selects the instrument from the 'Historical Data' list the display changes to reflect that no live data is being analysed as follows:

Event ID	Date Time	Description	Data
646	16/07/2009 14:22:31	Clear memory	Area: Events
647	16/07/2009 14:43:22	POST: Sensor unstable	Channel: Ref: Reading: 0; Previous: 65533
648	16/07/2009 14:43:59	POST: Sensor unstable	Channel: Ref: Reading: 0; Previous: 65533
649	16/07/2009 14:50:32	Start refresh firmware	
650	16/07/2009 14:50:49	Start refresh firmware	
651	16/07/2009 14:50:56	POST: Sensor unstable	Channel: Ref: Reading: 0; Previous: 65533
652	16/07/2009 14:54:25	Restore to factory settings	Area: User calibration
653	16/07/2009 14:54:27	Restore to factory settings	Area: User calibration
654	21/07/2009 09:51:35	Start refresh firmware	
655	21/07/2009 09:51:58	Start refresh firmware	
656	21/07/2009 09:54:39	Start refresh firmware	
657	21/07/2009 11:36:36	Start refresh firmware	
658	21/07/2009 11:38:08	Start refresh firmware	
659	21/07/2009 14:37:55	Logging mode changed	Enabled: 1; Pump run time: 0 Seconds; Interval: 1 Seconds
660	21/07/2009 14:37:55	Logging mode ID changed	ID: 3
661	21/07/2009 15:16:04	Start refresh firmware	
662	21/07/2009 15:16:31	Start refresh firmware	
663	21/07/2009 15:16:57	Clear memory	Area: Readings
664	21/07/2009 15:18:37	Clear memory	Area: Readings
665	21/07/2009 15:19:19	Clear memory	Area: Readings
666	21/07/2009 15:19:55	Clear memory	Area: Readings
667	21/07/2009 15:20:13	Logging mode changed	Enabled: 1; Pump run time: 0 Seconds; Interval: 1 Seconds
668	21/07/2009 15:20:14	Logging mode ID changed	ID: 1

Instrument Event Log

Live instrument events collected are uploaded to the 'Historical Event Log' from the instrument to PC storage by the 'Transfer' button.

Should there be a large quantity of events in PC storage then the user can filter the data to view using the 'Event ID', 'Start Date Time' and 'End Date Time' parameters.

7.4.1 Print Event Log

The process of printing event log data is exactly the same as for device readings. Please refer to section 'Print Device Readings' for connected devices for more information.

7.4.2 Copy Event Log

The process of copying event log data is exactly the same as for device readings. Please refer to section 'Copy Device Readings' for connected devices for more information.

7.4.3 Email Event Log

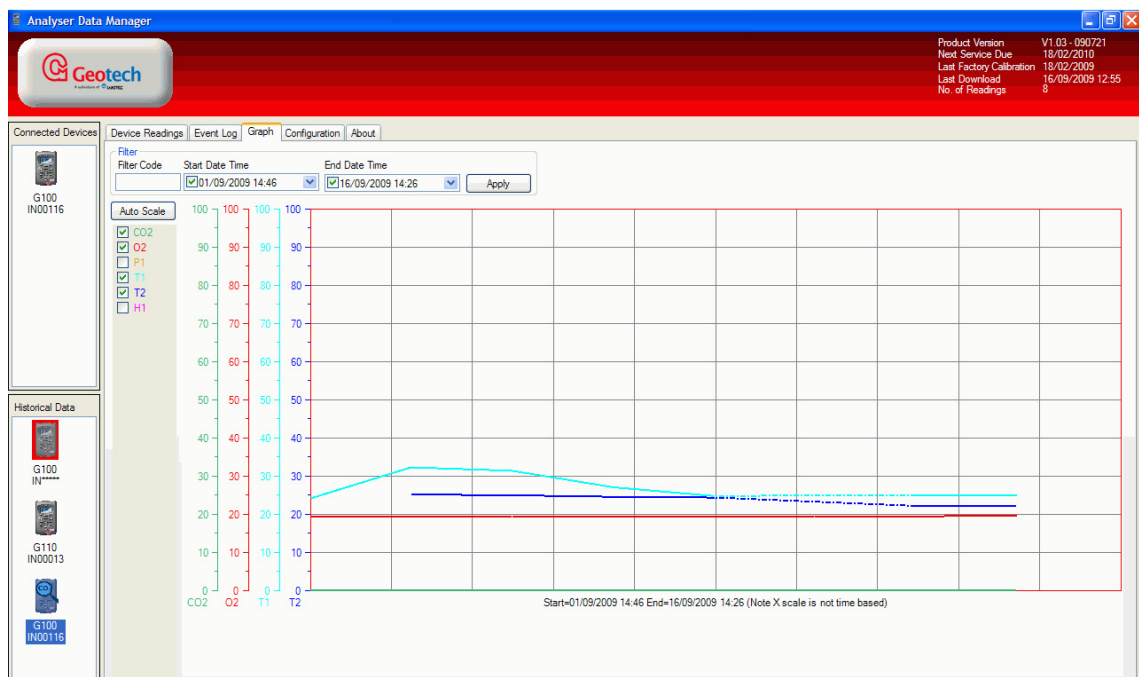
The process of emailing event log data is exactly the same as for device readings. Please refer to section 'Email Device Readings' for connected devices for more information.

7.4.4 Delete Event Log

The process of deleting event log data is exactly the same as for device readings. Please refer to section 'Delete Device Readings' for historical data for more information.

7.5 Graph Tab

The graph tab enables the user to graph selected channels from the downloaded instrument reading. Hence, this feature is only available when a non-connected instrument is selected.



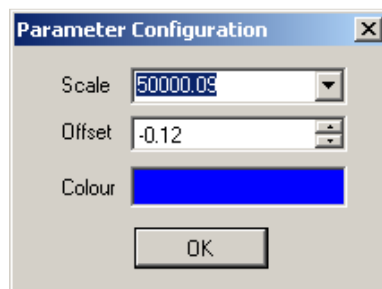
Device Readings Graph

From this screen the user can choose which readings to graph, filtering by date, time and filter code.

To graph many readings of varying scale select the 'Auto Scale' button. The 'Auto Scale' button forces the system to scale each selected reading to offer maximum peak to peak graph resolution. Should the data fall within a time envelope that is narrower than the filter time range then the graph is expanded out to start at the first reading point and end at the last reading point.

The user can change the 'scale, offset and colour' for each reading by 'double-clicking' the channel, i.e. 'double-clicking' on the H1 text of the H1 checkbox causes the system to present the 'Parameter Configuration' dialog box.

To change the colour, 'double-click' the colour box in the 'Parameter Configuration' dialog box. The Windows colour picker is presented and the user can choose the colour required.



Graph Parameter Configuration

For further details please refer to section 'Data Tracing – Parameter Configuration'.

7.5.1 Print a Graph

The process of printing the graph is exactly the same as for device readings. Please refer to section 'Print Device Readings' for connected devices for more information. The content of the print is shown as graphical rather than tabular data.

7.5.2 Copy a Graph

The process of copying the graph is exactly the same as for device readings. Please refer to section 'Copy Device Readings' for connected devices for more information.

7.5.3 Email a Graph

The process of emailing a graph is exactly the same as for device readings. Please refer to section 'Email Device Readings' for connected devices for more information.

7.6 About Tab

The 'About' tab when selected shows the current software version and defaults to the manufacturer's website, i.e. www.geotech.co.uk.

This feature enables the user to gain access to the user manual, technical specification and latest software release information for the G100 range of products.

✍ Note: Please refer to section 6.9 for more information

8.0 Problem Solving

Message

Connecting to Communication Service:
Cannot start service Geotechnical
Instruments Communications Service
on computer.

Action Required

Check the service is started by using the
Services control panel select the 'Run'
command and key 'Services.msc' and enter.
Check that the Service is running and is not
disabled.

✉ Note: For further information please contact Technical Support at Geotech (UK) Limited
on +44(0)1926 338111 or email technical@geotech.co.uk.

9.0 Glossary of Terms

Administrator	The Administrator for the PC (Client) onto which the Analyser Data Manager is to be installed and who has the required security privileges to install and remove software program files.
Baro	Barometric Pressure reading in millibars (mb).
CO₂	Carbon dioxide gas.
Connected devices	Instruments (analysers) currently connected to the PC via USB port(s). Live data readings can be viewed for the connected devices.
Data tracing	Data tracing enables the user to graph live data readings from the connected instrument and display in a graphical format then output to a printer, copied to another application for analysis or emailed.
Event log	The event log displays the events raised on the selected instrument, such as user calibration and changing of the date and time settings etc. Live event log data can be transferred to historical data for PC storage.
Firmware	Firmware is the name given to the analyser's internal software. The Firmware software is automatically updated if necessary when the analyser is returned for servicing.
Graph	The graph facility enables the user to display the historical data readings in a graphical format then output to a printer, copied to another application for analysis or emailed.
Historical data	Historical data displays readings from devices which were once connected and the data readings transferred to historical data for PC storage and further analysis.
O₂	Oxygen.
Service due date	The date the next service is due for the selected device. Instrument icons are highlighted in red in the application, indicating that the instrument is past its service due date.
Software Protection Device	Software copy protection is provided by a USB device giving only the licence holder security rights to run the software.