



ANALYSER DATA MANAGER

OPERATING MANUAL

The screenshot displays the Geotech G100 Analyser Data Manager software interface. The main window shows the status of a connected device (IN00020 - G100) and a table of readings. A secondary window is open, showing a graph of barometric pressure (Baro (mb)) over time for site ID EH40P54.

Device Information:

- Product Version: V1.05 - 091127
- Next Service Due: 07/10/2010
- Last Factory Calibration: 07/10/2009
- Device Date/Time: --
- Battery: [Battery Level Indicator]
- Memory: [Memory Level Indicator]

Readings in Instrument:

Time/Date	LOCID	Rdg Type	CO2 (%)	O2 (%)	Baro (mb)
08/02/2010 16:27:09	2	User	0.143	19.8	1002

Graph Data (Approximate):

Time	Baro (mb)
09:00	1024
10:00	1022
11:00	1022
12:00	1020
13:00	1020
14:00	1019
15:00	1018
16:00	1017
17:00	1018

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MANUAL GUIDELINES

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 QED on +44(0)333 800 0088 or email technical@qedenv.co.uk.

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INTRODUCTION

General

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

- G100 CO2 0-20%
- G110 CO2 0-100%
- G150 CO2 0-10,000ppm
- G200 N2O 0-1,000ppm
- G210 N2O 0-100%
- Hyperbaric Analyser

The G100 analyser is specifically designed to monitor CO₂ for the verification of incubators in research and pharmaceutical markets. 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 illegal immigrant detection.

The G200 analyser is designed to safety check background and breathing zone levels of N₂O (0-1,000ppm) in medical applications and the G210 analyser is designed to audit check piped medical gases in hospitals, including N₂O, O₂, CO₂ and CO.

These units have been developed to incorporate the latest technology and specification requirements, which provide the user with fast, simple-to-use, accurate instrumentation.

Note: The range of G100 and G200 instruments are sensitive pieces of scientific equipment and should be treated as such.

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Analyser Data Manager

Analyser Data Manager 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.
- Copy data from the 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.

Computer Requirements

The software is compatible with the 32-bit and 64-bit editions of the following Microsoft operating systems: Windows 7 and Windows 10.

- 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 4.0 (supplied).
- Microsoft SQL Server Express 2014 SP2 (supplied).

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SOFTWARE INSTALLATION AND REMOVAL

Software Installation

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

Installation from USB Flash Drive

- 1) Insert the USB flash drive into a spare USB port of your computer.
- 2) When the drive is detected by Windows, use Windows Explorer to find "ADMSetup.exe" on the drive.
- 3) Double-click "ADMSetup.exe"

Installation from CD

Insert the CD into the CD/DVD drive. The CD may automatically start up. If the installer does not start automatically locate "ADMSetup.exe" in the root of the CD and run the application.

Installation process

- 1) When installation begins tick the "I agree to the license terms and conditions" checkbox, then click Install.

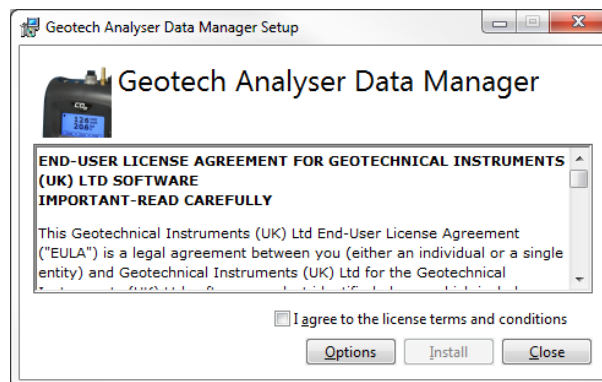


Figure 1 - Setup Screen

If your computer does not have Microsoft .NET Framework 4.0 or SQL Server Express installed, these will be installed first.

- 2) Installation continues:

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Figure 2 - Setup Screen, Next

- 3) The next screen displayed asks the user to accept the terms of the User License Agreement. Accept the terms of the license agreement by 'checking' the appropriate box followed by the 'Next' button to continue and the following screen is displayed:

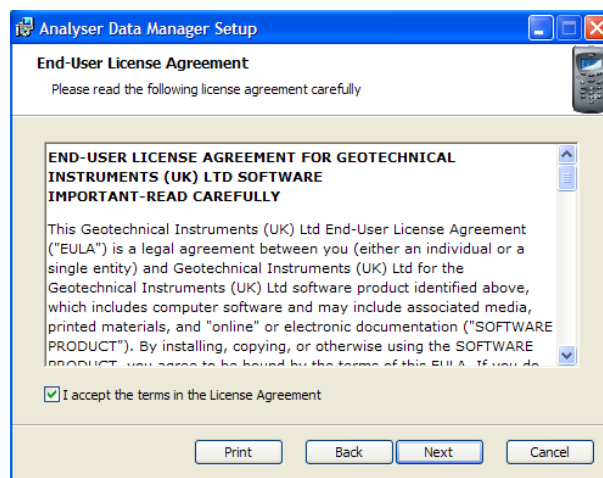


Figure 3: End-User License Agreement

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

However, it is possible to select each program individually. 'Right-click' on the program drop-down box to select whether the program is to be installed or not.

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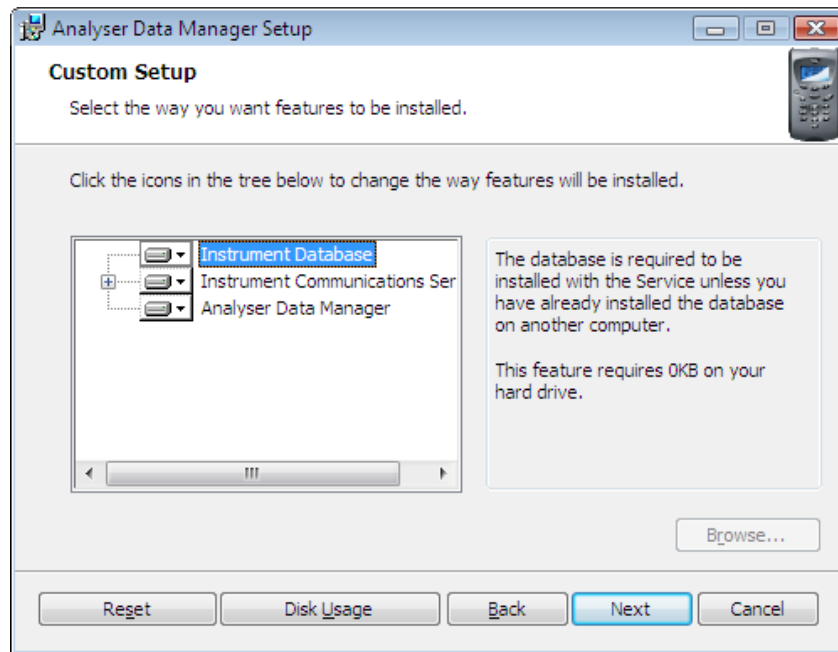


Figure 4 Custom Setup

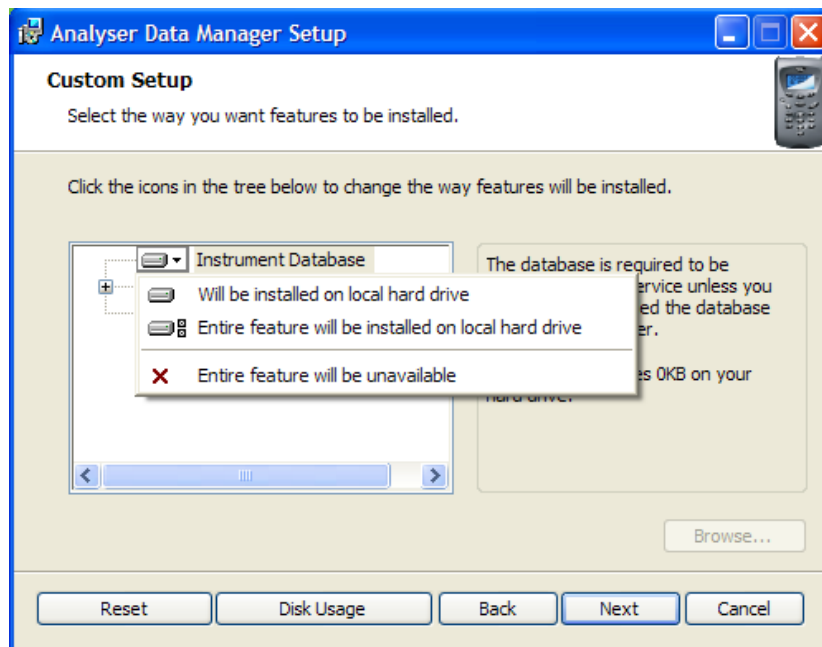


Figure 5: Custom Setup Options

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

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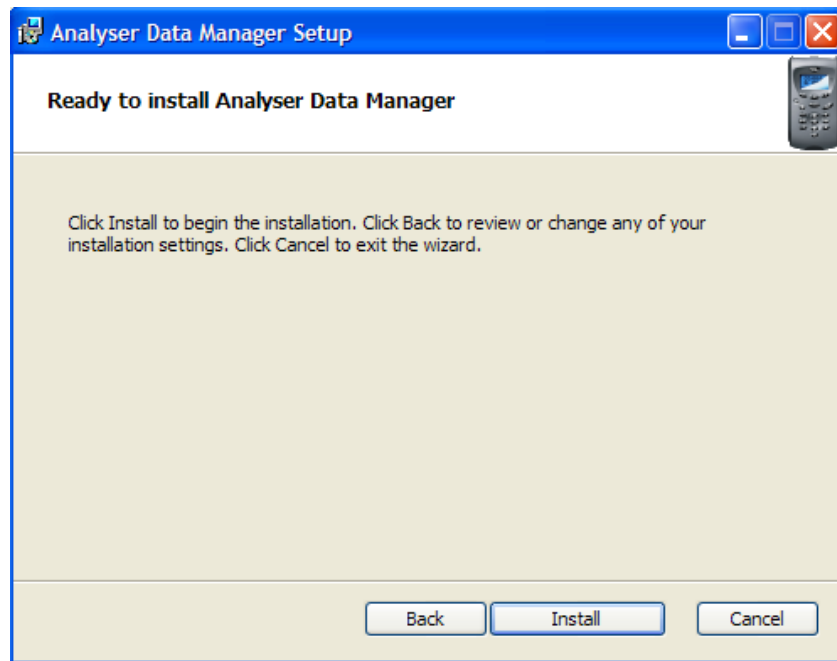


Figure 6 - Setup, Install

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

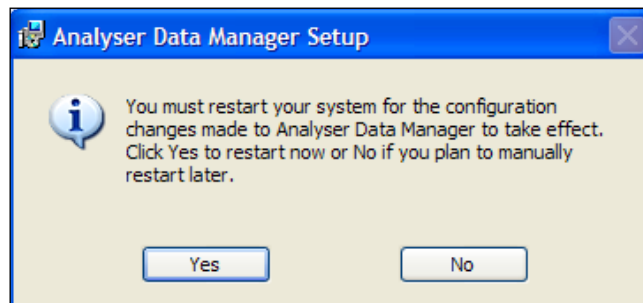


Figure 7 - Installation Complete

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

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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 7, select 'Programs and Features' and choose 'Geotech Analyser Data Manager', then select 'Uninstall'

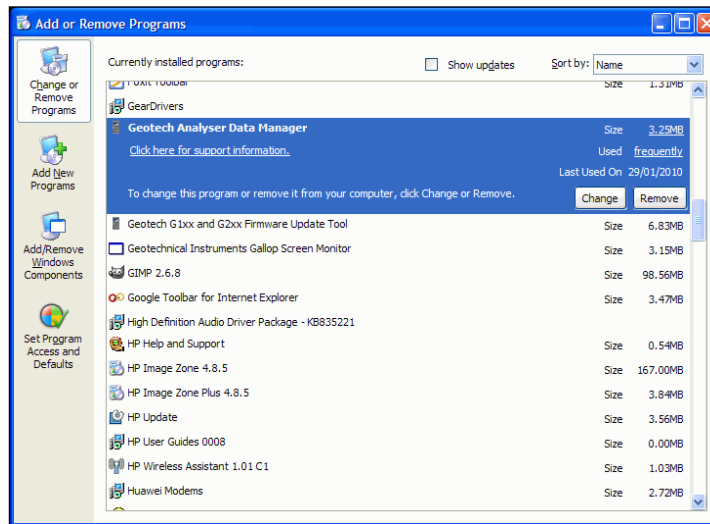


Figure 8: Add or Remove Programs

Note: Microsoft .NET Frameworks will not automatically be deleted when removing the application software.

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

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GETTING STARTED

Licence Protection

Licence protection is provided by a USB software protection device giving only the license holder the rights to use 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 a USB port.



Figure 9: Software Protection Message

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'.

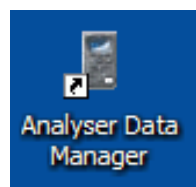


Figure 10: Desktop Icon

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

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Exiting the Application

To shut down or minimise the application click the Close button in the top right corner or press Alt+F4. The user is presented with an option to minimise the application or exit fully.

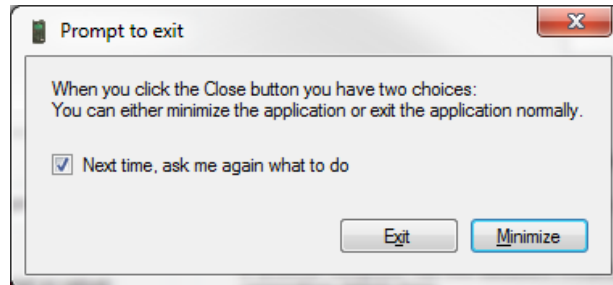


Figure 11 - Exit options

- 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.



Figure 12 - Taskbar icon

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

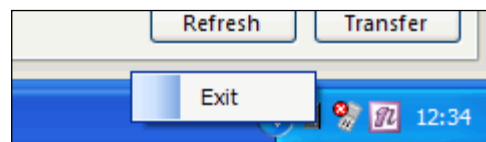


Figure 13 - Taskbar icon quit option

Note: If Analyser 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.

- 3) To change the Exit/Minimise behaviour the user can change the settings from the Configuration tab.

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USER INTERFACE

Instrument Selection

To the left-hand side of the application window there are two lists of devices (instruments) connected and disconnected. The main screen displays live data readings for physically 'Connected Devices' attached via a USB cable.

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.

The connected and disconnected devices shown can be displayed as icons or detailed view. Toggle between icon and details view as required using the buttons at the top of the connected list.

Default Application Screen

The default application screen is the 'Device Readings' tab. This screen displays live data readings for the connected device.

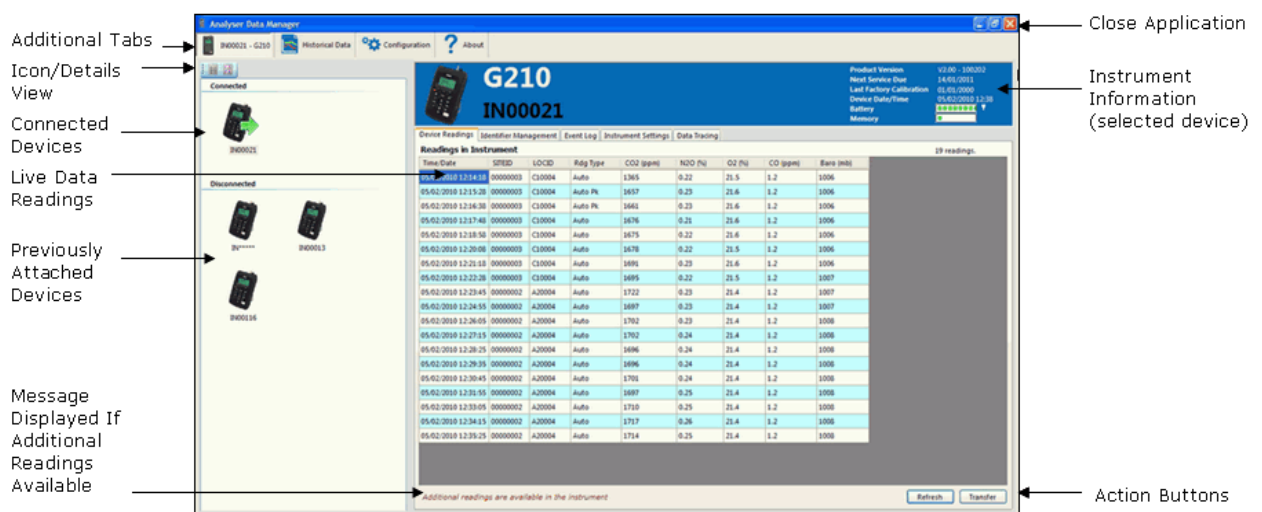


Figure 14: Default Application Screen

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.

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CONNECTED DEVICES

Main Application Screen

The main application screen displays live data readings for the connected device(s).

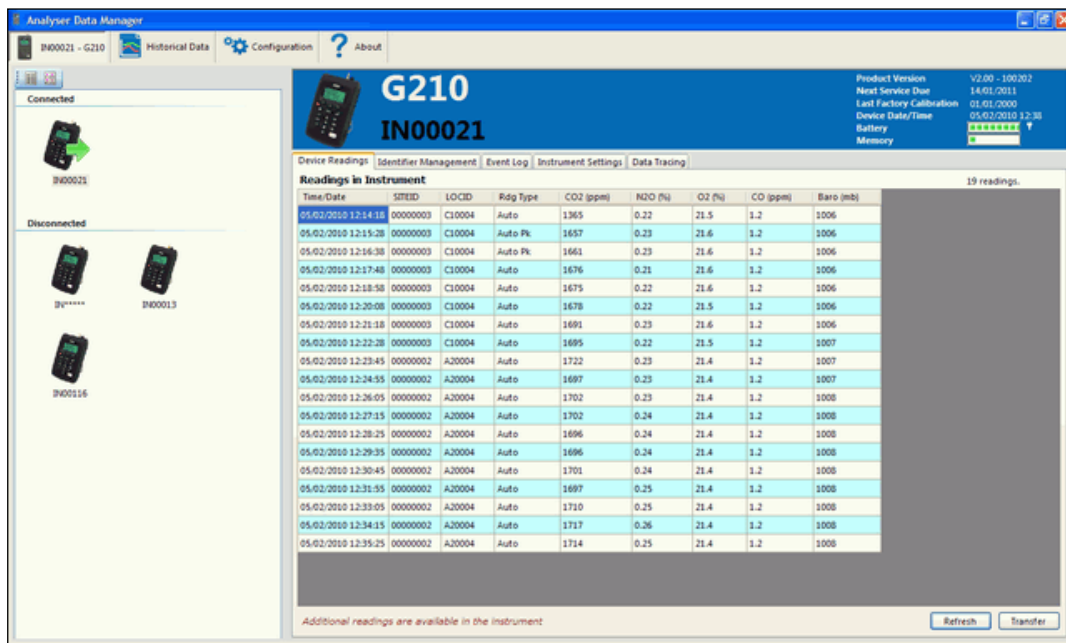


Figure 15: Main Application Screen

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.

Summary Instrument Details

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

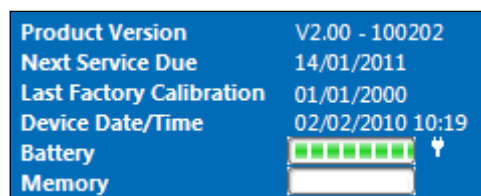


Figure 16: Summary Instrument Details

Product Version - The version number and release date of the instrument's internal software 'Firmware'.

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- 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 1,000 readings).

Device Readings Tab

When an instrument is selected, and the instrument is currently connected the 'Device Reading' tab is selected. When there are a small number of readings in the instrument they are retrieved automatically. If there are a lot of readings in the instrument, click the 'Retrieve Data from Instrument' button.

The message 'Additional readings are available for the instrument' is displayed when there are more recent readings available in the instrument.

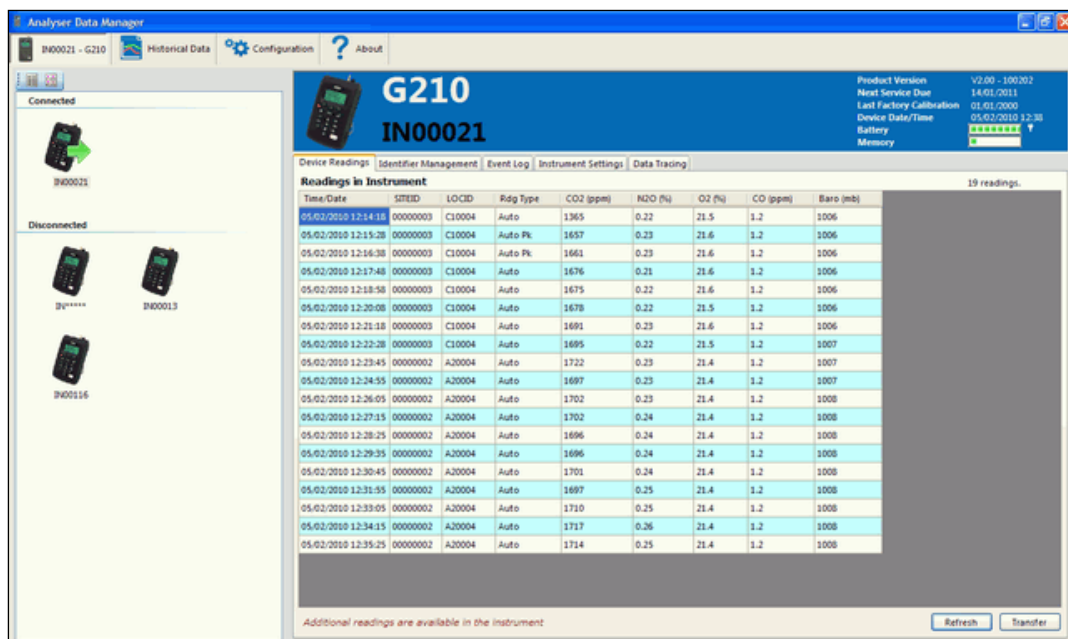


Figure 17: Device Readings Tab

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Viewing Alternative Units of Measurement

Some channels such as Pressure can be viewed in one or more alternative units of measurement such as FSW, millibars. To add or remove alternative units, right click a channel's Heading. If the channel supports alternatives, then the user can choose to remove the current units or add an alternative from the list that is shown.

Note: It is not possible to completely remove a channel from display or storage.

Saving Readings to a Text File

To save readings to a text file click the 'Export Readings to File' button. The user will be prompted to choose a filename. Input the file name and then click OK.

The file is saved in CSV format.

Saving Readings to the Database

To have the readings saved to the Analyser Data Manager database for later processing click the 'Save readings to Database' button. The readings will be transferred from the instrument and stored to the database.

If the software is configured to automatically delete readings from the instrument they shall be deleted when the transfer completes successfully.

After the readings have been transferred an option appears to 'View Newly Saved Readings'. When selected this option switches to the 'Historical' tab to display the last downloaded data.

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.



The screenshot shows the G210 IN00021 software interface. At the top, there is a blue header with the device name 'G210 IN00021' and an image of the device. Below the header, there are several tabs: 'Device Readings', 'Identifier Management', 'Event Log', 'Instrument Settings', and 'Data Tracing'. The 'Device Readings' tab is active, displaying a table titled 'Readings in Instrument'. The table has the following columns: 'Time/Date', 'SITEID', 'LOCID', 'Rdg Type', 'CO2 (ppm)', and 'N2O (%)'. The table contains several rows of data. A context menu is open over one of the rows, showing options: 'Print', 'Copy', and 'Email'.

Time/Date	SITEID	LOCID	Rdg Type	CO2 (ppm)	N2O (%)
02/02/2010 11:35:36	00000001	B10004	Auto Pk	1148	0.19
02/02/2010 11:36:46	00000001	B10004	Auto Pk	1512	0.19
02/02/2010 11:37:56	00000001	B10004	Auto Pk	1512	0.19
02/02/2010 11:39:06	00000001	B10004	Auto Pk	1512	0.19
02/02/2010 11:40:16	00000001	B10004	Auto Pk	1512	0.19
02/02/2010 11:41:26	00000001	B10004	Auto Pk	1519	0.19
02/02/2010 11:42:36	00000001	B10004	Auto Pk	1527	0.19

Figure 18: Device Readings Context Menu

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- 2) A print dialog box will open. To print, select the printer icon followed by the attached default Printer ID.

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).

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

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

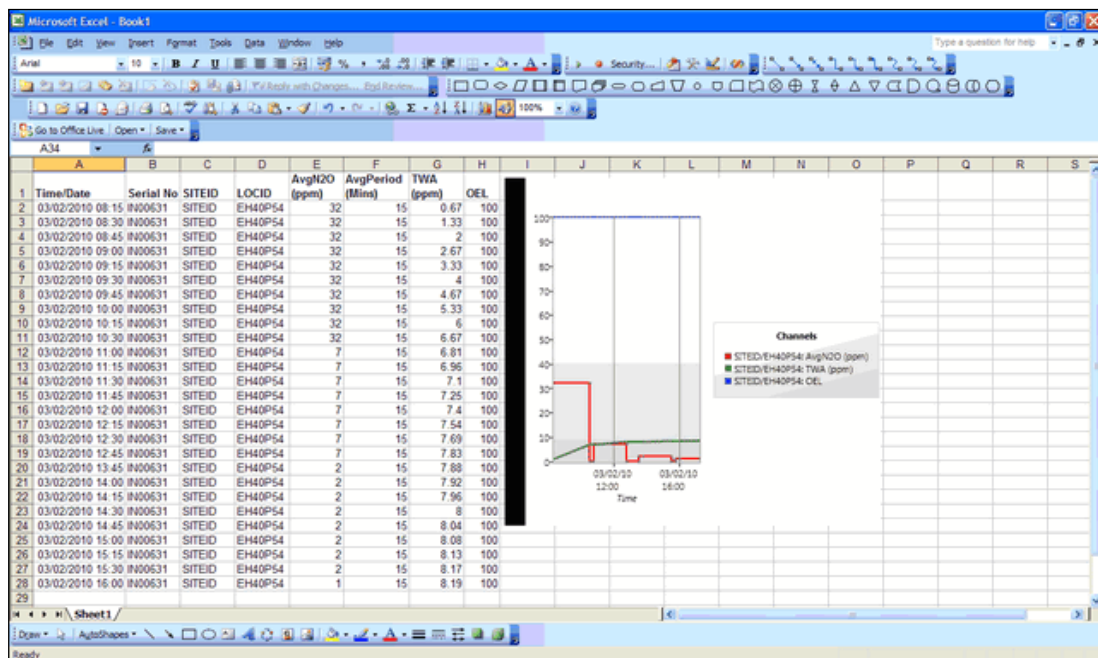


Figure 19: Example of Copied Device Readings into MS Excel

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 an email.

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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:

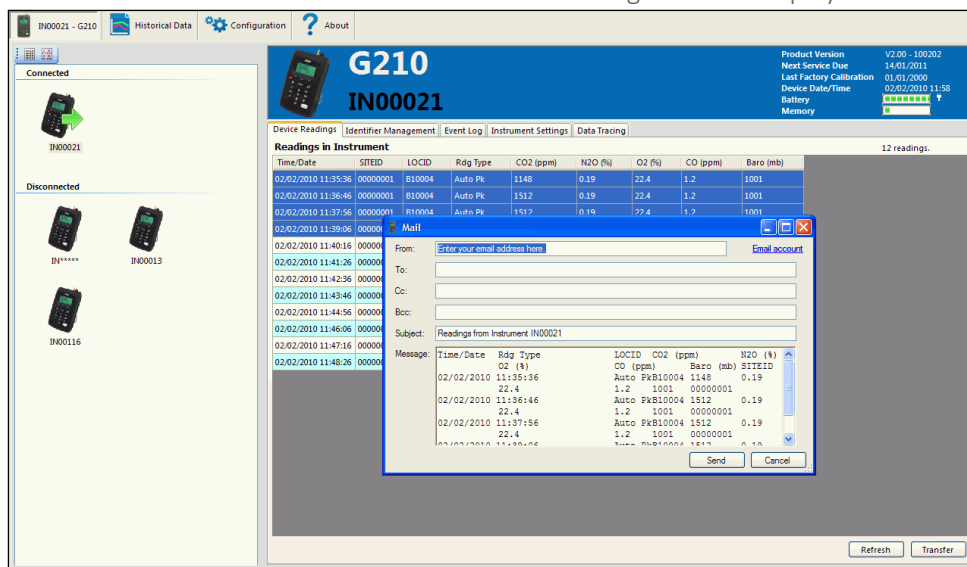


Figure 20: Email Device Readings – Mail Dialog Box

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'.

Email Configuration

The very first time the email feature is used the user is required to set up 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:

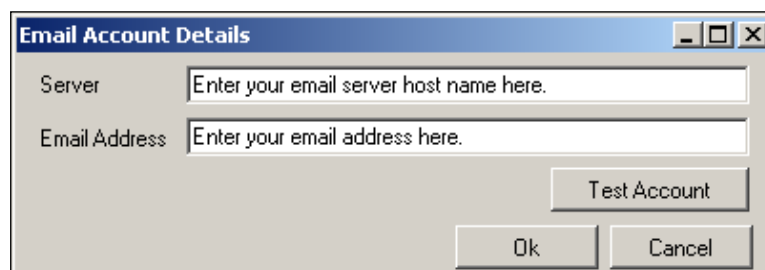


Figure 21: Email Account Details

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The email address requires the usual internet email address. Once the 'Server' and 'Email Address' are set up 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.

Identifier Management Tab

The identifier management tab enables the user to set up and maintain site and IDs which can then be uploaded to the analyser.

Note: This option is only available to the G200 range of analysers.

The screen is split into two:

- Master List - which displays the 'Site(s)' and 'IDs' which have already been created. The master list is stored in the database for future use enabling the user to create new IDs or delete existing IDs.
- Instrument List - displays IDs which after creation have been added ready for update to the instrument.

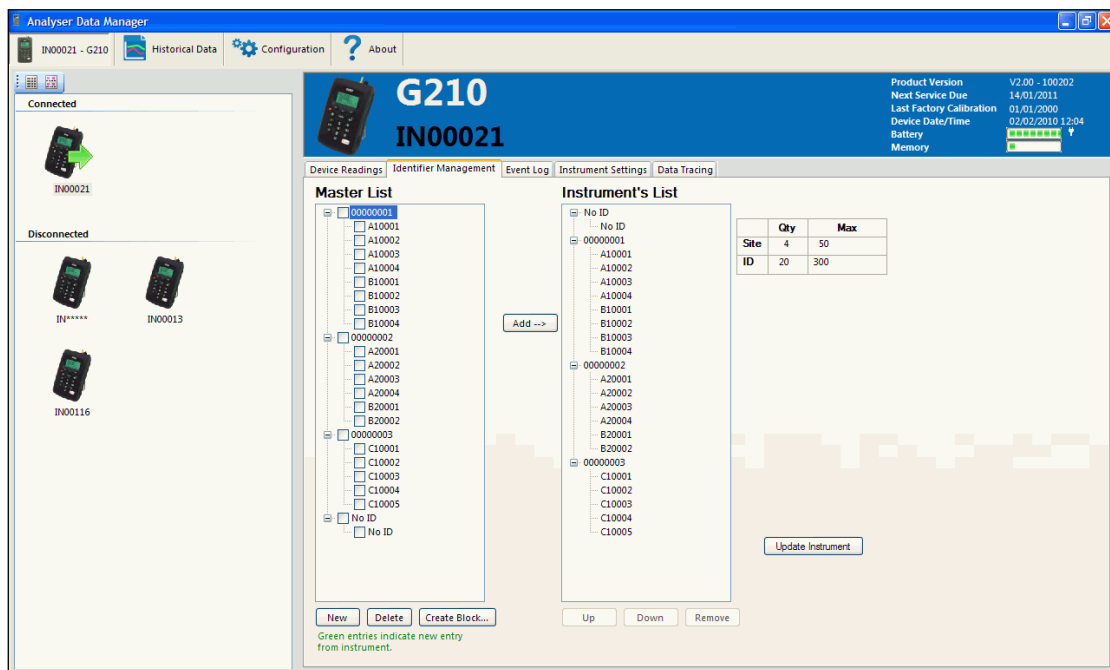


Figure 22: Identifier Management Tab

ID codes are either created at the time of selection on the analyser or created using the Analyser Data Manager software and uploaded to the instrument for selection prior to readings being taken.

The 'Site' (top level ID) and 'ID' (second level ID) fields refer to the identifier that the operator gives to a reading set before it is stored. The G200 and G210 allows the operator to enter up to 16 alpha-numeric characters which is split into two parts (to help manage the data) called 'Site' and 'ID' by default. These are entered as two sets of eight alpha-numeric identifiers by the operator (i.e. typed in). For example, the first part called 'Site' can be used to store the name of the building i.e. 'Warwick'

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and the second part called 'ID' could be used for location or room that the reading was taken i.e. 'A&E1'.

Create New Site ID

Site IDs (top level IDs) can be alpha-numeric and up to a maximum of eight digits in length. The user may create up to 50 sites.

- 1) To create a new Site ID select the 'New' button at the bottom of the master list and the following screen is displayed:

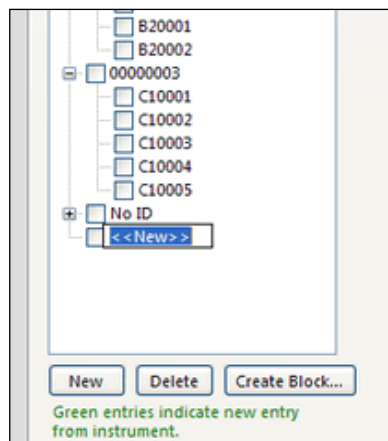


Figure 23: Create New Site ID

- 2) Place the cursor in the '<<New>>' field; click the left mouse button and key in the new Site ID.
- 3) Click outside the box to accept and create the Site.
- 4) Now that the site ID exists the user may now enter IDs.

Create ID

IDs (second level IDs) can either be created one at a time or for speed created as a block, alpha-numeric and up to eight digits in length. A top-level ID must exist before second level IDs can be created. The user may create up to 300 IDs.

- 1) To create an individual new ID, click and select the Site ID that the ID will reside in.

Note: When selected the box to the left of the Site ID displays a green tick.

- 2) Select the 'New' button at the bottom of the master list.
- 3) Place the cursor in the '<<New>>' field; click the left mouse button and key in the new ID.
- 4) Click outside the box to accept and create the ID.

Create New ID Block

IDs can be created as a block, alpha-numeric and up to eight digits in length.

- 1) To create a new ID block first create the Site ID as detailed in section '6.4.1 Create New Site ID'.
- 2) Click on the Site ID to select, followed by the 'Create Block ...' button and the following screen

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is displayed:

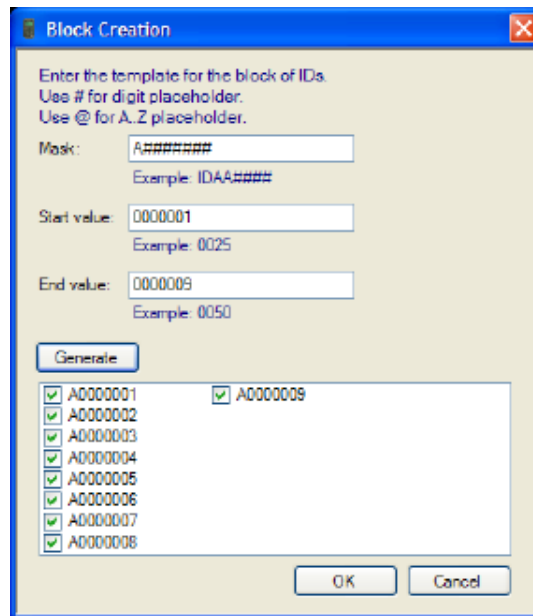


Figure 24: Block Creation

- 3) Enter the template 'Mask' for the block of IDs; alpha-numeric up to eight digits in length, i.e. A##### (A0000000).
- 4) Enter the 'Start value', i.e. 00000001 and 'End value', i.e. 00000009.
- 5) Select the 'Generate' button and the ID block will generate and display as a list.
- 6) Tick the required IDs and select the 'OK' button to confirm.
- 7) The new IDs will display as a second ID level within the appropriate Site ID.

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Delete ID

Delete an ID or group of IDs by selecting the ID(s) from the master list followed by the 'Delete' button.

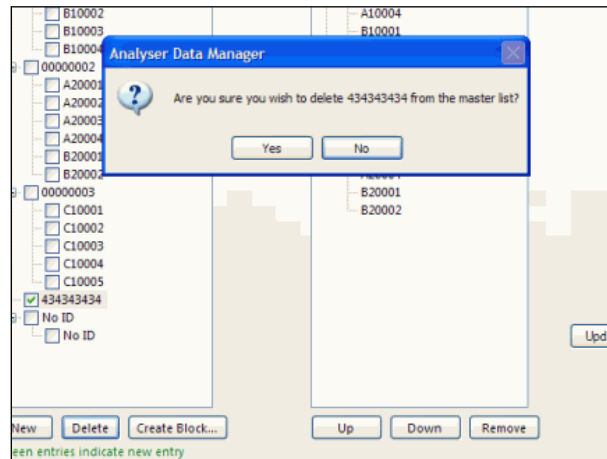


Figure 25: Delete ID Message

Note: A message will display asking the user to confirm the ID deletion. Select 'Yes' to confirm or 'No' to cancel the deletion request.

Instrument's List

IDs are added into the instrument list when the user selects IDs from the 'Master List' and sends the IDs over to the 'Instrument List' via the 'Add' button.

The order of IDs may be changed by clicking on an ID to select, followed by the 'Up' or 'Down' button. This enables the operator to view the IDs when updated to the instrument in an order that is more appropriate. A table is displayed to the right of the instrument's list detailing the number of Sites and IDs which have been created.

To remove an ID from the instrument's list, click on the ID, followed by the 'Remove' button. When selecting the top level Site ID for removal all subsequent second level IDs are automatically removed.

IDs displayed in the instrument's list must be updated to the instrument ready for selection by the operator when taking a gas reading. The following message is displayed if the instrument list has been updated.

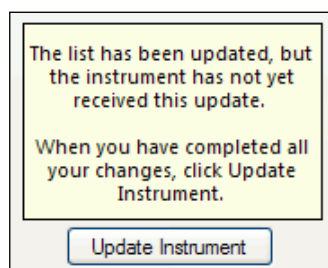


Figure 26 - Update Instrument List

Select the 'Update Instrument' button to send the IDs to the instrument.

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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.

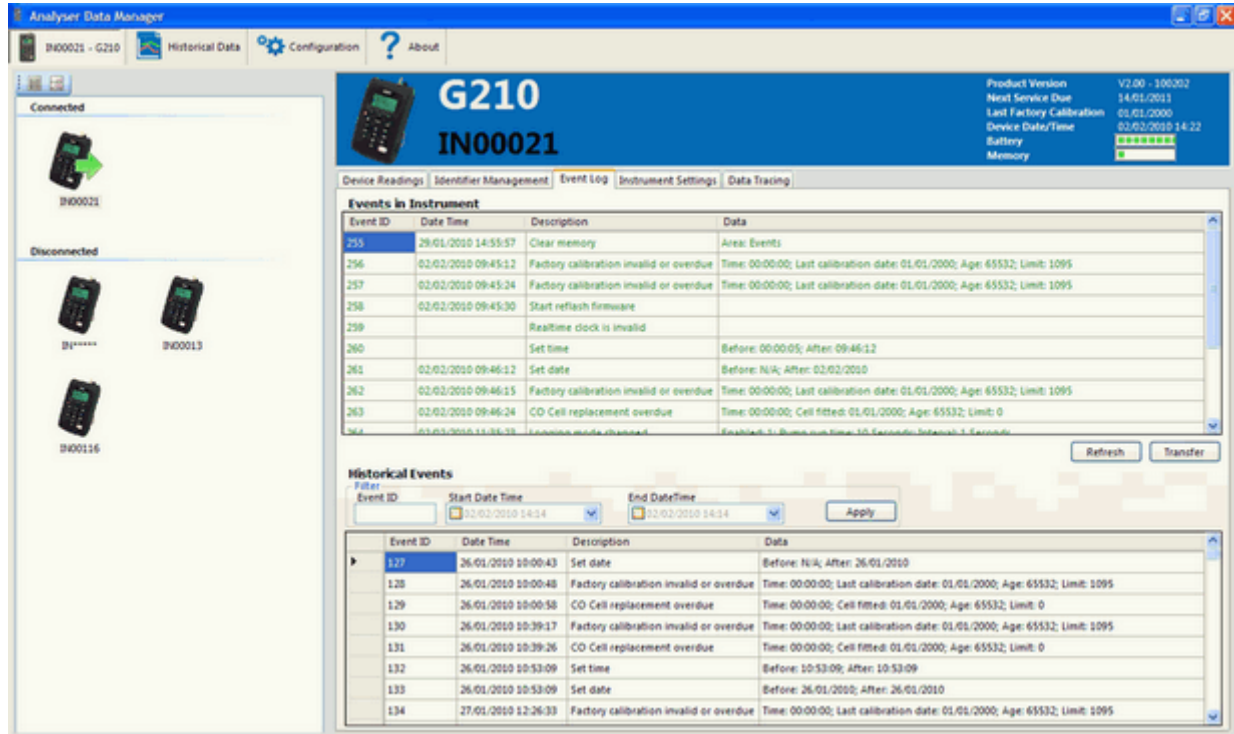


Figure 27: Instrument Event Log – Connected Device

- The user can select the 'Refresh' button to update the live events from the instrument in the 'Events in Instrument' list.
- The event log information can be printed, copied and emailed. Select the rows of data and right-click to reveal a context menu.
- To permanently save the event log to PC storage, select the 'Transfer' button and the following message will display:

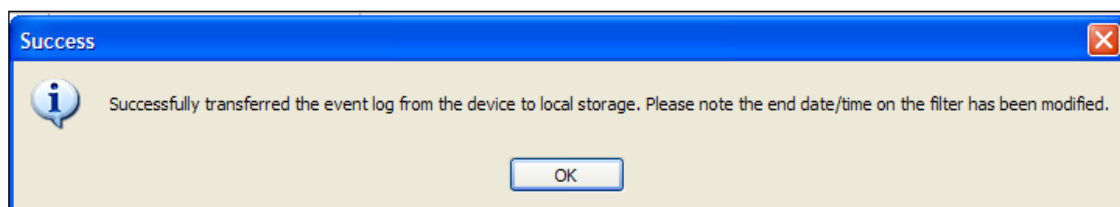


Figure 28 - Event Log

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

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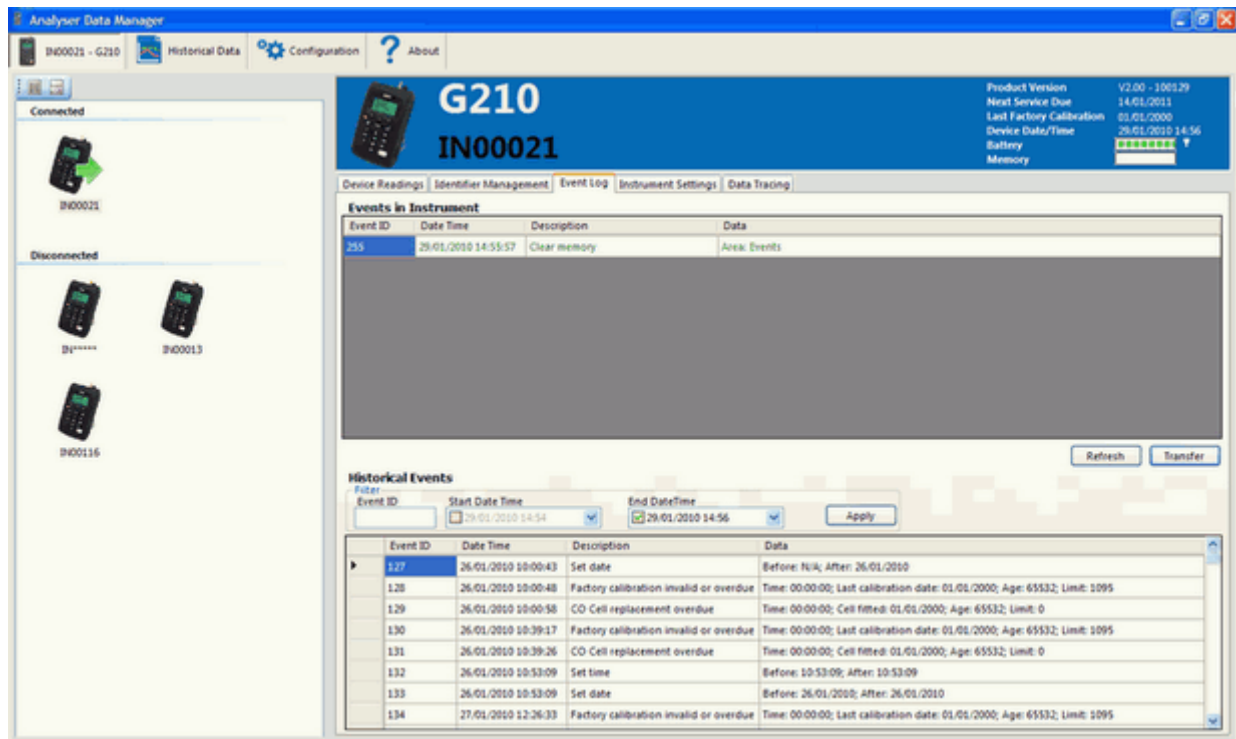


Figure 29: Transferred Event Log

- The historical event log information can be printed, copied, emailed or deleted. Select the rows of data and right-click to reveal a context menu.

Instrument Settings Tab

The instrument settings tab displays the configuration parameters for the connected instrument(s), such as next service due date and last factory calibration date. The user can also maintain the identifier field labels, i.e. Site and IDs.

Update Top and Second Level Field Labels

To update the top and second level field labels, key in the new label name and select the 'Save' button to confirm.

Note: A running count of top and secondary level IDs currently configured is displayed. Up to 50 Sites and 300 IDs can be configured.

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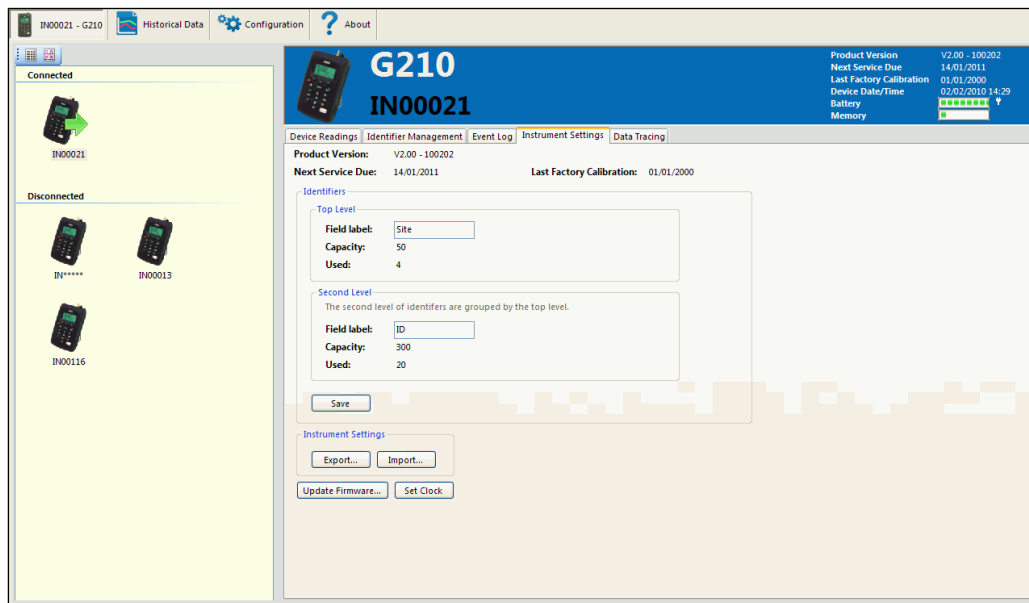


Figure 30: Instrument Settings Tab

Instrument Settings

Instrument settings enable the user to export and import settings specific to the instrument configuration for the connected device. This can be particularly useful for support opportunities should the user have configuration issues with an instrument.

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

Note: For further information please contact Technical Support at QED on +44 (0) 333 800 0088 or email technical@qedenv.co.uk.

Export Instrument Settings

- 1) To export the configuration settings, make sure that the instrument is connected to the PC via the USB lead.

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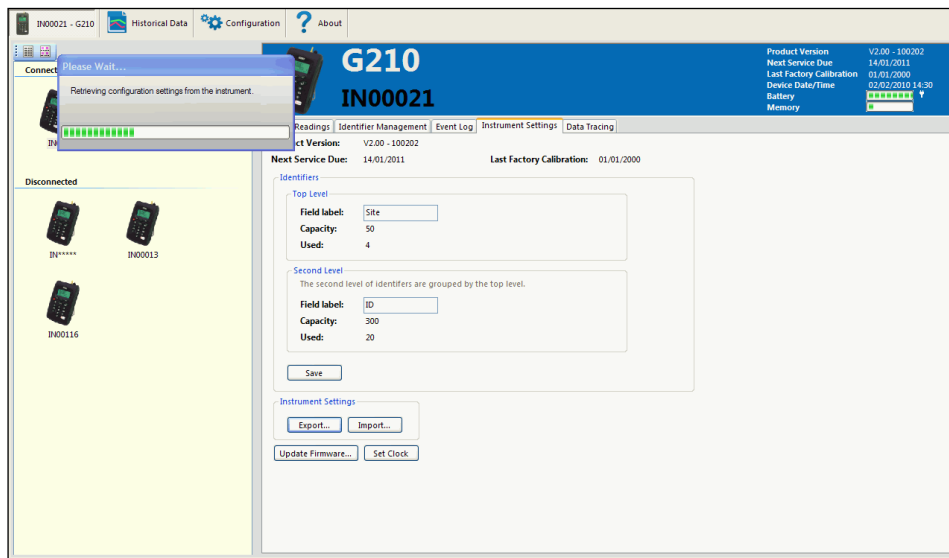


Figure 31: Export Configuration Settings

- 2) From the 'Instruments Settings' tab select the 'Export' button and the following message and screen will be displayed:

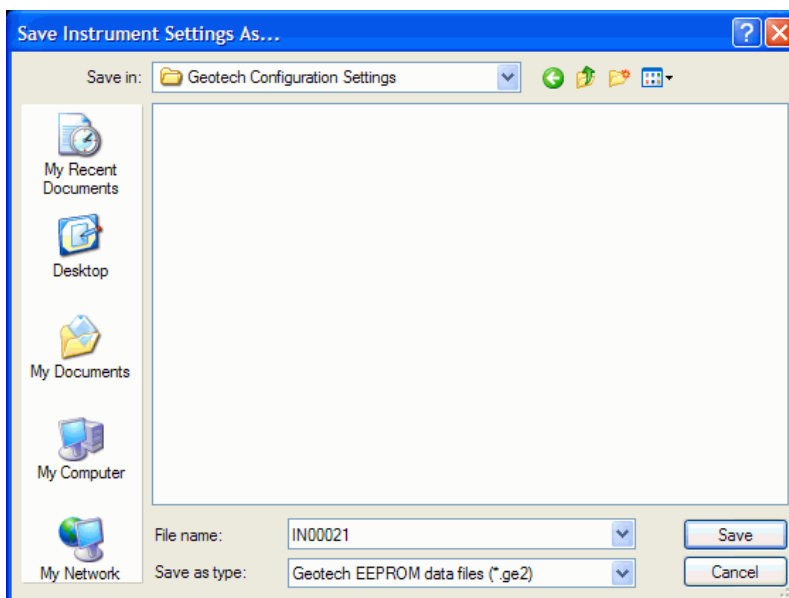


Figure 32: Save Instrument Settings As...

The user will be prompted to save the file into the 'My Documents' folder.

- 3) Select or create a folder in which you want to save the file. The system will automatically create the file as a '.ge2' file type, for example 'IN00021.ge2'.

Note: It is good practice to create a folder in the 'My Documents' folder to make it easier to locate the exported files along with the import files copied back to the PC that are waiting to be imported.

- 4) Select the 'Save' button and the file will be created in the specified folder. This file may then be emailed to QED Technical Support for analysis.

If the configuration requires modification it will need to be imported back into the instrument,

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therefore QED Technical Support will email the configuration file back to the user.

Import Instrument Settings

- 1) To import the updated configuration settings file sent to you from QED Technical Support, make sure that the instrument is connected to the PC via the USB lead.
- 2) Save the updated file into a folder in 'My Documents' folder. Please refer to section '6.6.2.1 - Export Instrument Settings' for more information.
- 3) From the 'Instruments Settings' tab select the 'Import' button.
- 4) Select the folder that the file resides in.

The file returned to you will be an .inca update file. Select the file followed by the 'Open' button and import the instrument settings to the connected device.

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.

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.

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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:

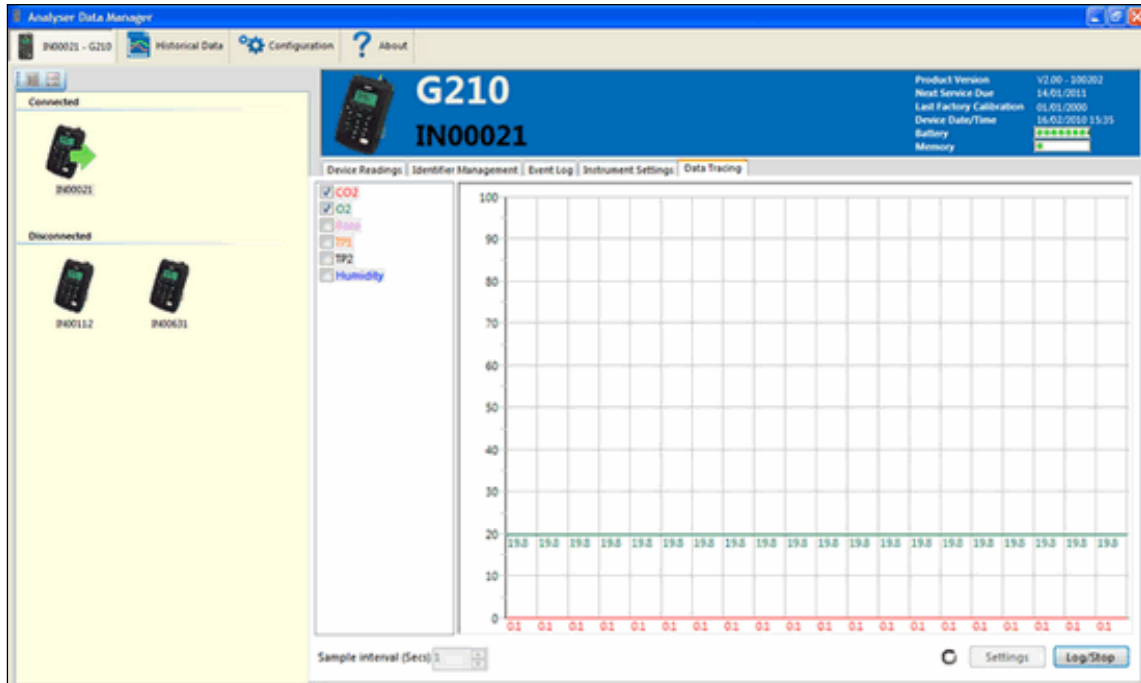


Figure 33: Live Data Tracing

This screen gives the user the ability to select the values that can be traced from the selected instrument.

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').

The data traced can be printed, copied or emailed. Right-click on the graphed data displayed to reveal a context menu.

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.

Parameter Configuration

'Double-clicking' a value, i.e. CO₂ 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 MS Windows colour picker is presented and the user can choose the colour required.

Example of Parameter Configuration:

'Double-clicking' the 'CO₂' 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

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and multiply the result by 1.

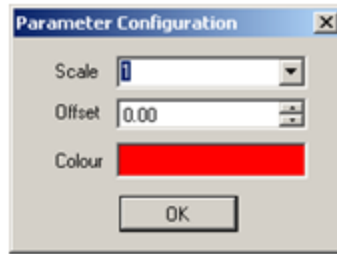


Figure 34: Parameter Configuration

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.

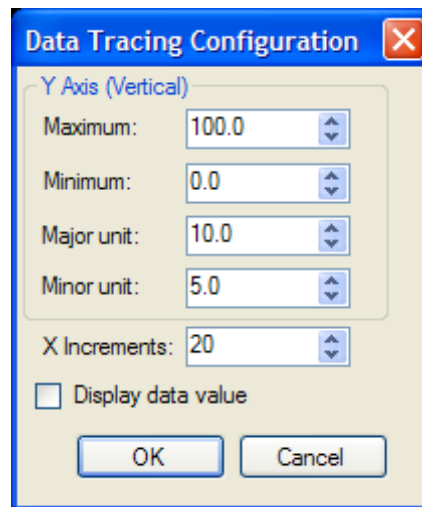


Figure 35: Trace Settings

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

The user can stop and restart data logging as required by selecting the 'Log/Stop' button at the bottom of the display.

Historical Data

The historical data tab displays device readings for all instruments that have been connected to Analyser Data Manager and their live data readings transferred to historical data.

- 1) Transfer all live readings for the selected device(s) by selecting the 'Transfer' button.

The instrument manager displays a dialog box informing the user that the transfer was successful.

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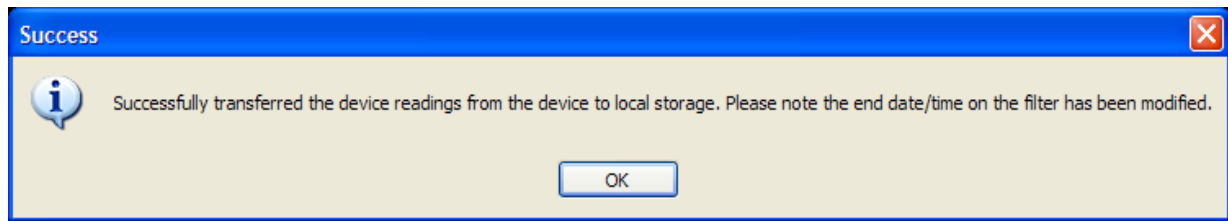


Figure 36: Transferred Device Readings

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

- 2) If you have configured the software to remove readings automatically then they will now be deleted. and the 'Device Readings' display is updated to reflect the fact that there are no readings on the instrument.

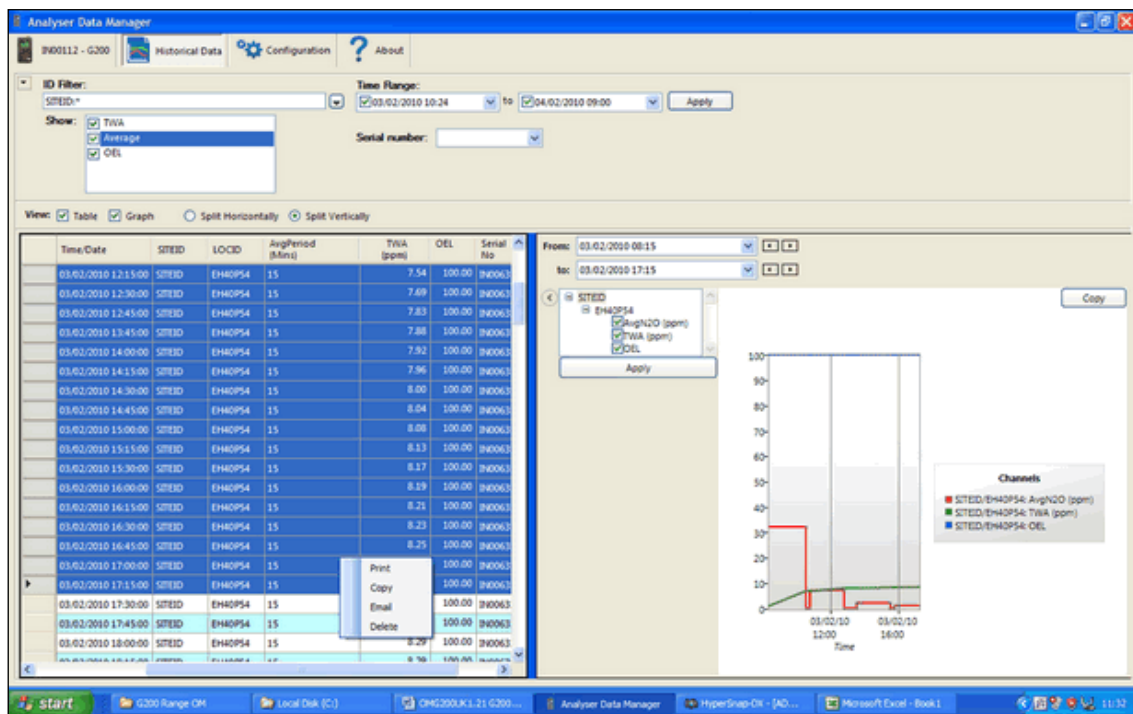


Figure 37: Historical Data Tab

- 3) If a large amount of data has been retrieved from the instrument the user can focus on the data that is of interest by filtering the data by 'ID Filter', 'Time Range' or instrument 'Serial Number' showing data records for 'TWA', 'Average' and/or 'OEL'.

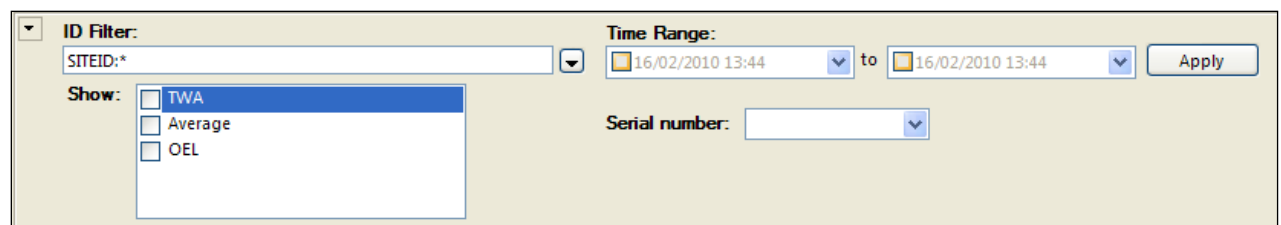


Figure 38: Historical Data - Filter

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The 'ID Filter' is the eight digit Site and ID codes that are specified by the user when taking a reading. All IDs for all previously attached instruments are listed.

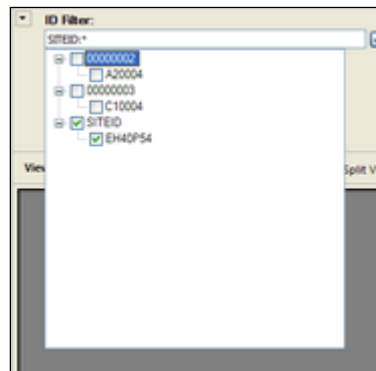


Figure 39: Historical Data – ID Filter

- 4) The 'Time Range' 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 and End Time Range' filter window and a calendar facility is displayed.
- 5) Click on the date and select the 'Apply' button to filter the data to be displayed.
- 6) The 'Historical Data' screen is split into three main areas: ID filter, historical data readings and historical data readings in a graphical view. However, the configuration of this screen is dependent upon which 'View' options the user has selected.

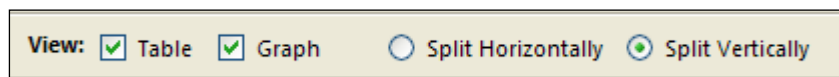


Figure 40: Historical Data – View Options

For Example:

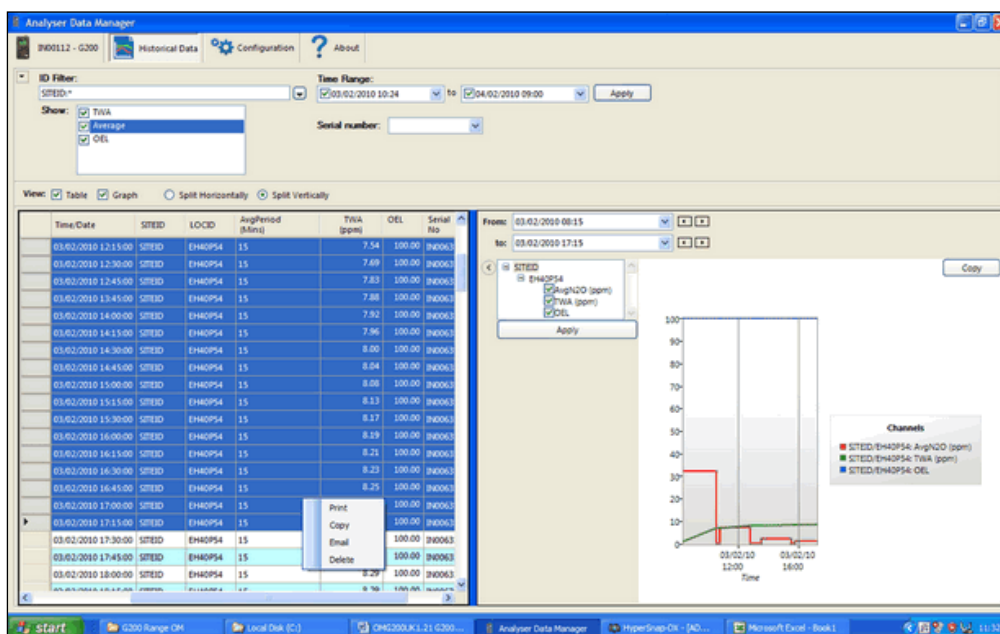


Figure 41: Historical Data – Data Readings and Graph Split Vertically

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

- 8) Using the mouse 'left-click' to select and then 'right-click' and a context menu is displayed with Print/Copy/Email/Delete options.

Context Menu Options

To print, copy, delete or email the data, select the data of interest using the mouse and then chose one of the following options: Print, Copy, Email or Delete/

Print Device Readings

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 'Print Device Readings' for connected devices for more information.

Copy Device Readings

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.

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.

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.

Graphed Data Readings

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.

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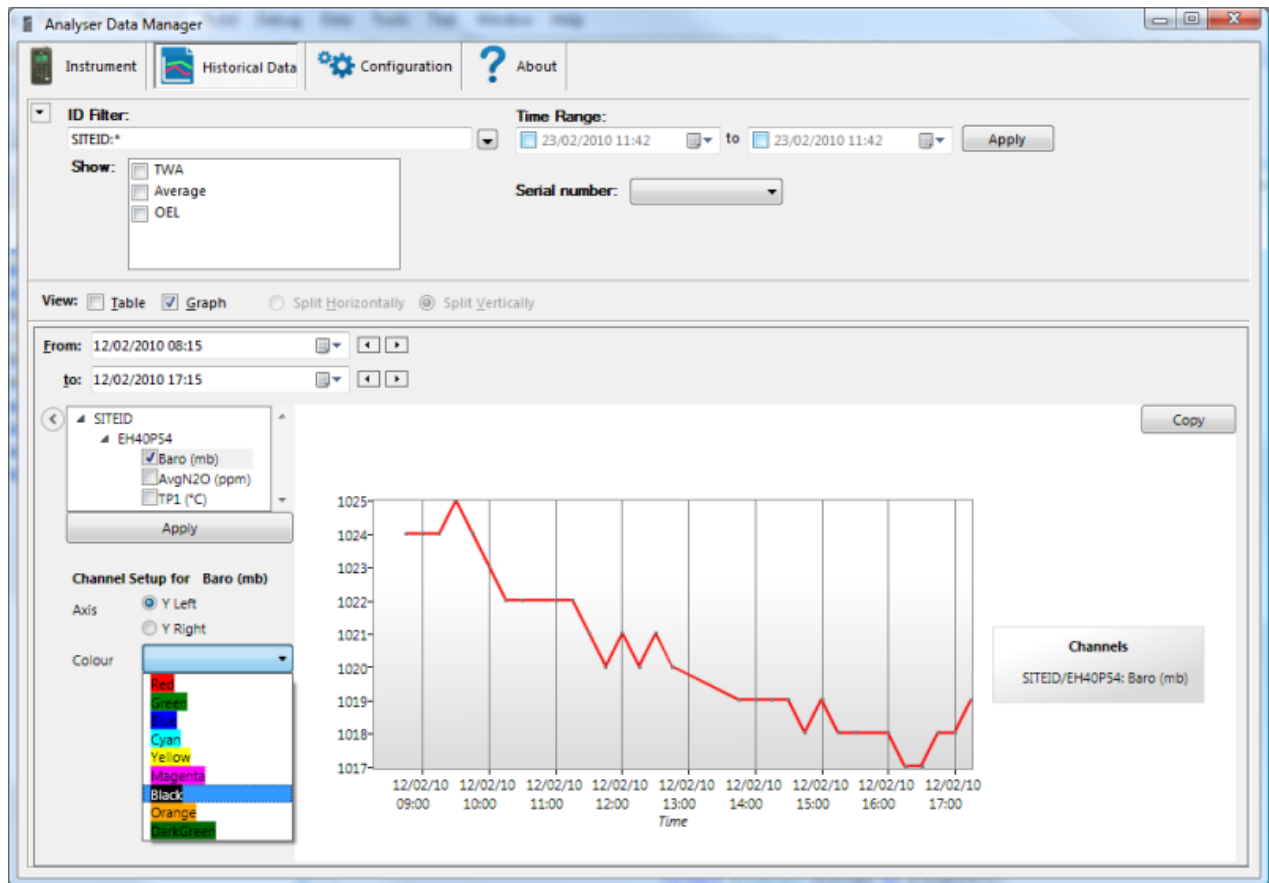


Figure 42: Historical Data – Graph Only

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

To change the colour, click on the item in the list of channels (text not tickbox). Set the Y axis to plot on and the line colour from the drop-down list. The user can also apply scales and offsets if required.

The 'Copy' button enables the user to copy the graph into a third party application, i.e. MS Excel or MS PowerPoint.

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CONFIGURATION

Instrument Communications Service

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.

Analysers 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 Analysers Data Manager software the user is prompted to confirm which components 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 'Analysers 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. Analysers Data Manager, the Communications Service and database are installed locally on 'MYLABPC'. 'MYLABPC' collects and stores the data readings.

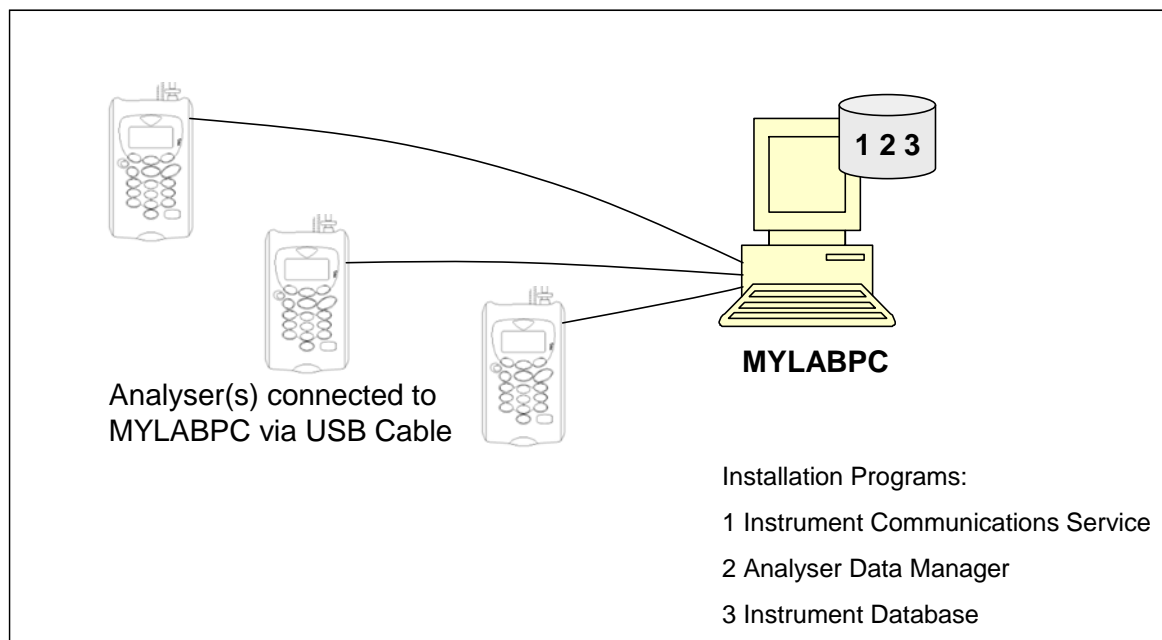


Figure 43 - Configuration A

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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 'Analyser 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'.

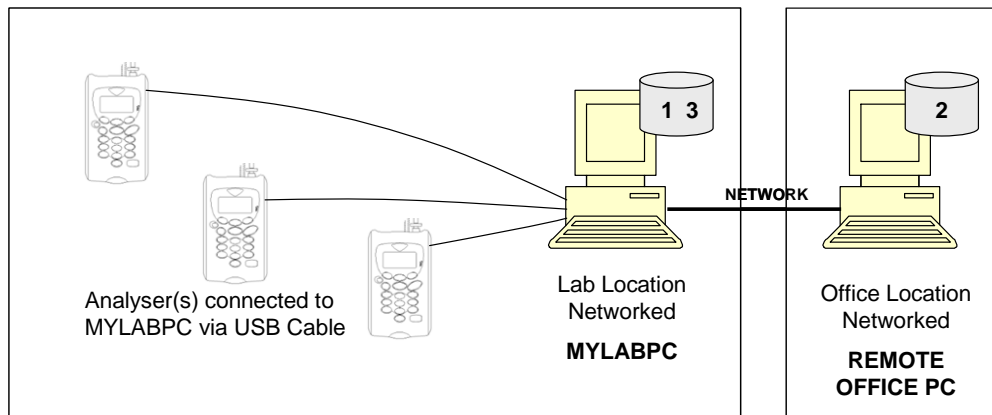


Figure 44 - Configuration B

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 'Analyser 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 PCs.

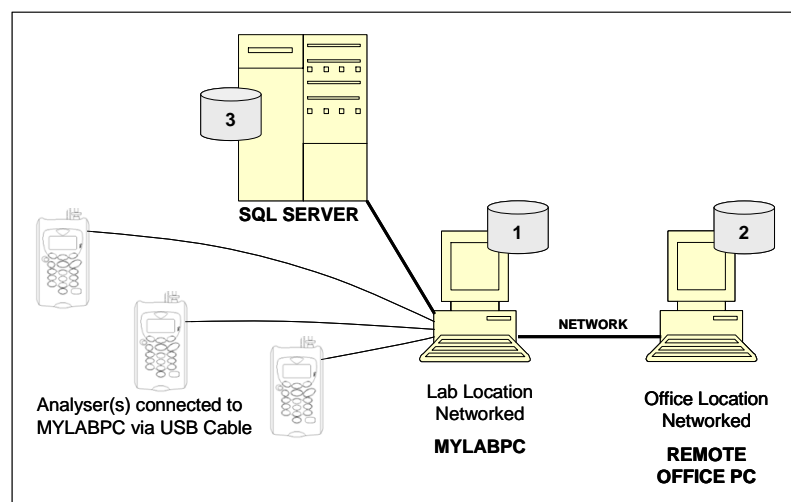


Figure 45 - Configuration C

Note: Microsoft SQL Server is not supplied and supported by QED in this configuration. Customers obtain their own licence for Microsoft SQL Server if required.

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Instrument Communications Service Settings

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

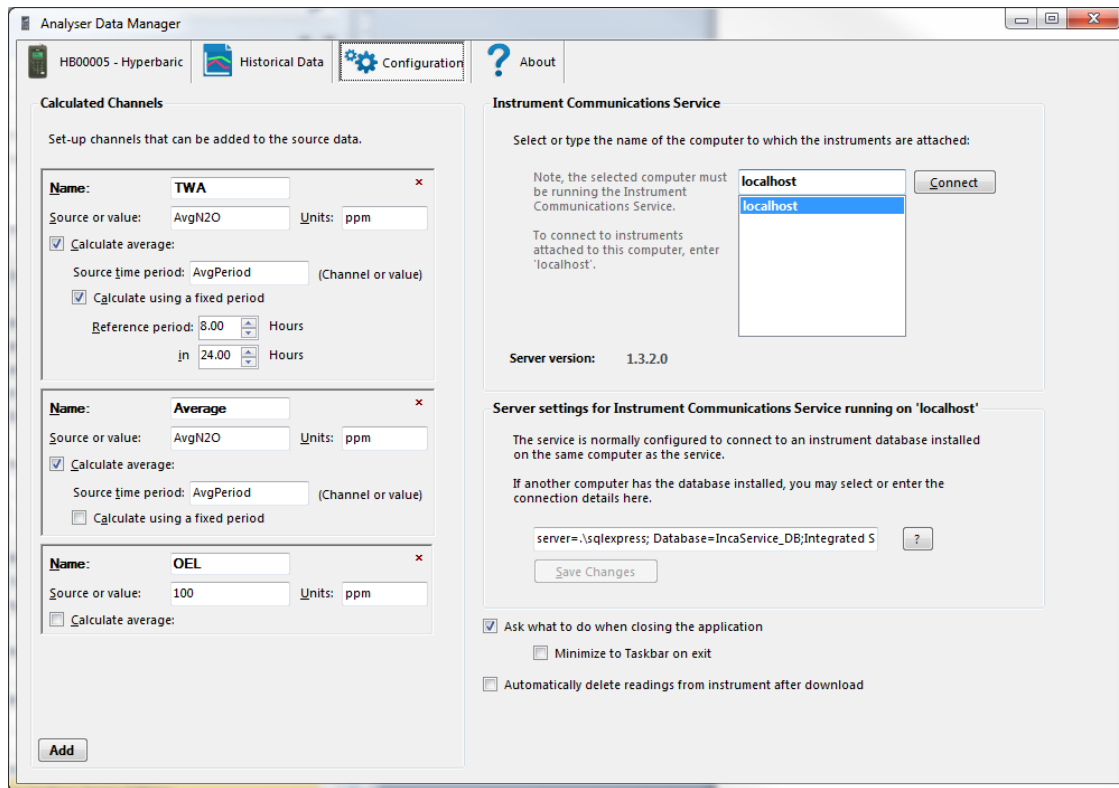


Figure 46: Configuration Tab

2) Select or type the computer name or the IP address in the field 'Select or type the name of the computer to which the instruments are attached', 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:

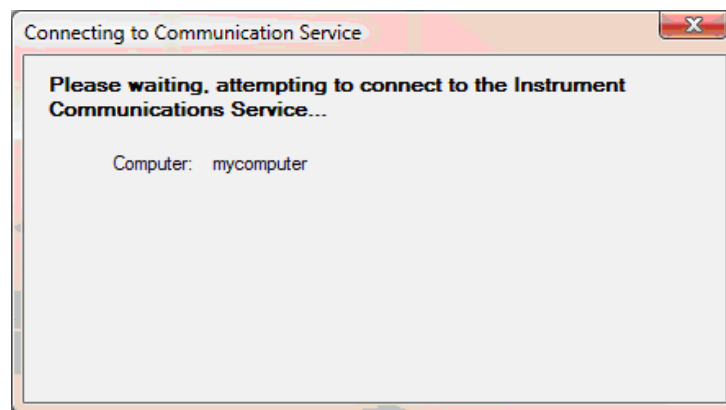


Figure 47: Connecting to Communication Service

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

Server Settings for Instrument Communications Services

Configuration C enables the software to store and retrieve data from a different database.

- 1) Edit the 'Database connection string' or click the '?' button next to the connection string and select a database server from the list.
- 2) 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.

Calculated Channels

The 'Configuration' tab enables the user to set up channels that can be added to the source data, for example TWA (Time Weighted Average), Average and OEL (Occupational Exposure Limit).

Calculated Channels

Set-up channels that can be added to the source data.

Name: TWA

Source or value: N2O Units: ppm

Calculate average: Reference period: 8.0 Hours

in 24.0 Hours

Name: Average

Source or value: N2O Units: ppm

Calculate average: Reference period: 8.0 Hours

in 8.0 Hours

Name: OEL

Source or value: 120 Units: ppm

Calculate average:

Add

Figure 48: Calculated Channels

The G200 range of analysers enable readings to be monitored in person safety mode, area/room mode or leak detection mode.

Person safety mode automatically stores an average N₂O reading every 15 minutes. This is used to calculate and display a long term 8hr TWA (time weighted average) reading which is the operator's personal exposure level to N₂O over their working day (often called OEL occupational exposure limit). The TWA calculation used by the instrument is that described by the Health and Safety Executive EH40/2002 Occupational Exposure Limits 2002. Where the TWA is represented mathematically by the

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following equation: $(C1T1 + C2T2...CnTn / 8hrs)$. In this mode the instrument will alarm when the operator has exceeded the recommended TWA limit (the OEL for $N_2O = 100ppm$). Readings are automatically stored ready for download to the Analyser Data Manager software.

When readings are downloaded to Analyser Data Manager the calculated channel settings can be added to the source data for analysis.

General Settings	
Ask what to do when closing the application	Checking this option will prompt the user whether to exit or minimise every time the application is closed.
Minimise to Taskbar on exit	When checked this option will minimize to the Taskbar's task tray rather than fully exit. To exit the program right click the Icon in the task tray and choose Exit from the menu.
Automatically delete readings from the instrument after download	When check this option will cause the readings to be deleted automatically after they have been downloaded and transferred to the ADM database.

About Tab

The 'About' tab when selected shows the current software version and enables the user to access the Geotech website www.geotechuk.com for further product information.



Figure 49 - 'About' information screen

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Help

Help text may also be viewed from the 'About' tab. Click on 'View Help' and search the contents to view user information about the application.

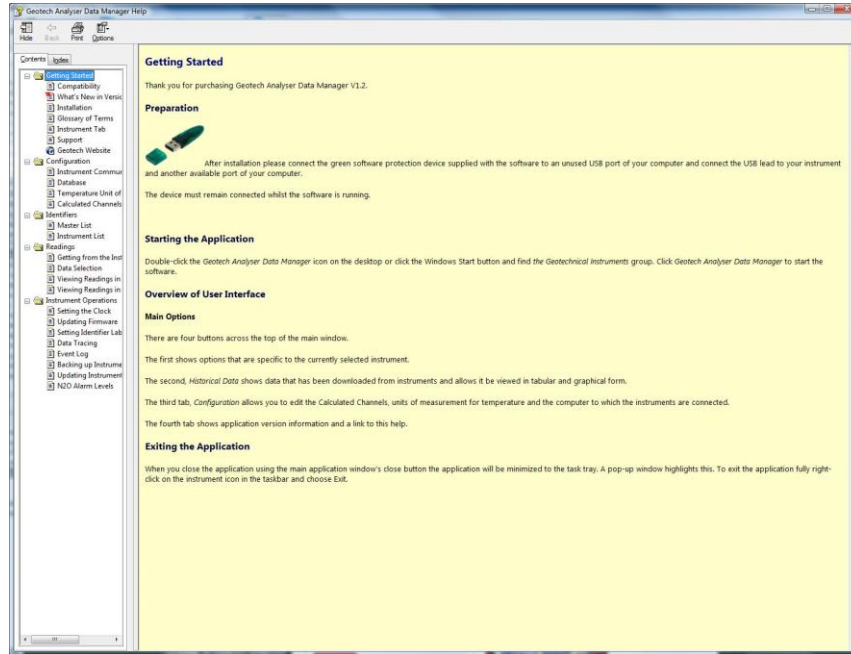


Figure 50 - Help menu

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PROBLEM SOLVING

Message	Action Required
Connecting to Communication Service: Cannot start service Geotechnical Instruments Communications Service on computer.	Check the service is started by using the Services control panels select the 'Run' command and key 'Services.msc' and enter. Check that the Service is running and is not disabled.
Instrument is not detected.	Check that the instrument is switched on and connected to the USB port of the computer. Connected instruments have a green arrow on the instrument icon.
I cannot view graphs properly, only the legend or part of the chart appears.	Try maximising the window size, hiding the tabular view (clear the table tick box) and minimise the reading filter selection area.
In the instrument details view I cannot see all of the columns of information.	Resize the 'instrument list view' using the vertical splitter between the two window sections.

Note: For further information please contact QED Technical Support on +44 (0) 333 800 0088 or email technical@qedenv.co.uk.

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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, usually expressed in millibars (mb)
CO ₂	Carbon dioxide gas.
CO	Carbon monoxide 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.
ID	Second level ID. Eight-digit alpha-numeric code used to identify readings by ID within a specific site or location.
N ₂ O	Nitrous oxide.
OEL	Occupational Exposure Limits.
O ₂	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.
Site	Top level ID. 8-digit alpha-numeric code used to identify readings within a specific site or location.
Software	Software copy protection is provided by a USB device giving only the licence

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Protection Device	holder security rights to run the software.
TWA	Time Weighted Average. Represents average exposure to a gas over a predefined period of time.