
USER GUIDE

MAN0136 rev 1

CXpro^{HD} Datalog Manager



Style conventions used in this document:

UI Text: Text that represents elements of the UI such as button names, menu options etc. is presented with a grey background and border, in Tahoma font which is traditionally used in Windows UIs. For example:

Ok

Standard Terms (Jargon): Text that is not English Language but instead refers to industry standard concepts such as Strategy, BACnet, or Analog Input is represents in slightly condensed font. For example:

BACnet

Code: Text that represents File paths, Code snippets or text file configuration settings is presented in fixed-width font, with a grey background and border. For example:

```
$config_file = c:\CYLON\settings\config.txt
```

Parameter values: Text that represents values to be entered into UI fields or displayed in dialogs is represented in fixed-width font with a shaded background. For example

10°C

Product Names: Text that represents a product name is represented in bold colored text. For example

INTEGRA™

Company Brand names: Brands that are not product names are represented by bold slightly compressed text:

ABB Active Energy

PC Keyboard keys: Text representing an instruction to press a particular key on the keyboard is enclosed in square brackets and in bold font. For example:

[Ctrl]+[1]

table of contents

1	DISPLAYING DATALOGS	
	Overview	6
	What is the Datalog Manager?	6
	What is a Datalog?.....	6
	What does the Datalog Manager do?	6
	Starting the Datalog Manager	7
	Types of data displayed by the Datalog Manager	7
	Standard Controller Datalog	7
	Extended Controller Datalog.....	7
	Virtual Datalog (By Point Number)	8
	Virtual Datalog (By Point Name).....	8
	Datalog Group	9
	Saved Datalogs.....	9
	Displaying Data on a chart	10
	The Open File dialog box	10
	Setting the Y-Axis origin.....	12
	Opening Data from the current site	14
	Opening a Controller Datalog.....	15
	Opening an Extended Controller Datalog	18
	Opening a Virtual Datalog (by point number)	20
	Opening a Virtual Datalog (by point name).....	24
	Opening a Datalog Group	27
	Stored data	28
	Opening a Saved Datalog.....	28
	Displaying data from Archived Datalogs	30
	Listing of all the archives in a site.....	30
	Listing the Archives associated with a particular controller:.....	31
	Listing Datalogs from an ODBC Archive	33
	Opening an Archived Datalog.....	34
	Opening multiple datalog plots on one chart	36
2	CUSTOMISING CHART APPEARANCE	
	Customising the appearance of a chart	38
	Chart Formats	38
	View Data as a Line Graph (Plot Format).....	39
	View Data as Text (Text Format)	40
	View Data as an Area Chart (Area Format)	41
	View Data as a Bar Chart (Bar Format or 2D Bar format).....	41
	Changing the Format of a Chart	42
	Chart Settings	42
	Selecting colours for datalog plots	43
	Selecting Pen Styles for datalog plots	44
	Changing the fonts for heading, legends, and axes	45
	Changing text for heading and axis titles	46
	Adjusting the Scale of a chart	46

table of contents

3	ANALYSING CHART DATA	
	Analysing Charts	47
	Zooming in on parts of the graph.....	47
	Viewing point values	48
	Displaying and Hiding plots on a chart.....	48
	Superimposing data from several datalog archives.....	49
	Displaying Statistics for each plot.....	51
	Selecting the types of statistics for display.....	52
	Drawing limit lines against each plot.....	53
4	SAVING CHART DATA	
	Saving a chart as a Saved Datalog	54
	Grouping Datalogs	54
	Saving Default Properties	55
5	PRINTING CHARTS	
	Printing Charts	56
	Setting up a chart printout.....	56
	Previewing a chart printout.....	57
	Sending a chart to the printer.....	58
	Printing Statistics	59
6	APPENDIX 1 : THE PROPERTIES DIALOG	
	The Properties Dialog	61
	Properties dialog - Statistics Tab	62
	Properties Dialog - Scanning Interval tab.....	63
	Properties Dialog - Limits tab	64
	Properties Dialog - General tab.....	66
	Properties dialog - font tab	68
	Properties dialog - Colour tab	69
	Properties Dialog - OK button	70
	Properties Dialog - Cancel button.....	71
	Properties Dialog - Help button	71
	Properties dialog - Save as Defaults.....	71
7	APPENDIX 2 : THE DATALOG MANAGER INTERFACE	
	The Datalog Manager Interface.....	72
	The Title Bar	72
	Status Bar.....	72
	Chart Display.....	73
	Site List	73
	Statistics Window	74
	Keeping the Datalog Manager interface on top.....	74

table of contents

8	APPENDIX 3 : TOOLBARS	
	Toolbars	75
	The File and Control toolbar	75
	The Chart Details and Statistics Toolbar	78
9	APPENDIX 4 : MENUS	
	The Menu Bar	81
	The File Menu	81
	The Edit Menu	86
	The View menu	87
	The Windows Menu	88
	The Help Menu	89
10	APPENDIX 5 : FORMAT FOR EXPORTED DATA	
	Export Data Format from Datalog Manager	90

1 Displaying Datalogs

OVERVIEW

WHAT IS THE DATALOG MANAGER?

The CXpro^{HD} Datalog Manager is a powerful tool for viewing, analysing, and presenting point data from a Cylon site, principally data that has been collected in a Datalog module in the controller. The data can be of several types, come from different sources, and can be displayed in one of a number of chart formats.

WHAT IS A DATALOG?

Cylon controllers can record point values (inputs, outputs, or other points within a strategy) over a period of time. The data is stored in the controller, in up to 32 separate Datalogs, depending on the controller type. The capacity of each Datalog also depends on the controller type..

It is also possible to log data from a point directly into a supervisory PC, even if the point does not have a datalog attached to it in a controller's strategy. This is a function of the CXpro^{HD} Datalog Manager, and creates a Virtual Datalog in the memory of the PC.

Datalogs can be used for many reasons, including:

- For troubleshooting problems in a building's environment control
- To detect trends in the building's environment
- To allow the control system to be run as economically as possible
- To monitor the effect of any changes made to the system
- To provide quality-control records for controlled environments, such as refrigerators or laboratories

WHAT DOES THE DATALOG MANAGER DO?

The CXpro^{HD} Datalog Manager allows data from controller datalogs to be viewed in a variety of ways:

- The data can be **listed as text** (see *View Data as Text (Text Format)* on page 40).
- A datalog can be **viewed as a graph** (see *Chart Formats* on page 38).
- Information from multiple datalogs can be **superimposed** on one graph (see *Opening multiple datalog plots on one chart* on page 36).
- The status of data points can be **viewed in real-time** (see *Opening a Virtual Datalog (by point number)* on page 20).

The Datalog Manager can display 7 types of data :

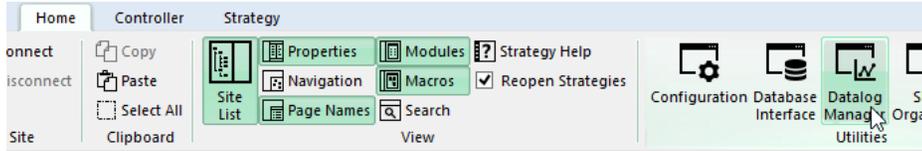
- Standard Controller Datalog
- Time-Stamped Controller Datalog
- Extended Controller Datalog
- Virtual Datalog (by point number)
- Virtual Datalog (by point name)
- Datalog Group
- Archived Datalogs
- Saved Datalogs

The data can come from two different sources:

- **Chart Data** - information uploaded live from a Field Controller.
- **Archived Data** - information that was previously saved by the CXpro^{HD} Datalog Manager.

STARTING THE DATALOG MANAGER

To start the **Datalog Manager**, click on the **Datalog Manager** icon in the **Utilities** group in the **Home** tab of the **CXpro^{HD} Ribbon**



TYPES OF DATA DISPLAYED BY THE DATALOG MANAGER

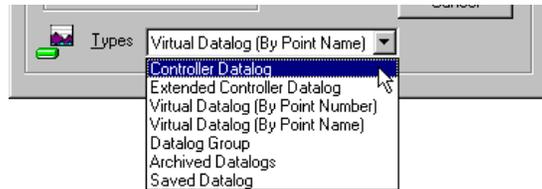
There are 7 types of data that the **Datalog Manager** can display:

- Controller Datalog
- Extended Controller Datalog
- Virtual Datalog (by point number)
- Virtual Datalog (by point name)
- Datalog Group
- Archived Datalogs
- Saved Datalogs

STANDARD CONTROLLER DATALOG

When a “Controller Datalog” chart is selected, the **Datalog Manager** reads a complete datalog from a Field Controller, and displays the complete set of values.

To display the contents of a datalog, select “Controller Datalog” from the **Types** list in the **Open Chart** dialog.



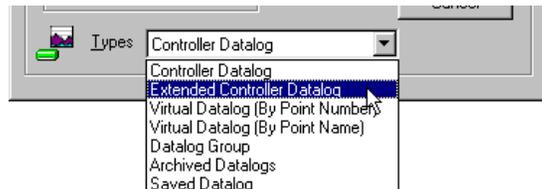
The display can be as a list of data, or one of a number of charts, as defined in the **Edit > Properties > General** dialog (see page 66).

EXTENDED CONTROLLER DATALOG

The **Datalog Manager** has the ability to display the value of logged data points directly. This bypasses the Field Controller’s datalog, creating a set of data in the manager like a ‘virtual’ datalog.

When an “Extended Controller Datalog” chart is selected, the **Datalog Manager** displays the contents of a controller datalog, then continues to read data from the logged point directly. The data is updated at the rate defined in the **Edit > Properties > interval** dialog.

To display such a datalog, select “Extended Controller Datalog” from the **Types** list in the **Open Chart** dialog.



The display can be as a list of data, or one of a number of charts, as defined in the **Datalog Manager Properties > General** dialog (see page 66).

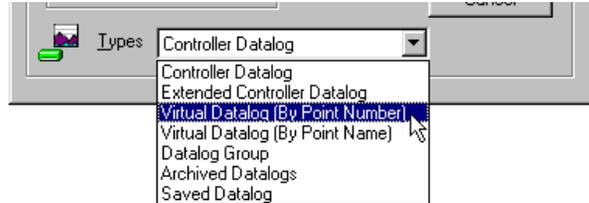
Note Extended datalogs continuously upload live data from a controller. This is also done by Virtual datalogs (see *Virtual Datalog (By Point Number)* on page 8, and *Virtual Datalog (By Point Name)* on page 8. Only 4 such datalog types can be run at any one time in the **Datalog Manager** application.

VIRTUAL DATALOG (BY POINT NUMBER)

The **Datalog Manager** can show the value of any data point in a Field Controller, even if it is not assigned to a datalog. The data can then be treated in the same way as logged data – creating a ‘virtual’ datalog in the **Datalog Manager**. This kind of data set can only function when the **Datalog Manager** is running.

Virtual Datalogs can be selected by either the name of the point in a controller or by the ID number of the point (which is defined in the controller strategy).

To view the ID numbers of points in the current controller, select **Virtual Datalog (By Number)** from the **Types** list in the **Open Chart** dialog.



When a **Virtual Live Points (By Number)** chart is selected, the **Datalog Manager** displays data read directly from the selected point. The data is updated at the rate defined in the **Datalog Manager Properties > Scanning interval** dialog.

The display can be as a list of data, or one of a number of charts, as defined in the **Datalog Manager Properties > General** dialog (see page 66).

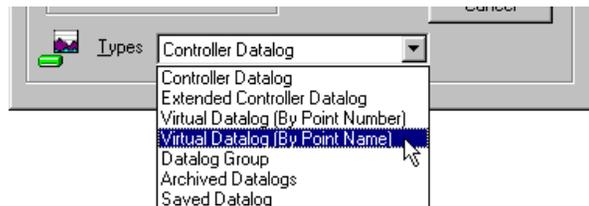
Note Virtual datalogs continuously upload live data from a controller. This is also done by **Extended datalogs** (see *Extended Controller Datalog* on page 7). Only 4 such datalog types can be run at any one time in the **Datalog Manager** application.

VIRTUAL DATALOG (BY POINT NAME)

The **Datalog Manager** can show the value of any data point in a Field Controller, even if it is not assigned to a datalog. The data can then be treated in the same way as logged data – creating a ‘virtual’ data set in the **Datalog Manager**. This kind of data set can only function when the **Datalog Manager** is running.

Virtual Datalogs can be selected by either the name of the point in a controller or by the ID number of the point (which is defined in the controller strategy).

To view the names of points in the current controller, select **Virtual Datalog (By Name)** from the **Types** list in the **Open Chart** dialog



When a **Virtual Live Points (By Name)** chart is selected, the **Datalog Manager** displays data read directly from the selected point. The data is updated at the rate defined in the **Datalog Manager Properties > Scanning interval** dialog.

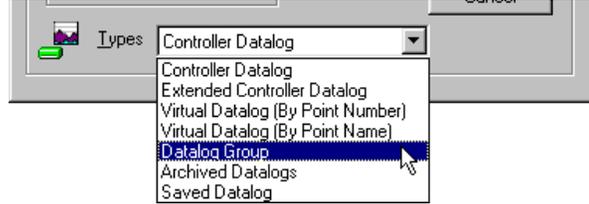
The display can be as a list of data, or one of a number of charts, as defined in the **Datalog Manager Properties > General** dialog (see page 66).

Note Virtual datalogs continuously upload live data from a controller. This is also done by **Extended datalogs** (see *Extended Controller Datalog* on page 7). Only 4 such datalog types can be run at any one time in the **Datalog Manager** program.

DATALOG GROUP

Data from several data points can be displayed on one graph (see *Opening multiple Datalog plots on one chart* on page 36). The group of data points which are displayed on a multiple chart can be saved as a **Datalog Group** using the **File-Save** menu option.

A saved group can be opened by selecting the **Datalog Group** from the **Types** list in the **Open Chart** dialog.



When a **Datalog Group** chart is opened, the **Datalog Manager** displays the current values of the datalogs, archives or virtual points defined in the selected group.

The display can be as a list of data, or one of a number of charts, as defined in the **Edit > Properties > General** dialog (see page 66).

Using **Datalog Groups**, data from a number of points in a site can be quickly displayed and compared.

A **Datalog Group** can only be opened as a new chart. It cannot be added to an existing chart. However, a group can be opened, and then additional plots added to its chart.

SAVED DATALOGS

The data from Controller or Virtual datalogs can be stored (“saved”), so that it can be recalled at any time for analysis or comparison with other data.

To open a stored datalog, select “**Saved datalog**” from the **Types** list in the **Open Chart** dialog.



If opened as a new chart, a “saved datalog” will appear with the format and settings of the chart from which it was saved.

If imported into an open chart, a “saved datalog” will take the format and settings of the chart into which it is being imported.

When a datalog is saved, two binary files are created:

- a “.dlg” file that contains information about how the chart is set up in the **Datalog Manager**, and
- an “.olc” file that contains the chart data and format.

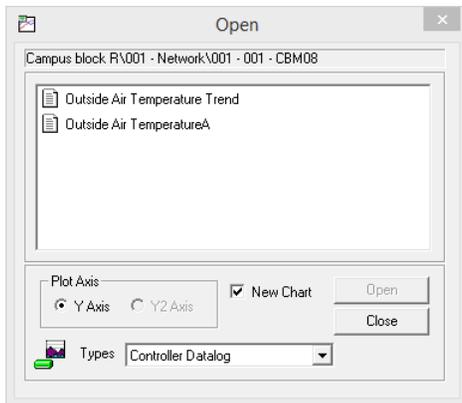
The files are stored in the Datalogs subdirectory under the directory of the site from which the data was taken.

DISPLAYING DATA ON A CHART

The **Datalog Manager** can display charts based on data from the current site (*see page 14*), or on data from files stored on disk (archived or saved)-*see page 28*.

THE OPEN FILE DIALOG BOX

When you select  **Open Chart**, or  **Open Archive** from the **File** menu or the **File and Control toolbar**, the **Open** dialog box appears:



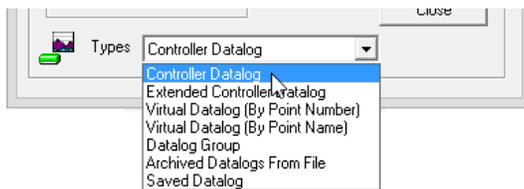
The **Open** dialog has the following sections:

Target path:



The target path shows the Site that is currently targeted by the **Datalog Manager** – this is the Site whose datalogs, Archives, or Groups will be listed in the Open dialog’s file list box.

Types list:

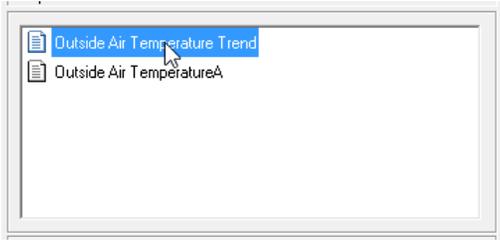


In the Types list, you select the type of chart you want to open. All charts of the selected type that are associated with the targeted controller will be listed in the file list box.

Some types will not appear if they are invalid for the current site – for example if no point names are defined or no database archives. The full list of types is:

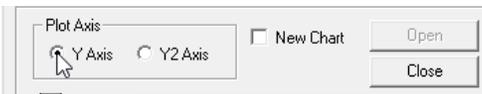
- Controller Datalog
- Extended Controller Datalog
- Virtual Datalog (By Point Number)
- Virtual Datalog (By Point Name)
- Datalog Group
- Archived Datalogs From File
- Saved Datalog
- Archived Datalogs From DB

File list box:



Select a chart to open in the file list box. This lists all the files of the type selected in the Types box, that are associated with the targeted controller.

Plot Axis selection



This selects where the Y-axis will be drawn for the chart. The Y-axis can be on the left-hand side of the chart (Y-axis) or the right-hand side of the chart (Y2 axis).

This means that two plots with different units or scale can be displayed on one chart.

Note: This option is not available if the file is to be opened as a new chart (see New Chart Tickbox)

New Chart tickbox

If the selected file is to be displayed on its own, tick the New Chart box:



If it is to be added to the plots on the currently opened chart, clear the New Chart box:



Open Button

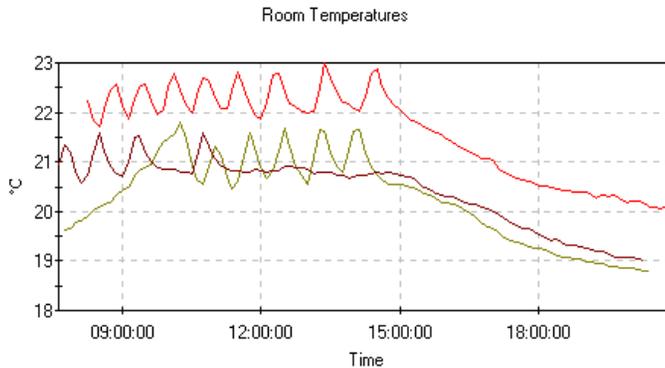
Opens the selected chart

Cancel Button

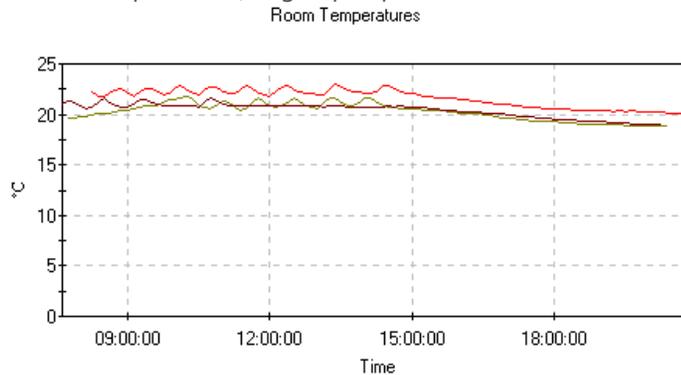
Closes the **Open Chart** dialog without opening the selected datalog.

SETTING THE Y-AXIS ORIGIN

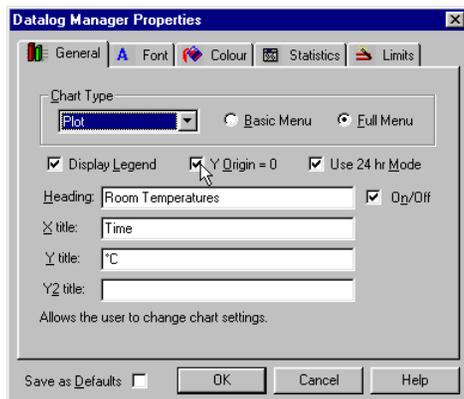
When the **Datalog Manager** creates a chart, it automatically sets the minimum and maximum values on the Y-axis close to the maximum and minimum values in the plots on the chart:



However, this kind of display can exaggerate variations in sensor readings, and make it difficult to assess the level of control present in the signal. It can be useful to set the scale of the Y axis to run from zero to the maximum plot value, to give perspective to the chart:



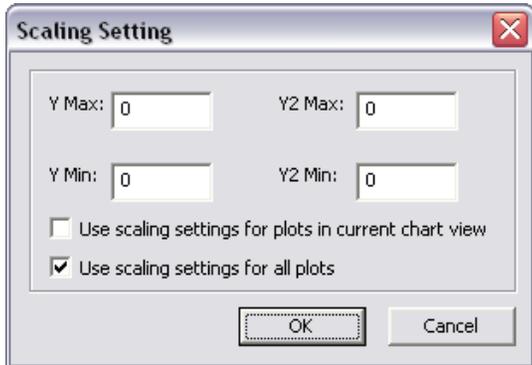
The **Datalog Manager** allows you to do this, by pressing the **Y-origin** button  on the **Chart and Statistics** toolbar, by pressing **[Alt] Y** or by ticking the **Y Origin = 0** box on the properties dialog:



You can also set scaling by right-clicking on the chart area, and selecting **Scaling Settings**



This opens the Scaling Setting dialog box:



This allows you to manually set any arbitrary value for the Maximum and Minimum Y-axis values.

You can specify if the current chart will use these settings, or will automatically set Y-axis limits, by ticking or clearing the **Use scaling settings for plots in the current chart view** checkbox.

You can force all charts opened in the **Datalog Manager** to use the specified settings by ticking the **Use scaling settings for all plots** checkbox.

OPENING DATA FROM THE CURRENT SITE

The **Datalog Manager** can display live data from the current site. To log on to a different site, you must use CXpro^{HD}.

The following data types will access live data from the current site:

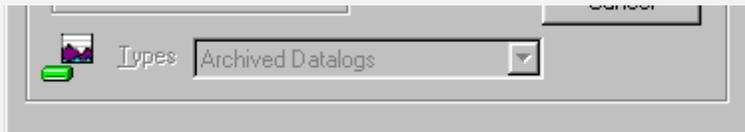
- Controller datalog,
- Extended Controller datalog,
- Virtual datalog (either by number or by name),
- Datalog group.

Note: you can view archives on any site, whether or not you are currently logged on to it (see *Listing all of the Archives in a site* on page 30).

Note: You cannot upload live data from any site other than the current one. If you select a controller on a site you are not logged onto, a warning will be displayed:



The type box will be 'greyed' out, and live data from that controller cannot be uploaded. Instead, any archives associated with that controller will be displayed:

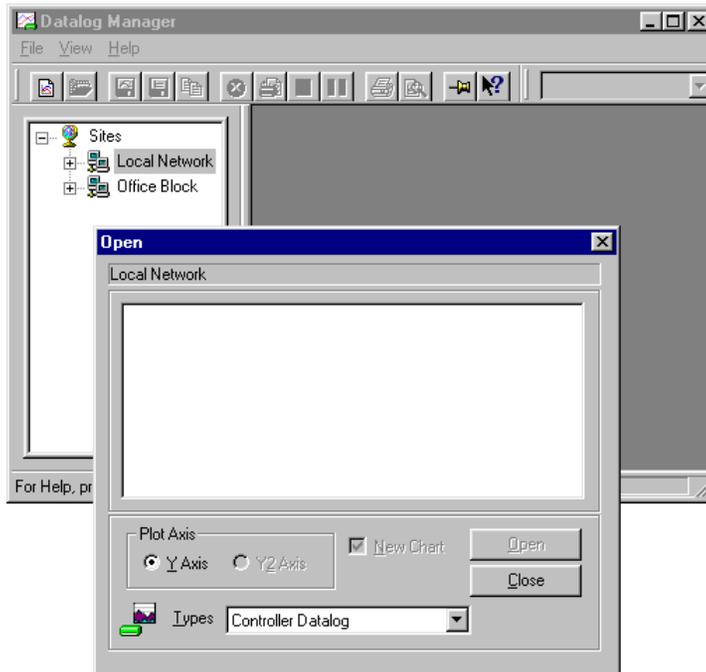


The file to be opened is selected in the **Open File** dialog box (see page 10).

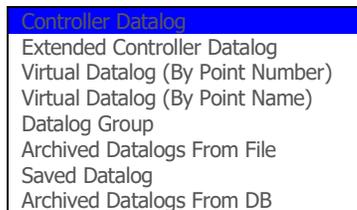
OPENING A CONTROLLER DATALOG

To view data that is saved in a datalog module in the current site (“Controller Datalog”), click on the **Open Chart** button  on the **File and Control** toolbar, or select **Open Chart** from the **File** menu.

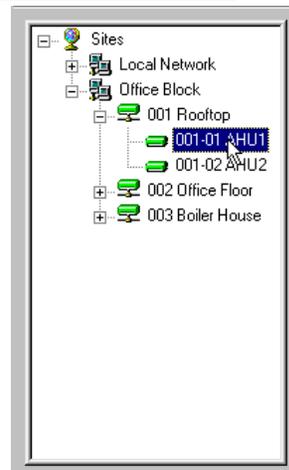
The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):



Select **Controller Datalog** from the **Types** box.



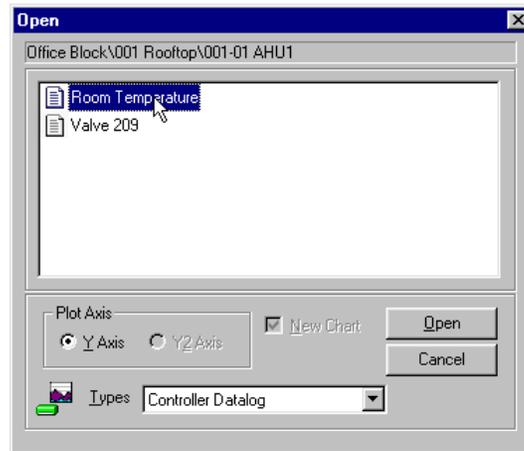
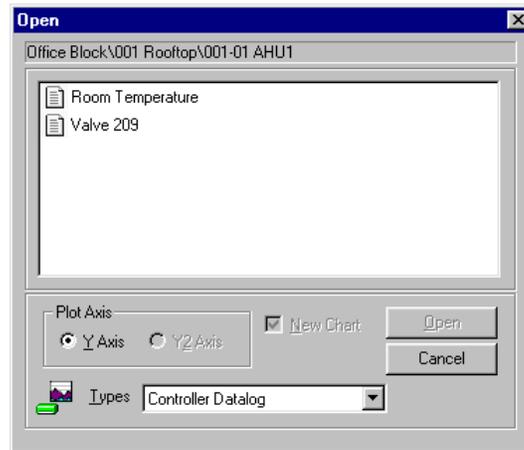
In the **Site List**, click on the current site, and then on the **Comms Controller** and **Field Controller** that you want to view.



A list of all the active datalogs on that controller will be displayed in the **Open** box:

Note: This list is read from CXpro^{HD}, it is not stored in the controller itself.

Select one of the datalogs from the list:



If you want to create a new chart, containing only the selected datalog, make sure that the **New Chart** box is ticked:



If you have a chart open, and wish to add the data from the selected Datalog to the open chart, make sure that the **New Chart** box is cleared:



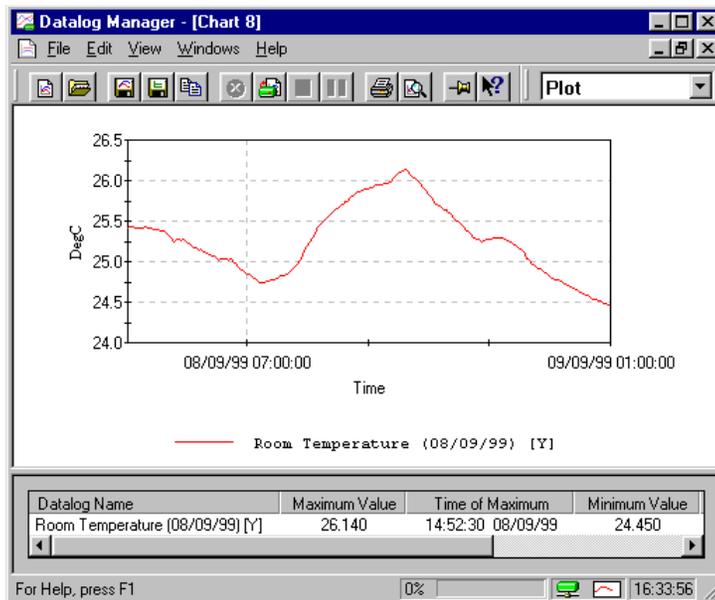
Note: If there is no chart currently open, this option will be 'greyed', and cannot be changed:



Note: If the data is to be inserted into an existing chart, then the Y2 Axis option becomes available in the Plot Axis section. This option allows two plots that use different units on the Y axis to be displayed on the same chart. There can be no Y2 Axis on a chart containing a single plot, so the Y2 Axis option is 'greyed out' when the New Chart box is ticked.

Press **Open**, or double-click on the name of the datalog.

The **Datalog Manager** will upload the data currently held in that datalog, and display it as a chart:

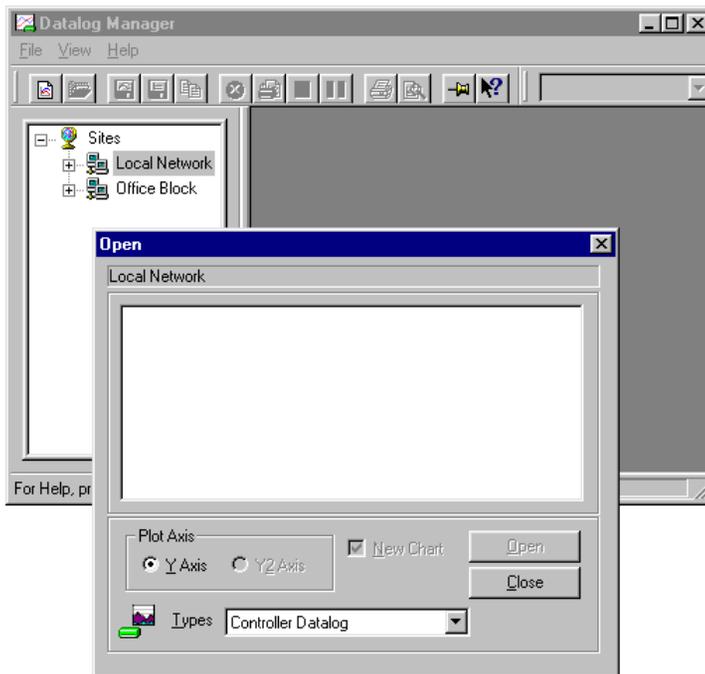


OPENING AN EXTENDED CONTROLLER DATALOG

If a datalog module in a controller is recording data from a particular point, the **Datalog Manager** allows you to view the current status of that point, along with the data that has been recorded from it in the datalog module (“Extended Controller Datalog”).

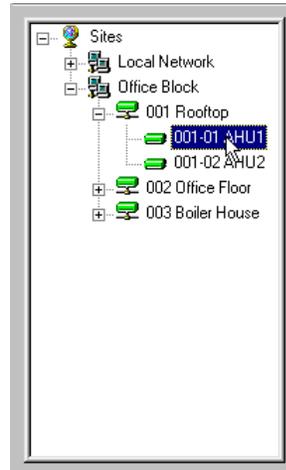
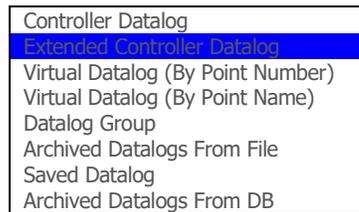
To do this, click on the **Open Chart** button  on the **File and Control** toolbar, or select **Open Chart** from the **File** menu

The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):

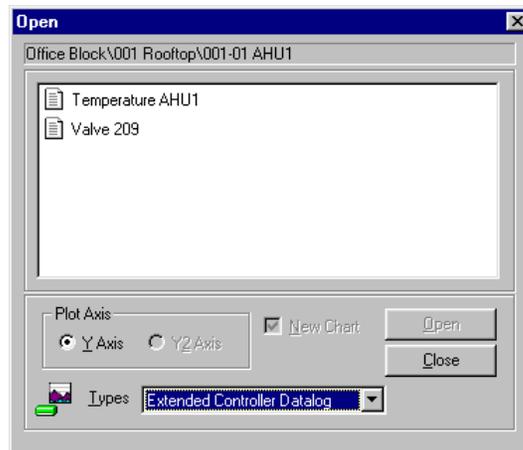


Select **Extended Controller Datalog** from the **Types** box.

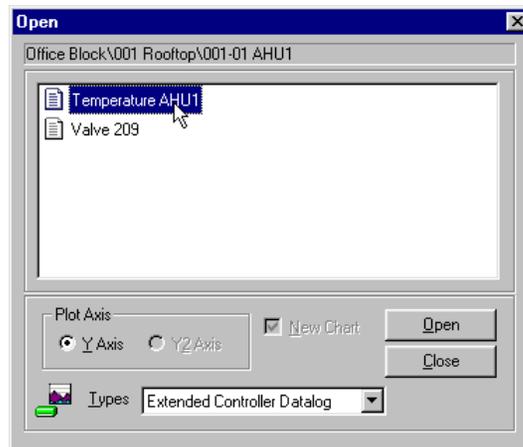
In the **Site List**, click on the current site, and then on the Comms Controller and Field Controller that you want to view.



A list of all the active datalogs on that controller will be displayed in the **Open** box:



Select one of the datalogs from the list:



If you want to create a new chart, containing only the selected datalog, make sure that the **New Chart** box is ticked:



If you have a chart open, and wish to add the data from the selected Datalog to the open chart, make sure that the **New Chart** box is cleared:



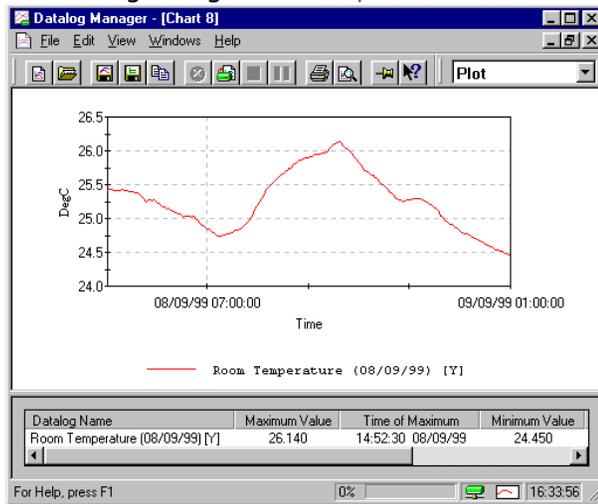
Note: If there is no chart currently open, this option will be 'greyed', and cannot be changed:



Note: If the data is to be inserted into an existing chart, then the Y2 Axis option becomes available in the Plot Axis section. This option allows two plots that use different units on the Y axis to be displayed on the same chart. There can be no Y2 Axis on a chart containing a single plot, so the Y2 Axis option is 'greyed out' when the New Chart box is ticked.

Press **Open**, or double-click on the name of the datalog.

The **Datalog Manager** will first upload the data currently held in that datalog, and display it as a chart:



and will then continue to add data to the chart from the logged point.

Data will be continuously uploaded, unless either **Stop Virtual** (see page 86) or **Pause Virtual** (see page 86) is selected

Note: The chart window should not be closed while data is uploading. Select **Stop Virtual** (see page 86) or **Pause Virtual** (see page 86) before closing a Virtual datalog chart.

Note: If the connection to the Controller is disrupted, a message will appear with an option to cancel the live data upload. If you do not cancel, data upload will automatically resume when the connection is re-established.

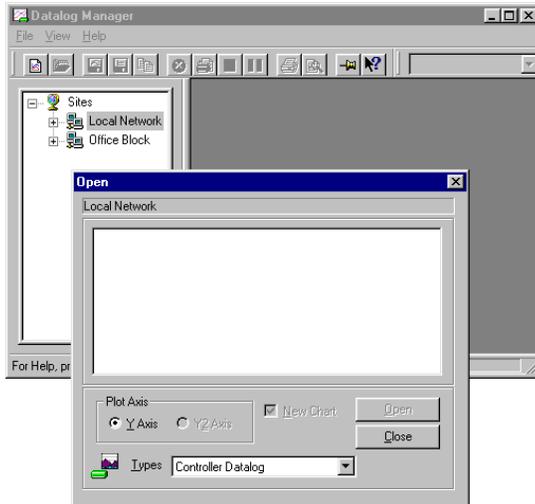
OPENING A VIRTUAL DATALOG (BY POINT NUMBER)

A 'Virtual Datalog' is created when the **Datalog Manager** reads the value of a point in a controller directly, whether or not it is connected to a Datalog module, and stores the resulting data in a chart on the PC. A 'Virtual Datalog' can only operate when the **Datalog Manager** is running.

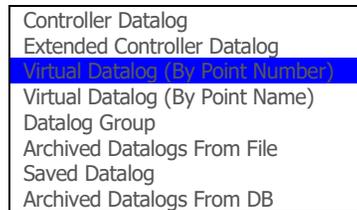
In order to start a 'Virtual Datalog', you can view the available points either by the names assigned to them in a strategy, or their numbers within the controller.

To open a Virtual Datalog by selecting the number of a point, first click on the **Open Chart** button  on the File and Control toolbar, or select **Open Chart** from the File menu.

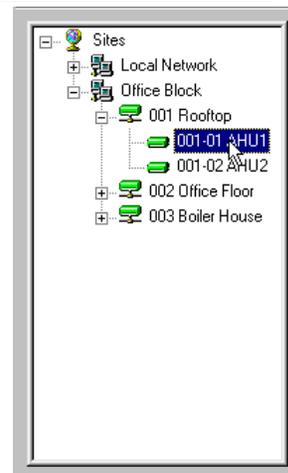
The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):



Select **Virtual Datalog (By Point Number)** from the **Types** box.

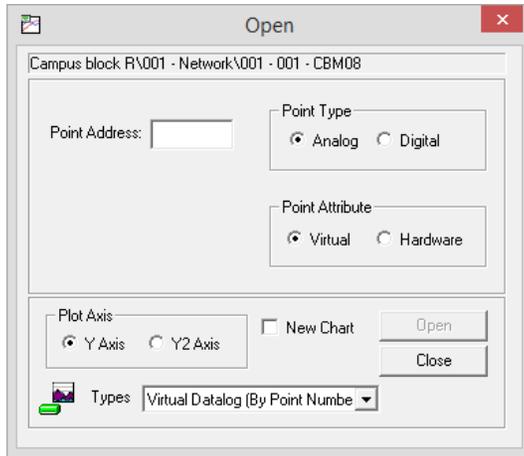


In the **Site List**, click on the current site, and then on the Router and Field Controller that you want to view.



Selecting point numbers (for virtual datalog) from a UC32 controller

Specify the point number, type and Attribute

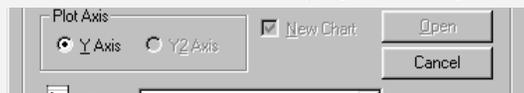


Opening the chart

If you want to create a new chart, containing only the selected datalog, make sure that the **New Chart** box is ticked.

If you have a chart open, and wish to add the data from the selected Datalog to the open chart, make sure that the **New Chart** box is cleared.

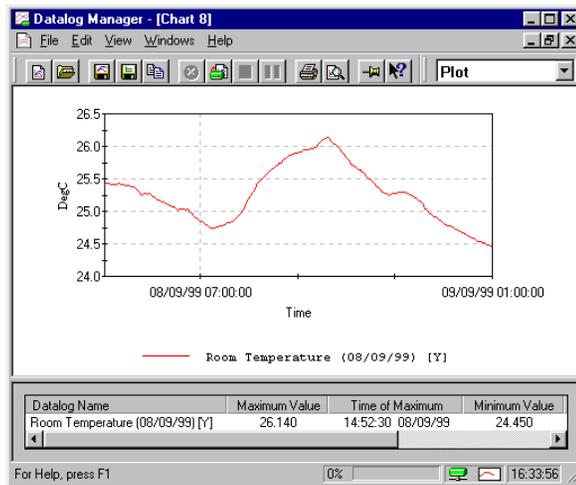
Note: If there is no chart currently open, this option will be 'greyed', and cannot be changed.



Note: If the data is to be inserted into an existing chart, then the Y2 Axis option becomes available in the Plot Axis section. This option allows two plots that use different units on the Y axis to be displayed on the same chart. There can be no Y2 Axis on a chart containing a single plot, so the Y2 Axis option is 'greyed out' when the New Chart box is ticked.

Press **Open**, or double-click on the point number.

The **Datalog Manager** will first upload the data currently held in that datalog, and display it as a chart:



and will then continue to add data to the chart from the logged point.

Data will be continuously uploaded, unless either Stop Virtual (*see page 86*) or Pause Virtual (*see page 86*) is selected .

Note: The chart window should not be closed while data is uploading. Select Stop Virtual (*see page 86*) or Pause Virtual (*see page 86*) before closing a Virtual datalog chart.

Note: If the connection to the Controller is disrupted, a message will appear with an option to cancel the live data upload. If you do not cancel, data upload will automatically resume when the connection is re-established.

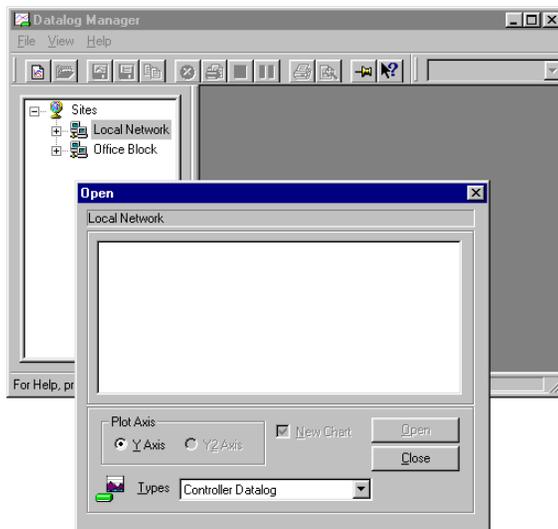
OPENING A VIRTUAL DATALOG (BY POINT NAME)

A 'Virtual Datalog' is created when the **Datalog Manager** reads the value of a point in a controller directly, whether or not it is connected to a Datalog module, and stores the resulting data in a chart on the PC. A 'Virtual Datalog' can only operate when the **Datalog Manager** is running.

In order to start a 'Virtual Datalog', you can view the available points either by the names assigned to them in a strategy, or their numbers within the controller.

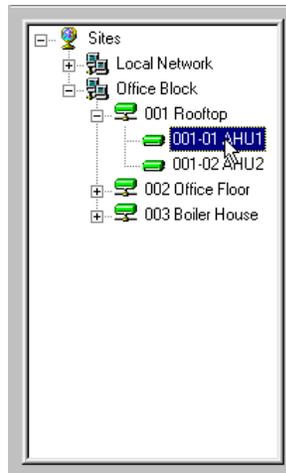
To open a Virtual Datalog by selecting the name of a point, first click on the **Open Chart** button  on the **File and Control toolbar**, or select **Open Chart** from the **File menu**.

The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):

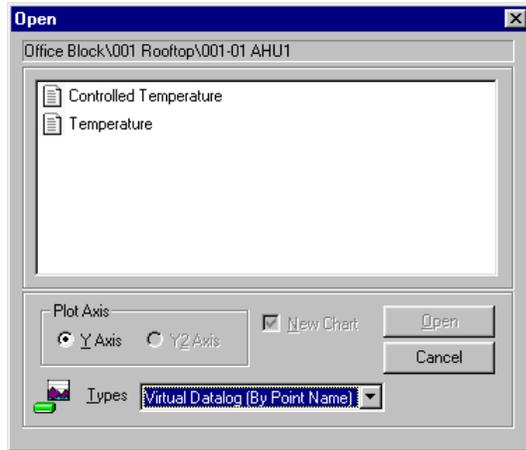


Select **Virtual Datalog (By Point Name)** from the **Types** box.

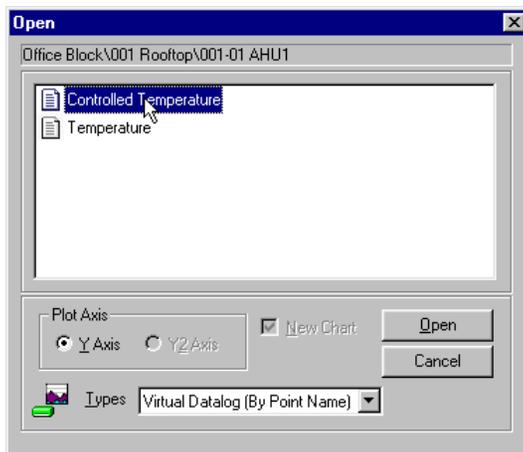
In the **Site List**, click on the current site, and then on the **Comms Controller** and **Field Controller** that you want to view.



All the points for the selected controller will be displayed in the **Open** box, listed by name:



Select one of the points from the list:



If you want to create a new chart, containing only the selected datalog, make sure that the **New Chart** box is ticked.

If you have a chart open, and wish to add the data from the selected Datalog to the open chart, make sure that the **New Chart** box is cleared.

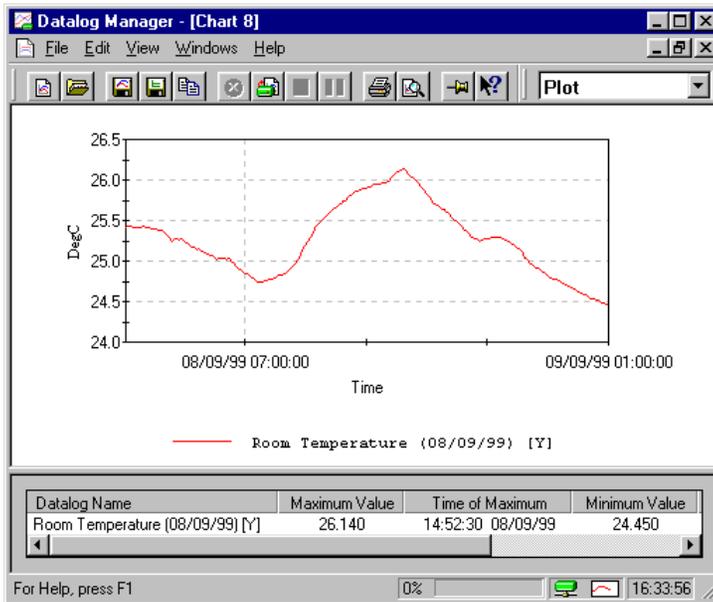
Note: If there is no chart currently open, this option will be 'greyed', and cannot be changed.



Note: If the data is to be inserted into an existing chart, then the Y2 Axis option becomes available in the Plot Axis section. This option allows two plots that use different units on the Y axis to be displayed on the same chart. There can be no Y2 Axis on a chart containing a single plot, so the Y2 Axis option is 'greyed out' when the New Chart box is ticked.

Press **Open**, or double-click on the point name.

The **Datalog Manager** will first upload the data currently held in that datalog, and display it as a chart:



and will then continue to add data to the chart from the logged point.

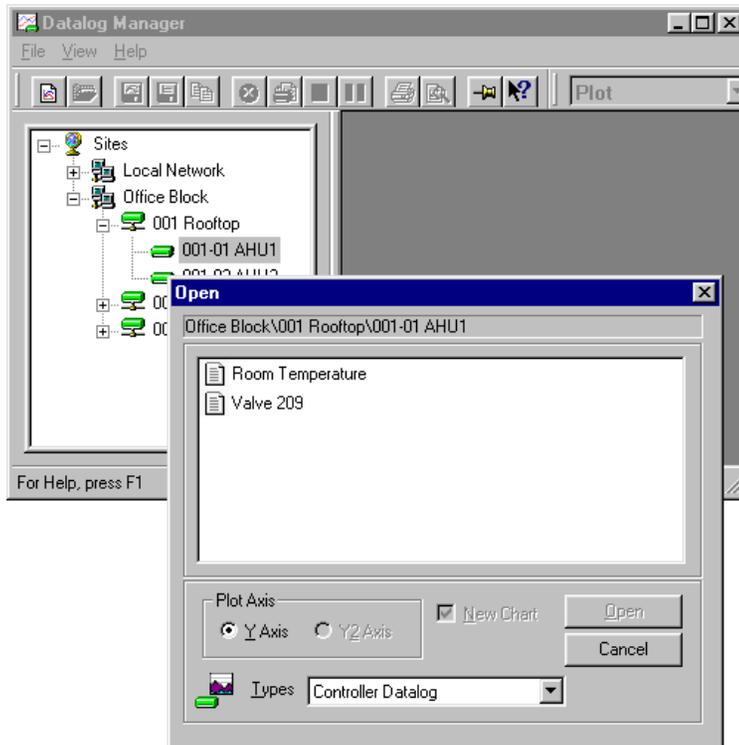
Data will be continuously uploaded, unless either Stop Virtual (*see page 86*) or Pause Virtual (*see page 86*) is selected .

Note: The chart window should not be closed while data is uploading. Select Stop Virtual (*see page 86*) or Pause Virtual (*see page 86*) before closing a Virtual datalog chart.

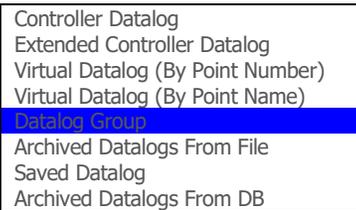
OPENING A DATALOG GROUP

To view data live from a datalog group (see page 9), click on the **Open Chart** button  on the **File and Control** toolbar, or select **Open Chart** from the **File** menu.

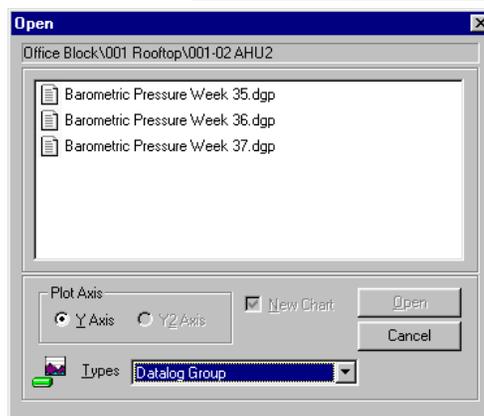
The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):



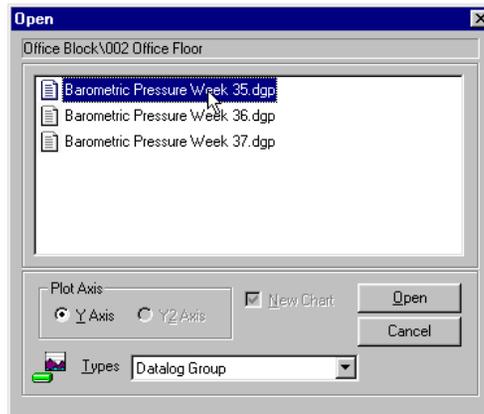
Select **Datalog Group** from the **Types** box.



All the Datalog Groups in the current site are listed in the **Open Chart** dialog:



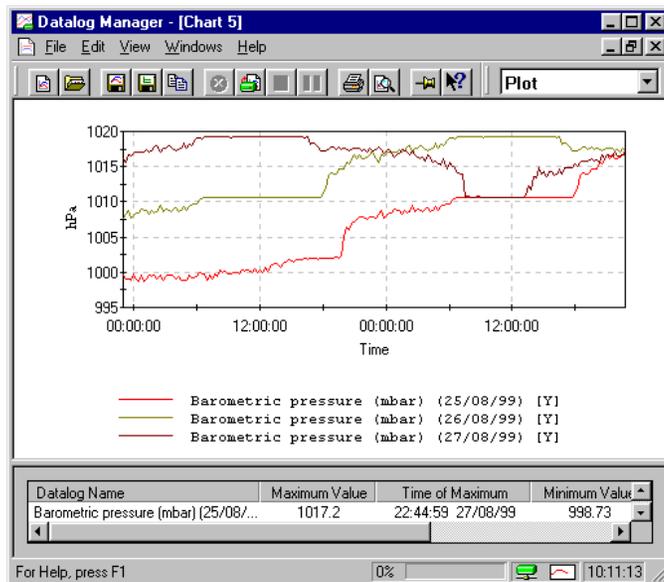
Select the Datalog group you wish to view.



Note: Datalog Groups can NOT be added to an existing chart in the way that other chart types can. A Datalog Group must always be opened as a new chart. However, once a group is opened, data from other datalogs or points can be added to it.

Press **Open**, or double-click on the group name.

The **Datalog Manager** opens a chart, and sets it up in the same way that the group was originally defined. This means it uploads the current data from any controller datalogs defined in the group, starts scanning any non-datalogged points defined in the group, and opens any saved datalogs defined in the group:



STORED DATA

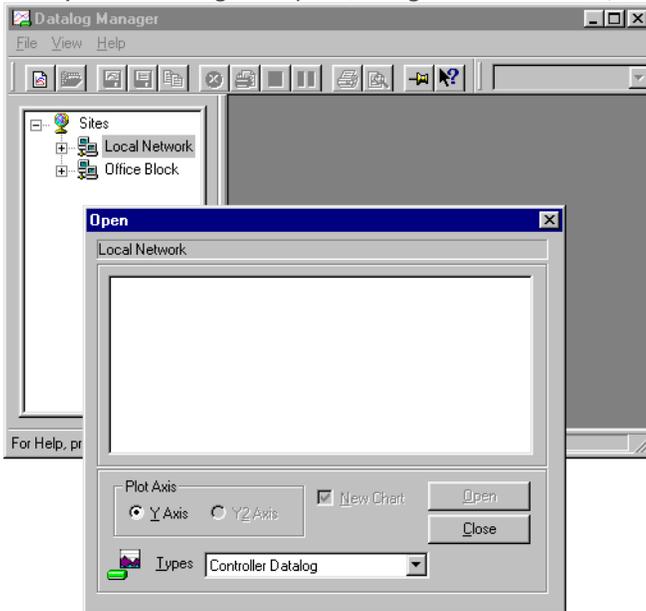
Data from Field Controller datalogs can be saved from the **Datalog Manager** when the **Datalog Manager** is running and the data is currently displayed on a chart.

OPENING A SAVED DATALOG

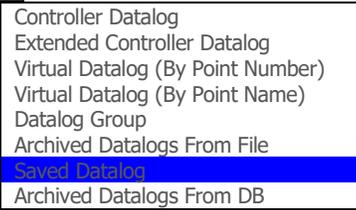
To open a new chart, using either the data and formatting of a saved datalog (*see page 9*), or the data only from a saved datalog – importing it into an open chart,

press the **Open Chart** button  on the **File and Control** toolbar, or select **Open Chart** from the **File** menu.

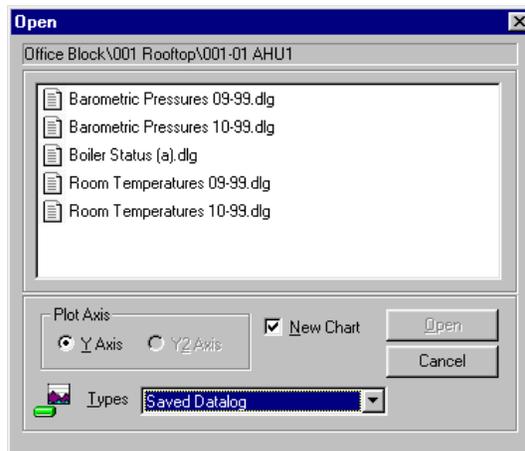
The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side):



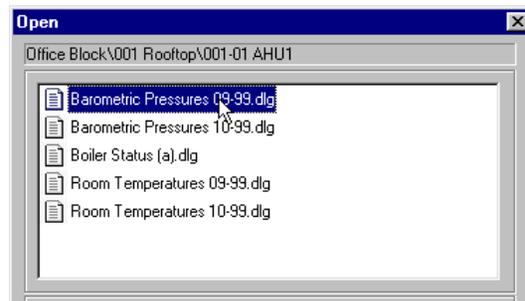
Select **Saved Datalog** from the **Types** box.



All the Saved Datalogs in the current site are listed in the **Open Chart** dialog:



Select the Saved Datalog you wish to open.



If you want to create a new chart, containing only the selected datalog, make sure that the **New Chart** box is ticked.

If you have a chart open, and wish to add the data from the selected Datalog to the open chart, make sure that the **New Chart** box is cleared.

Note: If there is no chart currently open, this option will be 'greyed', and cannot be changed.



Note: In the case of Saved Datalogs, the Plot axis option has no effect. The saved datalog can only load data back into the axis on which it was originally acquired. This is because a saved datalog may have data on more than one axis.

DISPLAYING DATA FROM ARCHIVED DATALOGS

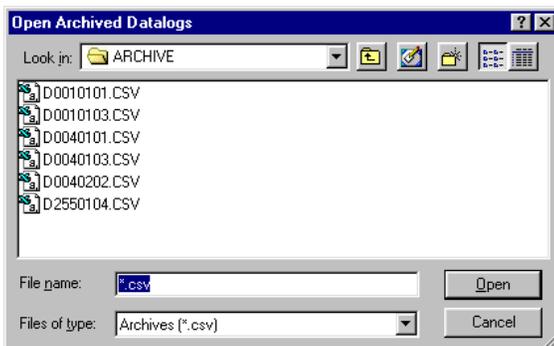
Data that has been stored as an Archive can be opened for viewing in the **Datalog Manager** in two ways:

- by choosing from a list of all the archives in a site
- by viewing the archives associated with particular controllers.

LISTING OF ALL THE ARCHIVES IN A SITE

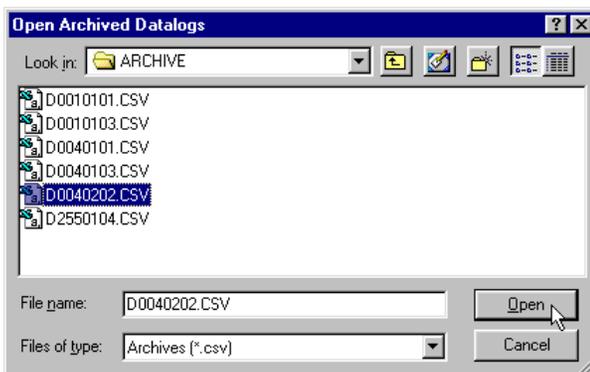
To list all the archives in a site, press the **Open Archive** button  in the **File and Control** toolbar, or select **Open Archive** from the file menu.

The **Open Archive** dialog box appears, listing all the datalog archives available on the current site.



If the archive you want to view has been stored in another directory, open that directory by using the **Look In** box at the top of the **Open** dialog box.

Select the archive you want to view.

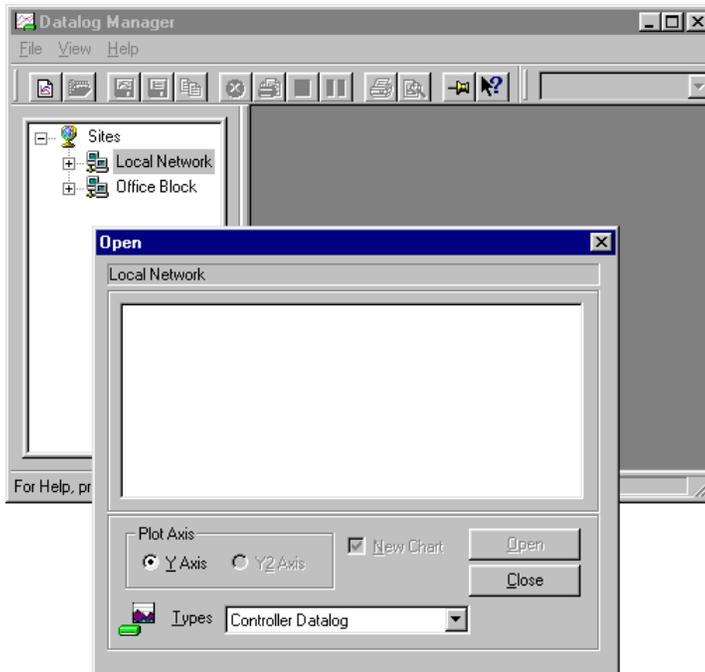


When you have selected a particular archive, see *Opening an Archived Datalog* on page 33 for further details.

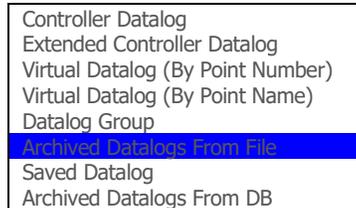
LISTING THE ARCHIVES ASSOCIATED WITH A PARTICULAR CONTROLLER:

To view the Archives associated with a particular controller in the current site, click on the **Open Chart** button  on the **File and Control** toolbar, or select **Open Chart** from the **File** menu.

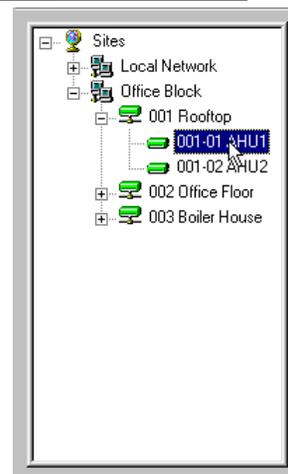
The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):



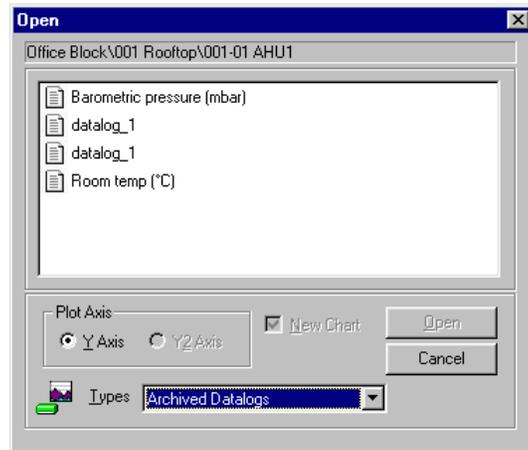
Select **Archived Datalogs From File** from the **Types** box.



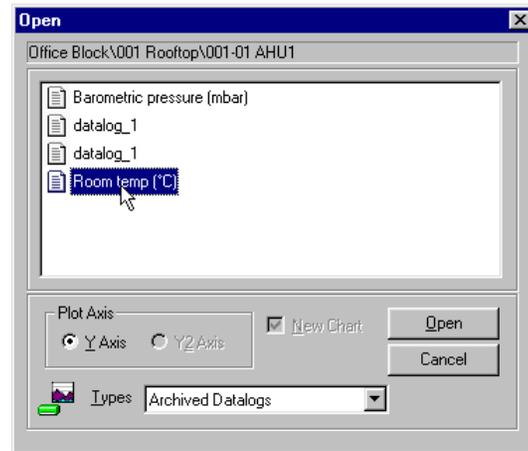
In the **Site List**, click on the current site, and then on the **Comms Controller** and **Field Controller** that you want to view.



A list of all the archived datalogs on that controller will be displayed in the **Open** box:



Select one of the archives from the list:

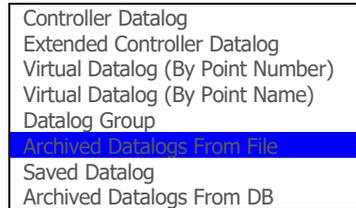


When you have selected a particular archive, see *Opening an Archived Datalog* on page 33 for further details.

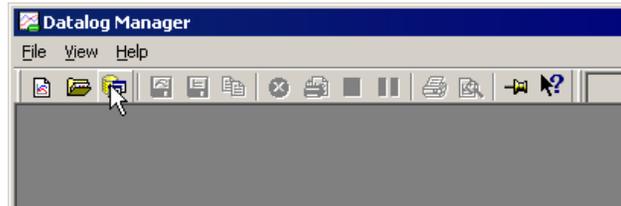
LISTING DATALOGS FROM AN ODBC ARCHIVE

To view archives stored in an ODBC database (see *Error! Reference source not found.* on page *Error! Bookmark not defined.*):

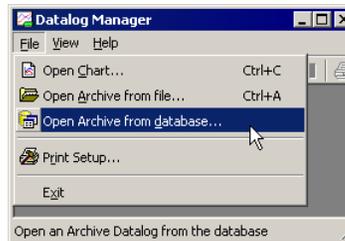
Either Select **Archived Datalogs From DB** from the **Types** box.



OR Click on the 'open from database' icon, located beside the 'open archive' button on the **Datalog Manager** toolbar.

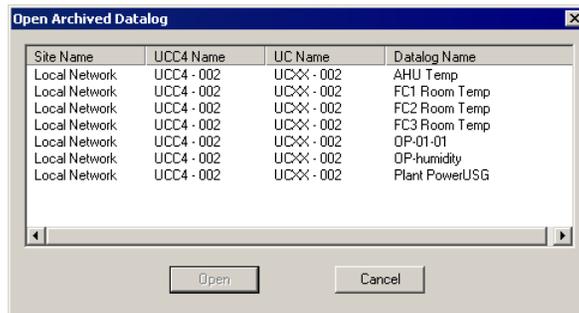


Alternatively, database archives can be accessed by clicking on 'Open Archive from database' in the File menu.



Selecting any one of the above options will open the 'Open Archived Datalog' dialog.

Select the required datalog archive and click on 'Open'.



OPENING AN ARCHIVED DATALOG

When you have selected an archive, either from a site or from a controller, click on the **Open** button. This opens the **Archive Dates** dialog

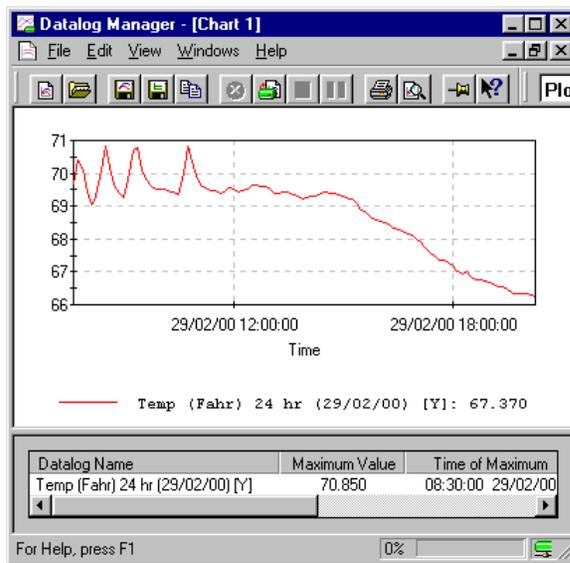
An Archive can contain several sets of data, each representing the entire contents of a datalog at one particular time. In one Archive, all the data will have come from a single datalog, at different times. The controller from which the data was taken can be identified by the name of the Archive file – e.g. D0040103.csv holds data from datalog 03 within Field Controller number 01 on the fieldbus of Comms Controller no 004.

The **Archive Dates** dialog lists the dates and times at which the contents of the relevant datalog were uploaded.

Select the archive dates that you want to view, either by specifying a start date and End date in the fields at the top of the dialog (all archives between these dates will then be selected) or by clicking on the archives in the list.

Click on **OK**.

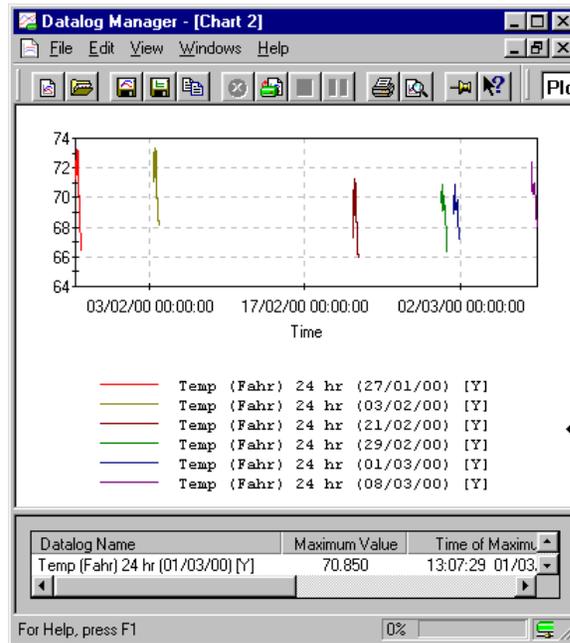
A graph of the selected upload set is displayed:



If you want to view data from more than one archive date at once, you can select multiple archive dates in the dialog.

From (Date)	To (Date)	Maximum	Minimum	Average
29/12/99	29/12/99	76.480	52.460	56.730
27/01/00	27/01/00	73.220	66.380	70.290
03/02/00	03/02/00	73.380	68.090	70.849
21/02/00	21/02/00	71.250	65.850	68.476
29/02/00	29/02/00	70.850	66.240	68.766
01/03/00	01/03/00	70.850	67.110	69.023
08/03/00	08/03/00	72.400	68.100	70.083

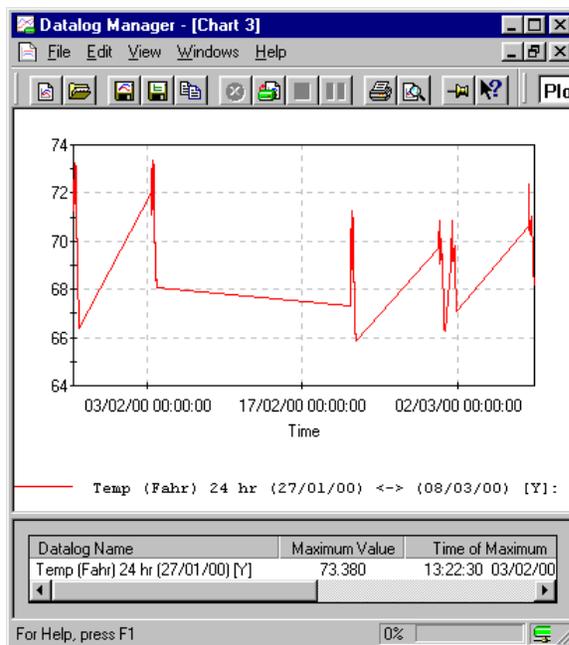
These will be inserted on a chart with each archive date as a separate plot. Only 6 plots can be displayed at once.



If you want the data to run together as a continuous set, or want to view more than 6 archive dates at one time, you should put a tick in the **Append items into a single datalog** box on the **Archive dates** dialog:



The archive dates will then be shown all in one plot, as if they were one upload from a single large datalog.



Note: The statistics window also treats the data as a single datalog.

Multiple archive plots can also be superimposed on one other, using the **Datalog Manager's** 24 hour mode (see *Superimposing data from several datalog archives* on page 49).

OPENING MULTIPLE DATALOG PLOTS ON ONE CHART

The **Datalog Manager** can display up to 6 plots on one chart. Each plot represents the data from one Datalog, Archive, or Virtual Datalog.

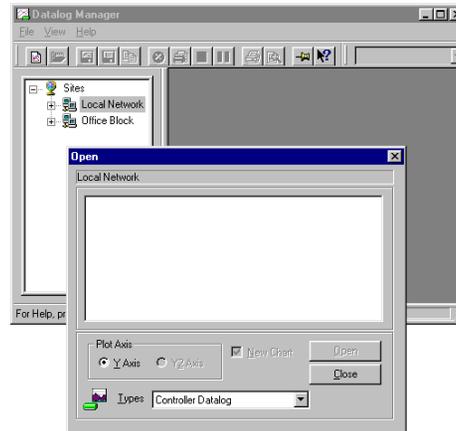
When a chart is opened, an extra plot can be added to it as follows:

To open a Virtual Datalog by selecting the number of a point, first click on the

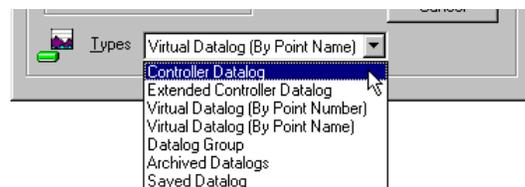
Open Chart button  on the **File and Control** toolbar, or select **Open Chart** from the **File** menu:



The **Open Chart** dialog box opens, along with the **Site List** (on the left-hand side of the window):

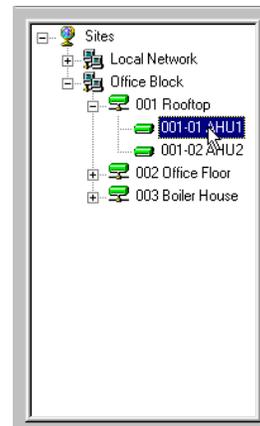


Select a source type from the **Types** box.

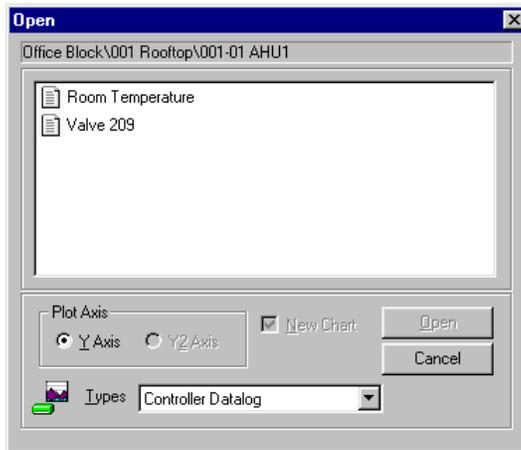


In the **Site List**, click on the current site, and then on the **Comms Controller** and **Field Controller** that you want to view.

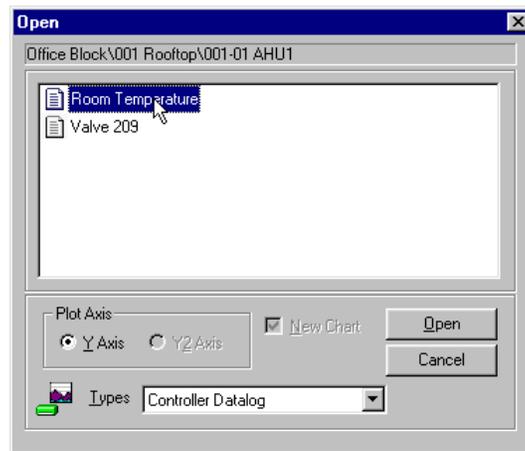
This does not need to be the same **Field Controller** as the data already plotted on the chart – data can come from anywhere on the current site.



A list of all the active datalogs on that controller will be displayed in the **Open** box:



Select one of the datalogs from the list:



To add this plot to the existing chart, untick the checkbox marked **“New Chart”**.



If the new plot uses a different scale to the existing chart (e.g. temperature and pressure are to be displayed on one chart), then you can insert the new data on the “Y2” axis, by selecting the Y2 Axis option.



Click on **Open**.

The existing chart is displayed, with a plot of the selected datalog added.

2 Customising Chart Appearance

CUSTOMISING THE APPEARANCE OF A CHART

The appearance of a chart can be modified in several ways, for example to make it appear better on screen, or to make it print more clearly.

The main ways to customise charts are:

- by selecting a format for the chart,
- by selecting particular colours for datalog plots,
- by selecting different Pen Styles (line types) for datalog plots,
- by changing the fonts for the heading, legends, and axes,
- by changing the heading text, and titles of the axes.

All of these options are available from the **Chart Properties** dialog.

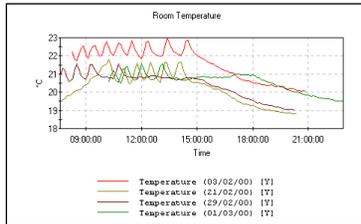
It is also possible to adjust some of the basic settings for a chart, the number of plots that can appear simultaneously on a chart and the maximum number of points that will be displayed on a graph. These are set in the Edit>Settings dialog.

Note: When displaying time values, the **Datalog Manager** uses the format set in the PC's operating system.

CHART FORMATS

The CXpro^{HD} Datalog Manager allows data to be displayed in a variety of formats:

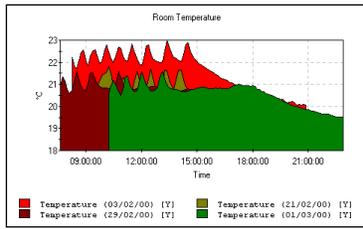
- Plot Format:



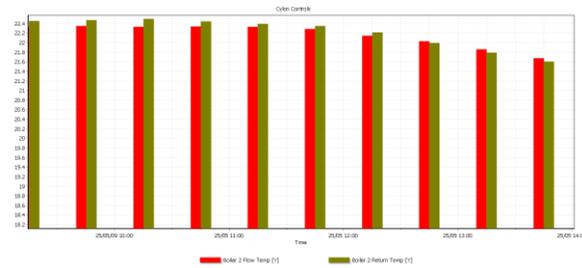
- Text Format:

Items	No.	Values	Time
Temperature (03/02/00) [1]	1	22.233	08:15:00 03.
Temperature (21/02/00) [1]	2	21.828	08:22:30 03.
Temperature (29/02/00) [1]	3	21.722	08:30:00 03.
Temperature (01/03/00) [1]	4	22.083	08:37:30 03.
	5	22.444	08:45:00 03.
	6	22.567	08:52:30 03.
	7	22.128	09:00:00 03.
	8	21.850	09:07:30 03.
	9	22.256	09:15:00 03.
	10	22.454	09:22:30 03.
	11	22.561	09:30:00 03.
	12	22.228	09:37:30 03.
	13	21.956	09:45:00 03.
	14	22.050	09:52:30 03.
	15	22.506	10:00:00 03.
	16	22.783	10:07:30 03.

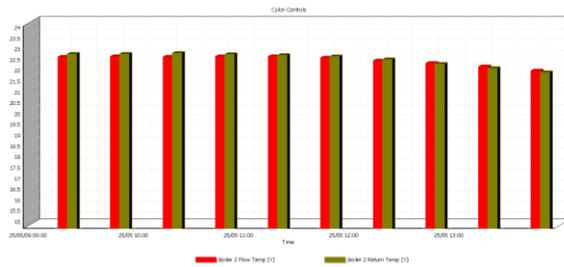
- Area Format:



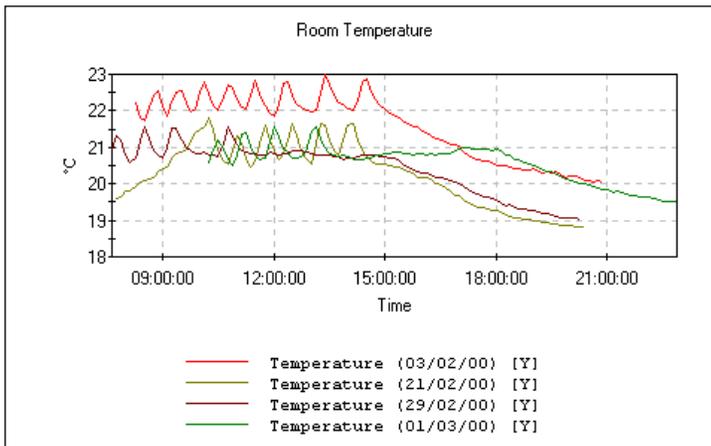
- Bar Format:



- 2D Bar Format:



VIEW DATA AS A LINE GRAPH (PLOT FORMAT)



This is the most commonly used format for charts in the **Datalog Manager**.

In this type of chart, the values of points are plotted against the time at which they were recorded, and linked by straight lines. The result is a line graph for each Datalog on the chart.

Trends and patterns in the data are clearly visible in this chart format, and different datalogs can easily be distinguished.

VIEW DATA AS TEXT (TEXT FORMAT)

The screenshot shows a software interface with two main sections: 'Items' on the left and 'Data' on the right. The 'Items' section contains a list of datalog entries, with 'Temperature (03/02/00) [Y]' selected. The 'Data' section displays a table with three columns: 'No.', 'Values', and 'Time'. The table contains 16 rows of data points.

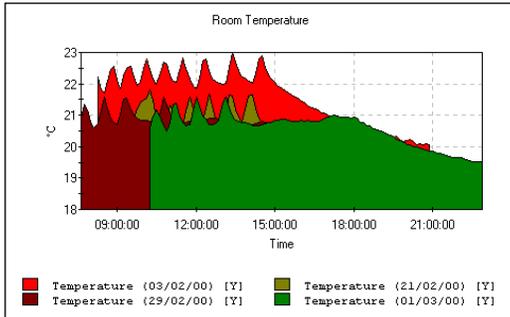
No.	Values	Time
1	22.233	08:15:00 03...
2	21.828	08:22:30 03...
3	21.722	08:30:00 03...
4	22.083	08:37:30 03...
5	22.444	08:45:00 03...
6	22.567	08:52:30 03...
7	22.128	09:00:00 03...
8	21.850	09:07:30 03...
9	22.256	09:15:00 03...
10	22.494	09:22:30 03...
11	22.561	09:30:00 03...
12	22.228	09:37:30 03...
13	21.956	09:45:00 03...
14	22.050	09:52:30 03...
15	22.506	10:00:00 03...
16	22.783	10:07:30 03...

In this type of chart, the values of points are listed as text.

The **Text Format** screen has two main sections. The left hand side lists the datalogs which are open in the current 'chart', and any of these can be selected for viewing. The right hand side lists the point number, value, and time recorded for each point in the selected datalog.

This chart format allows precise analysis of individual points.

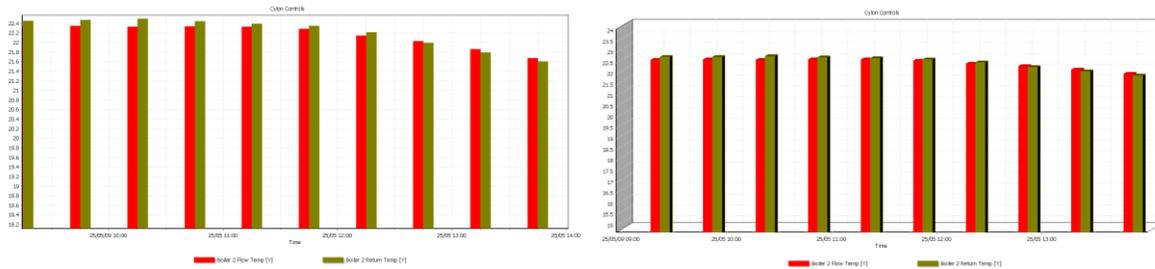
VIEW DATA AS AN AREA CHART (AREA FORMAT)



In this type of chart, the values of points are plotted against the time at which they were recorded, and the area under the plot is shaded.

This type of chart can be used to illustrate trends and patterns in data from a single datalog, or to highlight the differences between one principal datalog and one or more others.

VIEW DATA AS A BAR CHART (BAR FORMAT OR 2D BAR FORMAT)



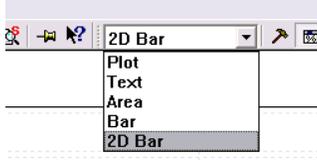
In this type of chart, the values of points are shown as bars. The height of the bars represents the value of the points, and their horizontal position represents the time at which the data was recorded.

This type of chart can be more suitable than the plot format for discrete data, e.g. power usage per week.

Note: In the Bar Chart Format, the time axis will be correct for the first data set. Other data sets are then added in such a way that corresponding point numbers are matched regardless of actual times. This format is best used where data sets are taken over the same time period.

CHANGING THE FORMAT OF A CHART

To change the format of a chart, choose the new format from either the Chart and statistics Toolbar:

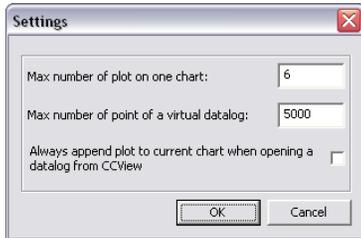


or the Chart Types section in the Properties dialog (see page 61):



CHART SETTINGS

Selecting **Settings** from the **Edit** menu opens the Chart Settings dialog:



This dialog allows you to set:

The Maximum number of plots on a chart. The **Datalog Manager** can display multiple plots on a single chart, for comparison. By default only 6 can be displayed on a shingle chart, but if required this number can be changed to any value between 1 and 32.

The maximum number of Points of a Virtual Datalog that will be displayed on a chart. After this number of points, the earliest point is erased whenever a new point is added. This avoids having virtual datalogs so large that they cannot be practically read in Text view.

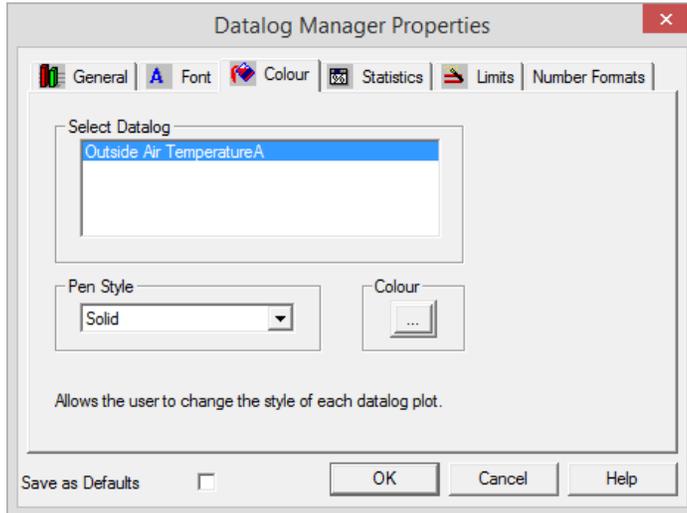
Always display new plots opened from CCView on the current chart. This allows you to either:

- cause a new chart to be opened every time a datalog is selected in CCView (checkbox cleared), or
- cause every datalog opened in CCView to be displayed in the current chart (checkbox ticked), so that the plots can be easily compared.

SELECTING COLOURS FOR DATALOG PLOTS

Different colours can be set for each datalog plot on any of the chart formats, to help identify data from different datalogs on a colour display.

Open the Properties dialog (*see page 61*), and click on the **Colour** tab.



Select a datalog plot, then press the **colour** button.



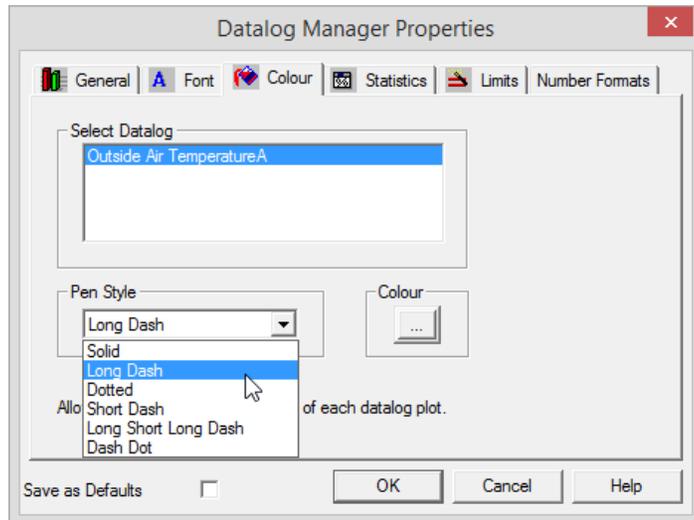
Select a colour from the Palette, then click on **OK**.

Click on **Apply** to close the **Properties** dialog, and view the changes you have made on the chart.

SELECTING PEN STYLES FOR DATALOG PLOTS

Different pen styles (line types) can be set for each datalog plot on any of the chart formats, to identify data from different datalogs when colour is not available. This is very useful for printing on black-and-white printers, such as laser printers.

Open the Properties dialog (*see page 61*), and click on the **Colour** tab.



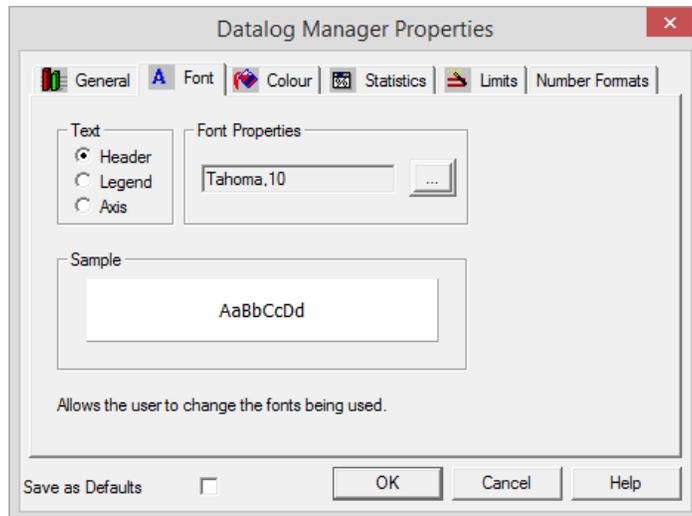
Select a datalog plot, then click on the **Pen Style** list box.

Select a Pen Style from the list.

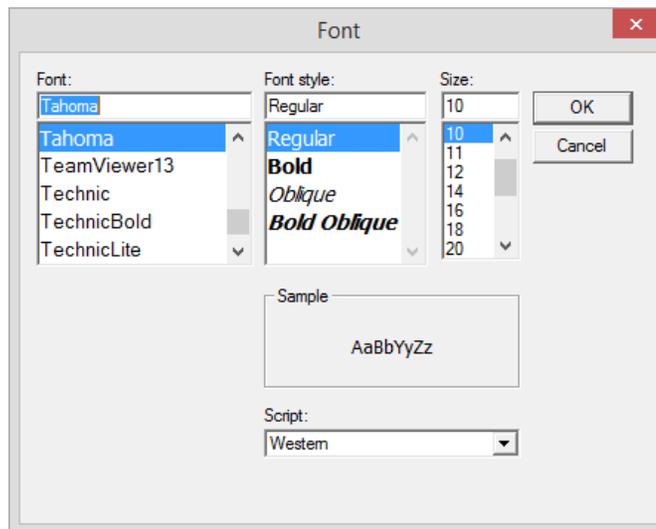
Click on the **OK** button to close the Properties dialog, and to view the changes you have made on the chart.

CHANGING THE FONTS FOR HEADING, LEGENDS, AND AXES

Open the Properties dialog (see page 61), and click on the Font tab.



Select Header, Chart_Legend_button, or Axis from the Type box, then press the font button.

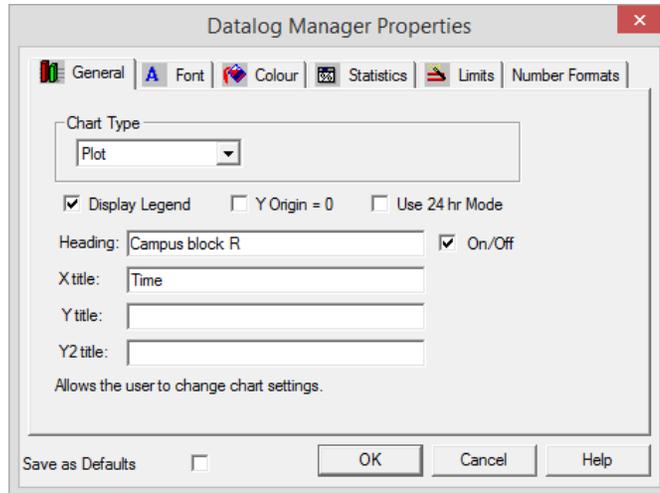


Select a font from the palette, then click on **OK**.

Click on the **OK** button to close the Properties dialog, and to view the changes you have made on the chart.

CHANGING TEXT FOR HEADING AND AXIS TITLES

Open the Properties dialog (see page 61), and click on the General tab.



Change the text in the **Heading** and **Title** boxes as required.

Click on the **OK** button to close the **Properties** dialog, and to view the changes you have made on the chart.

ADJUSTING THE SCALE OF A CHART

It is possible to adjust the scale of the Y axis against which a graph is displayed on screen, in three ways:

- Setting the y axis origin
- Setting maximum and minimum values for y axis.
- Zooming the graph display in or out.

These facilities are explained in detail elsewhere in this manual – *Setting the Y-Axis origin* on page 12, and *Zooming in on parts of the graph* on page 47.

3 Analysing Chart Data

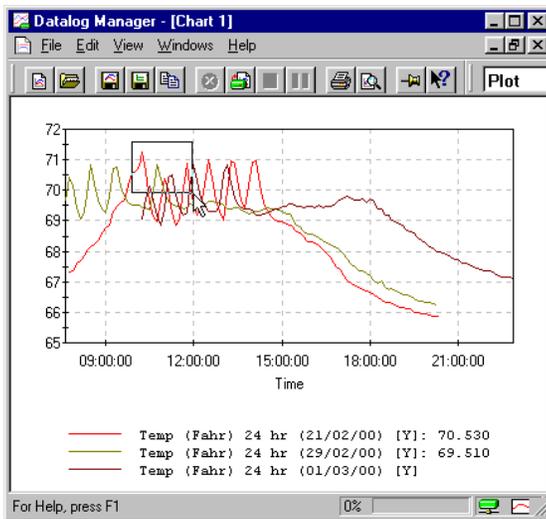
ANALYSING CHARTS

When you have displayed data on a chart, you may want to examine or analyse it. There are several ways to do this. You can:

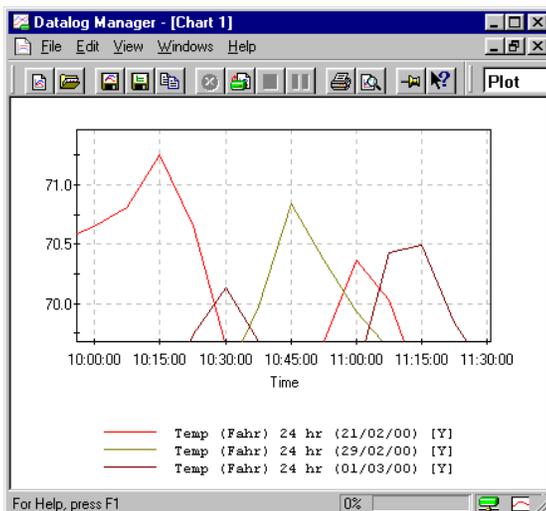
- zoom in on parts of the graph (*see below*),
- see point values for each of the displayed datalog plots (*see page 48*),
- superimpose several plots on top of one another to compare them, (*see page 49*)
- display maxima, minima, means, and times for each plot (*see page 51*),
- draw limit lines against each plot (*see page 53*).

ZOOMING IN ON PARTS OF THE GRAPH

If you want to view a section of a chart close-up, draw a **zoom box** with the mouse pointer, by pointing and clicking at a point on the chart, then dragging until the selection box covers the area you want to view.



Release the mouse button, and the chart changes to an enlarged view of the area covered by the **zoom box**.



You can move the zoomed area around the full chart, using the arrow keys on the computer's keyboard, or by clicking on the navigation icons in the toolbar.

-  Move the displayed area to the left
-  Move the displayed area to the right
-  Move the displayed area up
-  Move the displayed area down

To show the full chart, click on the **Reset Zoom** button  on the **Chart and Statistics** toolbar, or double-click on the Chart area.

VIEWING POINT VALUES

On "Plot" format charts (see *Chart Formats* on page 38) it is possible to view point values on the chart.

When you move the mouse pointer over the chart display, the numbers in the legend (beneath the chart) change to show the values of each datalog plot at that point.

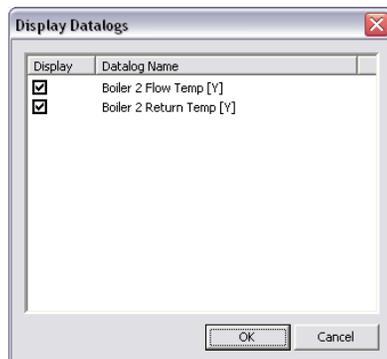
DISPLAYING AND HIDING PLOTS ON A CHART

You can select which of the charts plots are visible, and which are hidden. This allows you to focus on a particular plot or set of plots .

Right-click on the chart display area, and select **Display Datalogs** from the menu that appears:



This opens the Display Datalogs dialog, which allows you to choose which plots should be hidden by clearing the checkbox beside the Plot's point name:



SUPERIMPOSING DATA FROM SEVERAL DATALOG ARCHIVES

An archive chart usually graphs data against the time at which each point was recorded. This means that if a chart contains archived data from more than one uploaded data set, the data sets are displayed one after the other along the X-axis.

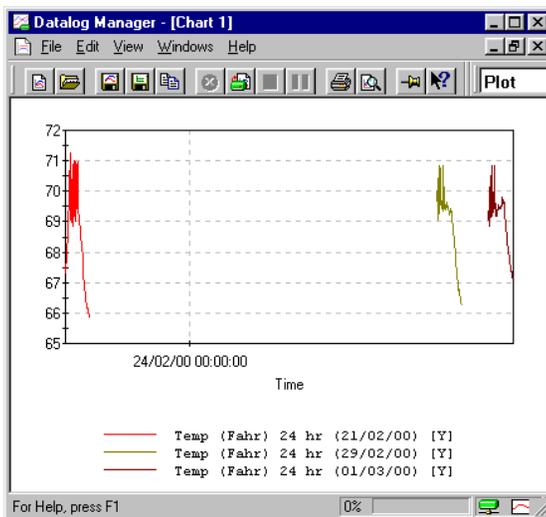
However, in the **Datalog Manager** there is an option to display each upload set graphed against the same time scale scale (ignoring the dates). This superimposes the data sets on one another, allowing comparison between them.

For instance, if the contents of a datalog are uploaded and archived once per day, you can see changes in the readings from day to day by superimposing the uploaded data sets.

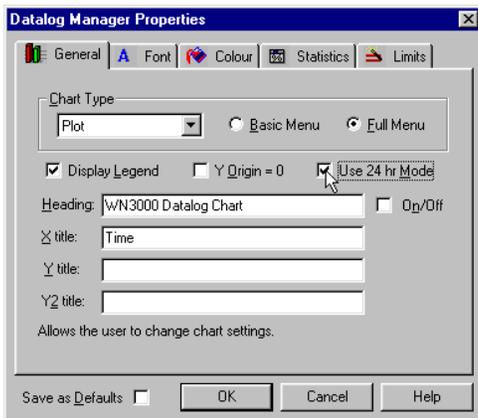
This feature of the **Datalog Manager** is called the “24 hour mode”, and is used as follows:

Note: This option is only available on “Plot” format charts (see Chart Formats on page 38)

Open the archive that you want to examine (see *Displaying data from Archived Datalogs* on page 30.)



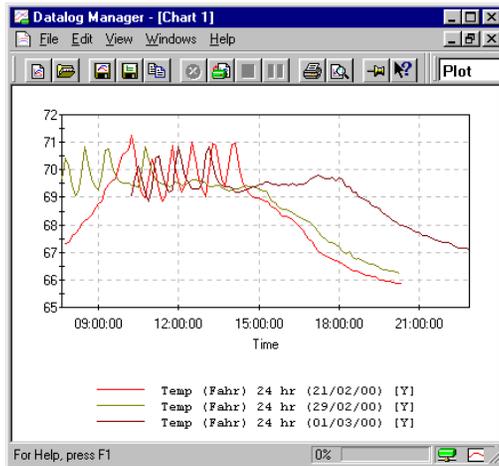
Open the Properties dialog (from the Edit menu, or the Chart and Statistics toolbar).



Select the **General** tab, and make sure the **Use 24 hr Mode** check box is ticked.

Alternatively, click on the **24 hour clock** button  in the toolbar.

The chart will be redisplayed, with all plots superimposed on one another.

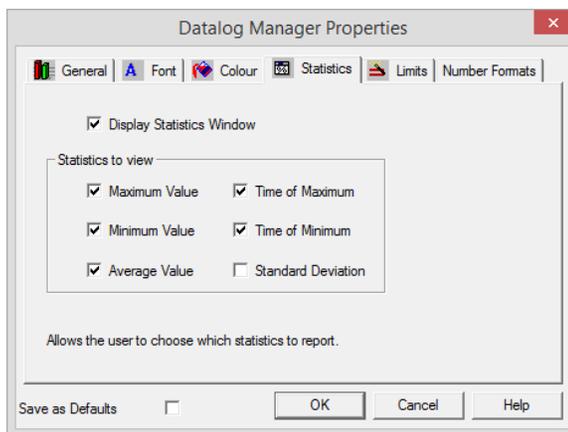


DISPLAYING STATISTICS FOR EACH PLOT

The Datalog Manager can display some useful statistics about plots on a chart. The display includes

- the maximum value for each plot.
- the time at which the maximum value was recorded.
- the minimum value for each plot.
- the time at which the minimum value was recorded.
- the average of all recorded values for each plot.
- the standard deviation of all recorded values on each plot.
- a sum of each plot and a sum of all displayed plots (useful for Meter data)

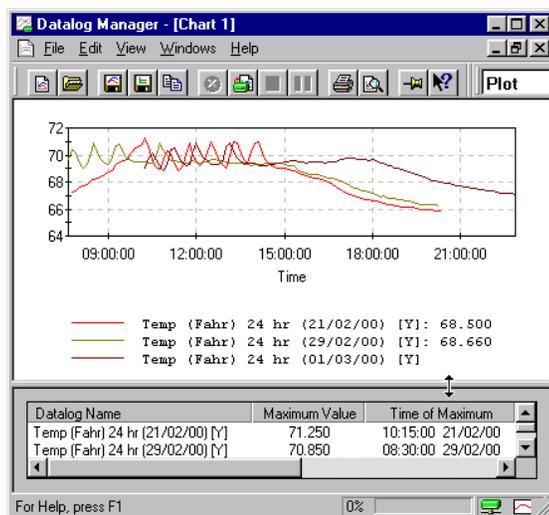
In order to display these statistics, open the **Properties** dialog (from the **Edit** menu, or the **Chart and Statistics** toolbar).



Select the **Statistics** tab, and make sure the 'Display Statistics Window' box is ticked.

Alternatively, click on the **Statistics** button  in the **Chart and Statistics** toolbar

The **Chart Statistics** window will be displayed below the chart.



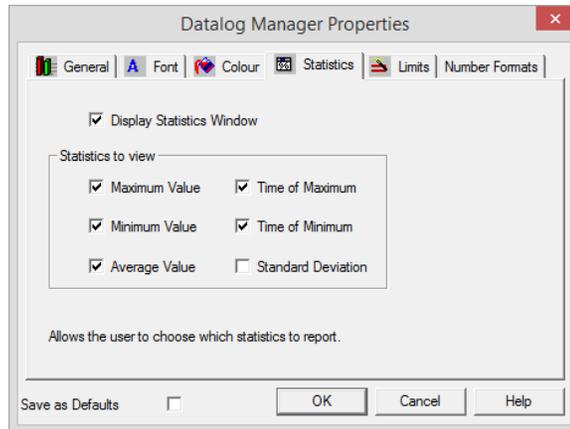
The **Statistics Window** can be adjusted by dragging the separator bar up or down to display statistics for more or fewer datalog plots at one time. The display can be adjusted so fewer statistics are displayed, see *Selecting the types of statistics for display* on page 52.

SELECTING THE TYPES OF STATISTICS FOR DISPLAY

The Sum statistic is selected in a different way from Maximum, Minimum, Average and Standard Deviation statistics, which are selected on the **Properties** dialog. Sum is selected on the **Open Archive** dialog.

Displaying Maximum, Minimum, Average and Standard Deviation

Open the **Properties** dialog (from the **Edit** menu, the Chart details toolbar, or by 'right-clicking' on any part of the chart), and select the **Statistics** tab.



In the **Displaying Statistics** section, make sure there is a tick beside each of the statistics that you want to display.

If you want to remove a type of statistic from the display, make sure there is no tick beside it.

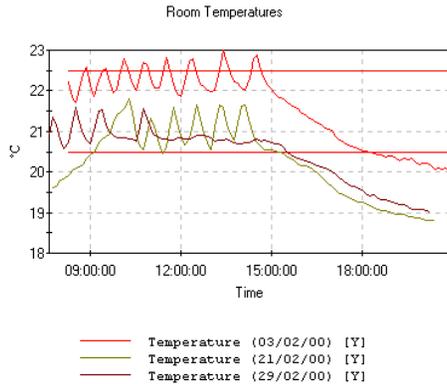
Displaying Sum statistics

In the **Open Archive** dialog, there is a 'Sum' checkbox below the list of archives. If this is ticked when archives are opened, a Sum column will be displayed in the statistics box. This shows the sum of all of the values in a datalog - which is useful for determining total energy usage from Meter data. In addition, the sum of all of the values in all of the displayed datalogs is shown.

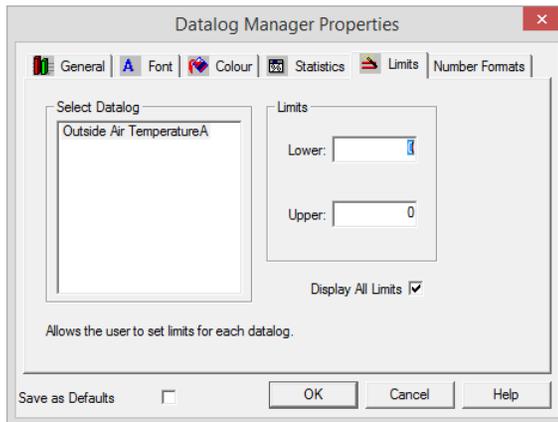
Note: When 'Sum' statistics are displayed, an extra row is added to the bottom of the window showing the Max value of all the maxs, the Min value of all the mins and the Average value of all the averages as well as the Sum of all the Sum values.

DRAWING LIMIT LINES AGAINST EACH PLOT

You can draw lines on a chart, so that you can see where a plot exceeds a maximum or falls below a minimum. This can be useful to show that a temperature stays within the desired limits, or to identify the time at which it exceeded those limits.



In order to display these statistics, open the **Properties** dialog (from the **Edit** menu, or the **Chart and Statistics toolbar**), and click on the **Limits** tab.

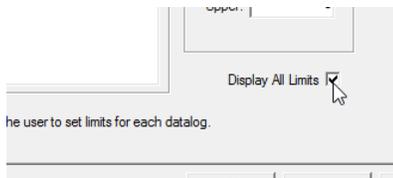


Select the plot for which you want to draw limit lines (from the **Select Datalog** box).

Type the required values into the **Lower** and **Upper** boxes (units are the same as the chart's vertical axis).

Note: Entering a limit value of 0 (zero) means that the limit line will not be displayed. This is useful if you want to display one line only. However, it means that if you want to set a limit line at the zero point you must enter a value of slightly more or less than 0, e.g. 0.00001

Pressing the **OK** button will apply the new limits to the chart, but the limit lines will not be visible unless the **Display all limits** box is ticked:



Lines will be displayed for every plot that has had limits set in the limits tag of the properties dialog. The limit lines will be the same colour as the plot to which they apply.

Limits can also be displayed by clicking on the **Limits** button  on the **Chart and Statistics toolbar**.

4 Saving Chart Data

SAVING A CHART AS A SAVED DATALOG

To save the data in an open chart, press the **Save Datalog** button  on the **File and Control** toolbar, or select **Save Datalog** from the **File** menu.

The standard Windows **Save** dialog appears:

Enter a name for the saved datalog, and click on **Save**.

All the data displayed on the current chart will be saved as two files, a “.dlg” and an “.olc” file, in the **Datalogs** subdirectory under the directory of the site from which the data was taken. The format and setup for the chart is also saved.

GROUPING DATALOGS

It can be useful to work with data points in logical groups. For instance, temperature and humidity readings from various points in a controlled storage area can be displayed to check that the environment is consistent throughout the area.

The **Datalog Manager** can define groups of datalogs or virtual points so that when at any time a group is opened, the current data from all points in the group will be displayed.

To define a datalog group, open a chart with multiple data plots, (see *Opening multiple datalog plots on one chart* on page 36.) showing data from all the sources you want in the group.

When the chart displays all the datalogs required, press the **Save Group** button  on the **File and Control** toolbar, or select **Save Group** from the **File** menu.

The **Save** dialog box appears.

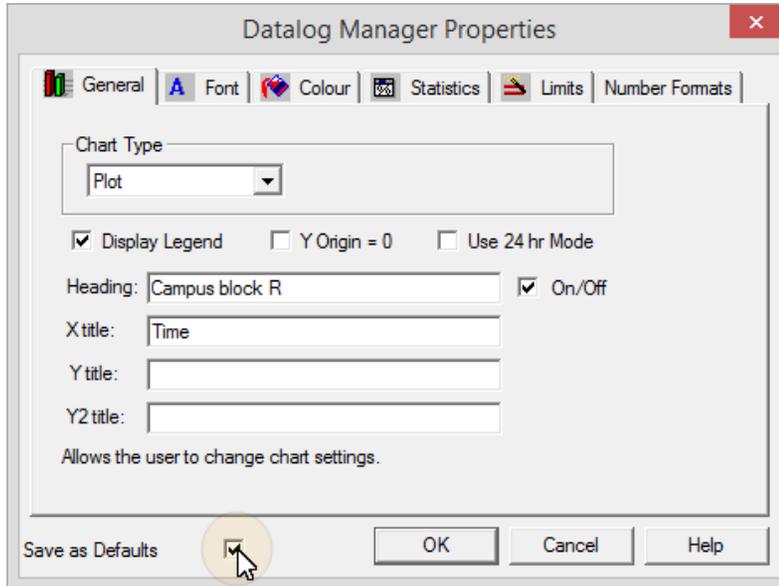
Enter a file name for the group you are saving, and click on **Save**.

Datalog groups can be opened directly from the **Datalog Manager** (see *Opening a Datalog Group* on page 27), or from a dynamic point in **CCView** (see “Viewing the History of a Point - Datalogs” in *MAN0040 – CCDraw User Manual* for details on attaching a **Datalog Group** to a dynamic point in a **CCView** graphic).

SAVING DEFAULT PROPERTIES

If you find that you want some properties set the same way on all charts, such as headings displayed, or 24hr mode, it is possible to set the **Datalog Manager** to use those settings every time a new chart is created. This is called creating “Default” property settings.

To create your own default properties, first set up a chart with the desired property settings. Then in the Properties dialog (*see page 61*), before clicking **OK**, make sure the **Save as default** box is ticked.



Now, when **OK** is pressed, the current settings will be saved and will be used for all new charts created.

5 Printing Charts

PRINTING CHARTS

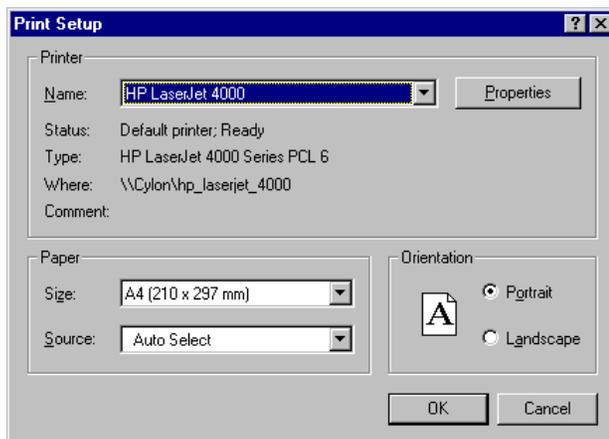
Datalog Manager can print charts as displayed on screen. You can choose how the chart is printed out using the Print Settings dialog, and preview the printout.

SETTING UP A CHART PRINTOUT

Select Print Setup from the File menu



The standard Windows print setup dialog box is displayed.



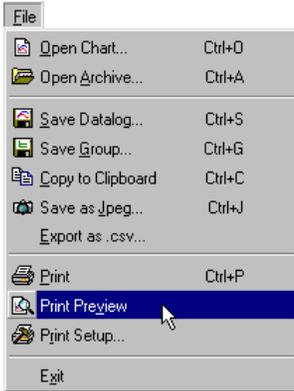
In this dialog you can select a particular printer, a paper size and whether the printout is to be Landscape (wide) or Portrait (long).

You can also choose the type of paper to use, in the **Size** and **Source** boxes.

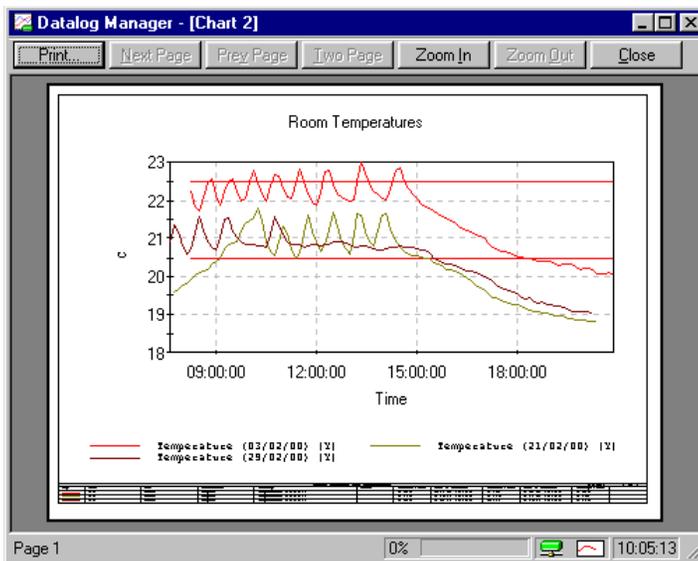
When all the options have been set, click on the **Ok** button.

PREVIEWING A CHART PRINTOUT

To see what the chart will look like when printed, press the Print Preview button  on the File and Control toolbar, or select Print Preview from the File menu:



This displays the Print Preview screen:



In the print preview screen, the mouse pointer changes to a magnifying glass.

Clicking anywhere on the chart zooms the display in on that part of the chart. Clicking again will zoom in further. Clicking a third time zooms back out to the full-chart view.

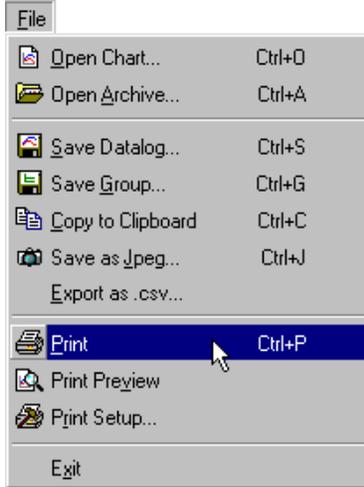
Pressing the **Zoom In** and **Zoom Out** buttons at the top of the screen has the same effect.



SENDING A CHART TO THE PRINTER

To print a chart, open the Print Dialog. This can be done in one of the following ways:

Select **Print** from the file menu



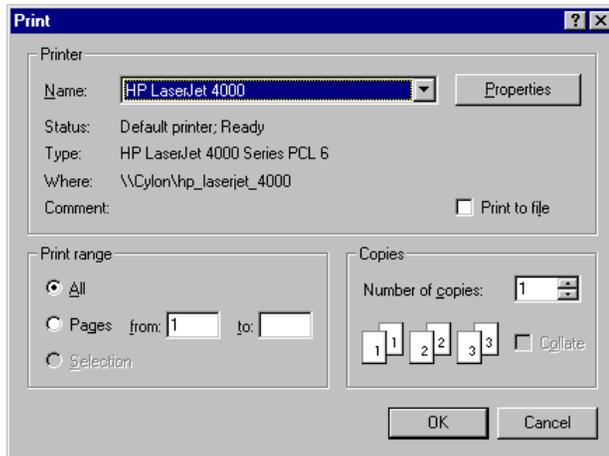
Click on the **print button** on the toolbar



Click on the **Print button** in Print Preview mode.



The standard Windows print dialog opens:



If the printer name displayed is not the one you want to print to, select the correct printer in the **Name** box.

Select the pages to print, if appropriate.

Select the number of copies you want, and whether they should be collated or not.

Click on the **OK** button to send the chart to the printer.

PRINTING STATISTICS

When statistics are displayed on a chart (see

Displaying Statistics for each plot on page 51), it is possible to print out the statistical data. To do this, select **Print Statistics** from the **File** menu.

All of the statistics currently selected for display (see *Selecting the types of statistics for display* on page 52) will be sent to the printer.

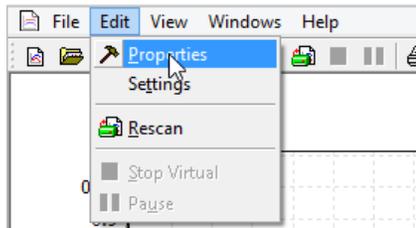
6 Appendix 1 : The Properties dialog

THE PROPERTIES DIALOG

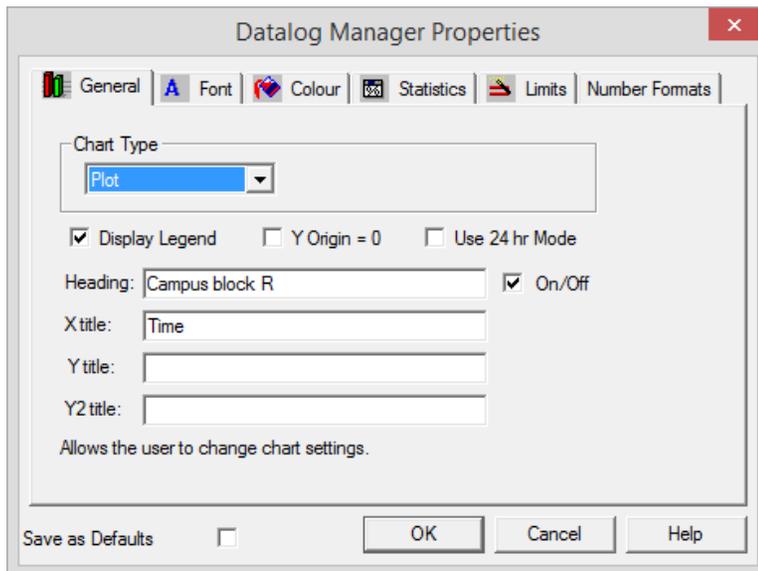
Pressing the Properties button  on the Chart and Statistics toolbar,



or selecting Properties from the Edit Menu :



brings up the Properties Dialog. This is the main control for the appearance of charts in the **Datalog Manager**.



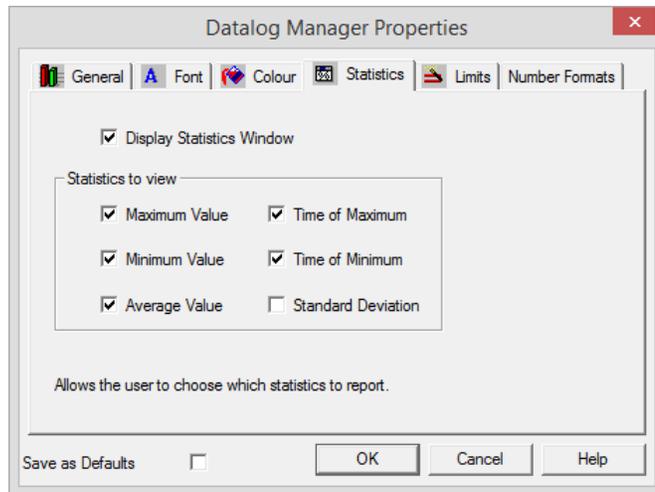
The properties controlled by this dialog are grouped into 6 sections. The ‘tabs’ at the top on the **Properties** dialog are used to move between those groups.

Note: The “Interval” tab is only available when the **Datalog Manager** is scanning virtual or extended dialogs.

For more information, click on one of the tabs or buttons in the graphic above.

PROPERTIES DIALOG - STATISTICS TAB

This tab in the **Datalog Manager Properties** dialog sets whether or not a statistics window will be displayed with a chart, and what statistics will be displayed in the window.



Display Statistics window

When this box is ticked, the Statistics window will be displayed in the main **Datalog Manager** window, below the Chart Display.

Statistics to view

This section selects types of statistics for display below the current chart. The options that have a tick beside them can be displayed, those with an empty tickbox can not.

Note: The selected statistics will only be displayed if the “Display Statistics Window” option is ticked.

For further information see [Displaying Statistics for each plot](#).

The options available are:

Maximum Value

The largest value in the datalog or plot.

Minimum Value

The smallest value in the datalog or plot.

Average Value

The average value for the datalog or plot.

Time of Maximum

The time at which the maximum value was recorded.

Time of Minimum

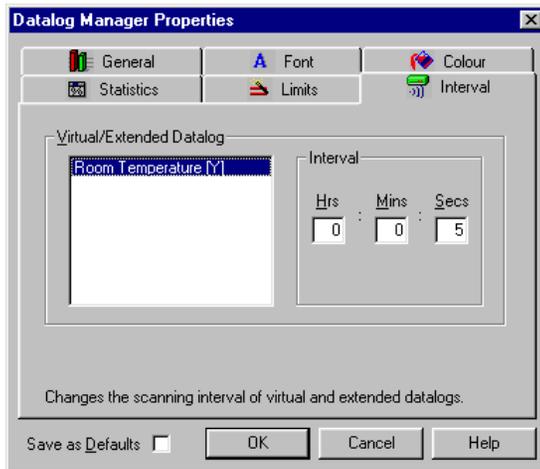
The time at which the minimum value was recorded.

Standard Deviation (n-1)

An indication of the amount of variation from the average value.

PROPERTIES DIALOG - SCANNING INTERVAL TAB

If the **Datalog Manager** is scanning points in a controller (i.e. updating extended or virtual datalogs on a chart), a 6th tab becomes available in the **Datalog Properties** dialog. The **Interval** tab sets the rate at which data is uploaded from a Field Controller to the PC.



Datalog list

The list box to the left of the Interval tab lists the Virtual or Extended Datalogs in the current chart. Different scanning intervals can be set for each Datalog.

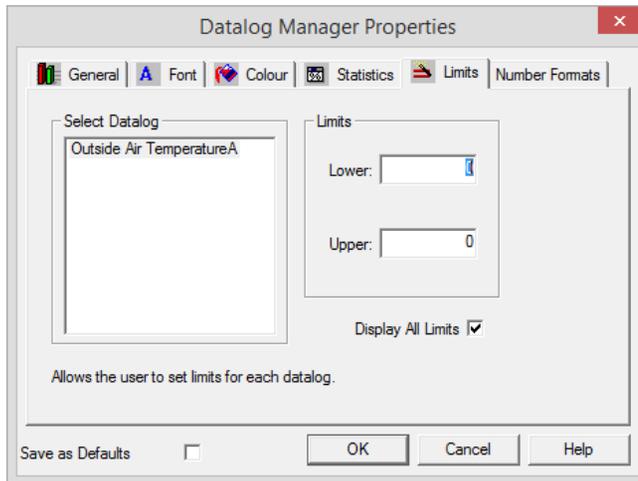
Interval

Set the scanning interval for the selected virtual datalog in hours, minutes, and seconds by entering values into the **Hrs**, **Mins**, and **Secs** boxes to the right of the Interval tab.

PROPERTIES DIALOG - LIMITS TAB

This tab in the **Datalog Manager Properties** dialog sets values at which limit lines will be drawn on the current chart, for each of the datalog plots (see

Drawing limit lines against each plot on page 53).



Select Datalog

This lists all the plots in the current chart, so that you can select the datalog for which limits are to be set.

Lower

Enter the required lower limit here.

Upper

Enter the required upper limit here.

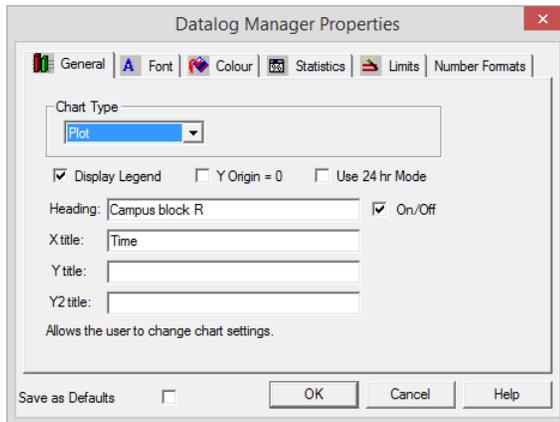
Display All Limits

If this box is ticked, limit lines will be displayed on the current chart.

Lines will be displayed for every plot that has had limits set in the limits tag of the properties dialog. The limit lines will be the same colour as the plot to which they apply.

This box has the same function as the limits button  in the Chart Details toolbar.

PROPERTIES DIALOG - GENERAL TAB



This tab in the **Datalog Manager Properties** dialog sets the format for the current chart, and allows you to change display options of the current chart.

Chart Type

Choose a format for the current chart from this drop-down list. (see

Changing the Format of a Chart on page 42).

The list is the same as the list in the **Chart details** toolbar.

Display Legend

Sets whether the Chart legend is visible or not. This is the same as the **Legend** button  on the **Chart Details** toolbar.

Use 24 hr mode

Overlays charts of archived data over a 24-hour period, so that data from different days can be compared (see *Superimposing data from several datalog archives* on page 49). This is the same as the **24 hour mode** button  on the **Chart Details** toolbar.

Heading

The text entered here will be displayed as a heading for the chart, if the On/Off box to the right of it is ticked. The Heading can also be turned on and off with the **Chart Heading** button  on the **Chart Details** toolbar.

X title

Sets the text for the title on the X axis.

Y title

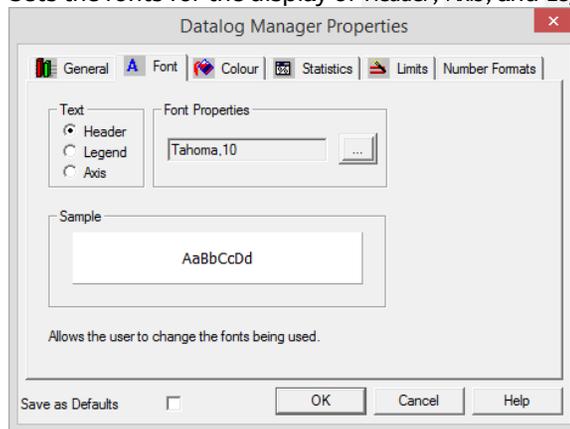
Sets the text for the title on the Y axis (left hand side of screen).

Y2 Title

Sets the text for the title on the Y2 axis (right hand side of screen).

PROPERTIES DIALOG - FONT TAB

Sets the fonts for the display of Header, Axis, and Legend.

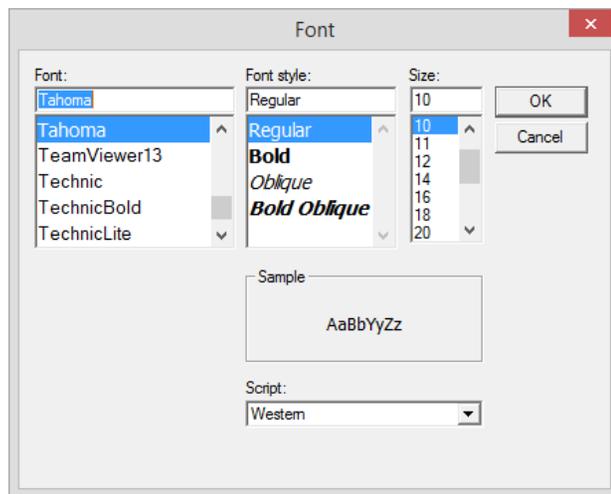


Type

Selects the text item for which the fonts will be set.

Font Properties

Pressing this button opens a font dialog:



Font

Lists all the fonts available on your computer. Click on the one you want to apply.

Font Style

Lists the styles (bold, italic, etc) available for the selected font. Click on one to apply to the font.

Size

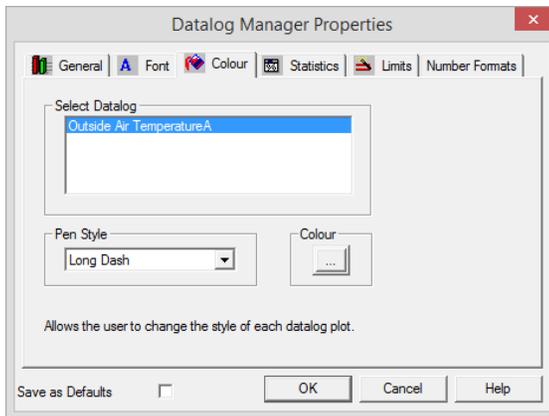
Lists point sizes for the selected font. Select one from the list, or enter a number in the box if the size you want is not listed.

Sample

Shows a preview of the selected font, style, and size.

PROPERTIES DIALOG - COLOUR TAB

Sets the **pen style** (line type) and colour for individual datalog plots on the current chart.



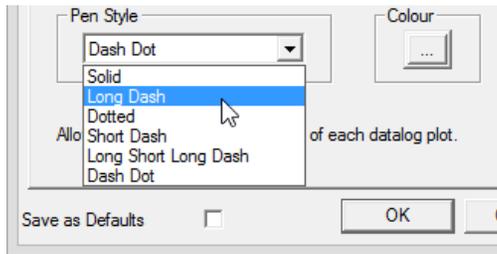
Select Datalog

Selects the datalog plot for which line type and colour are to be set.

Pen style

Sets a **Pen Style** (line type) for the selected datalog plot (see

Selecting Pen Styles for datalog plots on page 44).



Colour

Sets the colour for the selected chart object (datalog plot) (see *Selecting colours for datalog plots* on page 43).

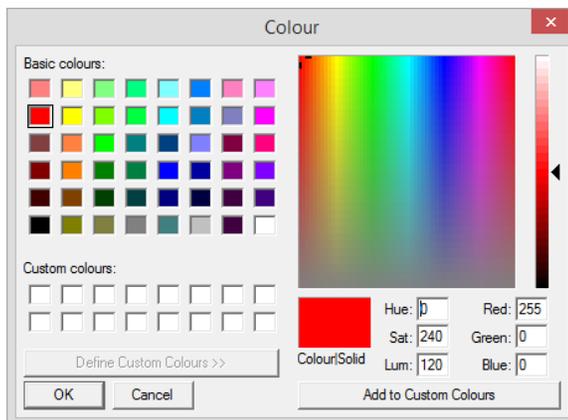


The following options are available in this palette:

Basic Colours: Selects a colour from a standard Windows palette.

Custom Colours: Selects a colour from a user-defined palette.

Define Custom Colours>> : Allows the user to define colours for the Custom colours palette using the following options by clicking on a palette, or by entering values for Hue, Saturation, and Luminance, or by entering values for Red Green and Blue components.



Clicking on the **Add to custom colours** button adds the new colour to the **Custom colours** palette.

PROPERTIES DIALOG - OK BUTTON

Pressing the OK button, at the bottom of the **Datalog Manager Properties** dialog, closes the dialog and applies the property settings to the current chart.

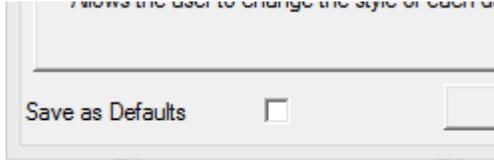
PROPERTIES DIALOG - CANCEL BUTTON

Pressing the **Cancel** button, at the bottom of the **Datalog Manager Properties** dialog, closes the dialog and discards any changes to the property settings. The current chart remains as it was before the dialog was opened.

PROPERTIES DIALOG - HELP BUTTON

Pressing the **Help** button, at the bottom of the **Datalog Manager Properties** dialog, opens a Help window with information about the selected properties tag.

PROPERTIES DIALOG - SAVE AS DEFAULTS



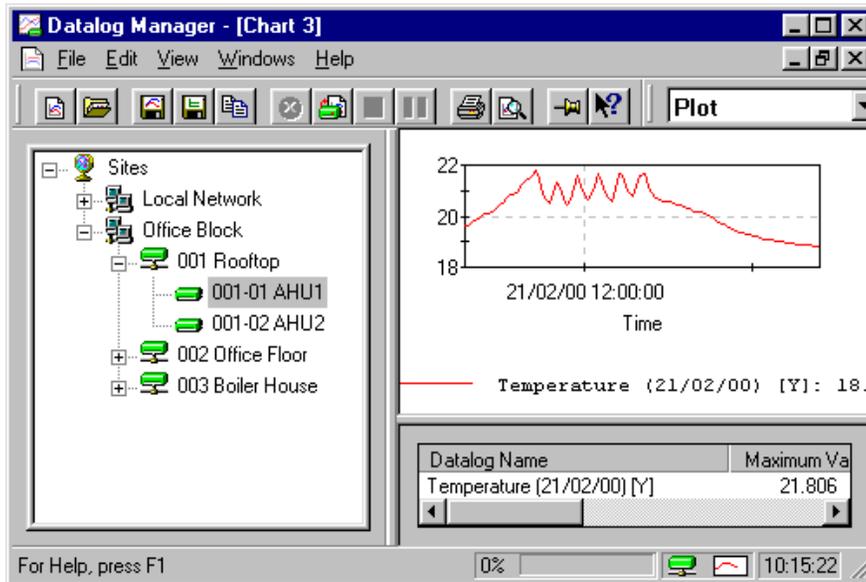
If the **Save as Defaults** box is ticked, the current settings of most of the **Datalog Manager** Properties will be stored after the **Datalog Manager** is closed, for use the next time the **Datalog Manager** is opened.

This applies to most of the settings in the Properties dialog, but the following settings are NOT saved:

- **Chart Type** (properties-general tab). This always defaults to “Plot” type when **Datalog Manager** first opens.
- **Y-title** (properties-general tab). This is set from the data being displayed
- **Upper and Lower Limits** (properties-limits tab). These always default to 0.
- **Interval** (properties-interval tab). This defaults to 0hrs:0mins:5secs

7 Appendix 2 : The Datalog Manager Interface

THE DATALOG MANAGER INTERFACE



The interface through which the **Datalog Manager** is used has the following sections:

THE TITLE BAR

The program name (**Datalog Manager**) and the title of the current chart are displayed in the **Title bar**, at the top of the **Datalog Manager** window:



STATUS BAR

Information about the status of the program is displayed at the bottom of the **Datalog Manager** window:



Menu tips



At the left of the **status bar**, a small amount of text is displayed to give information about the menu option or toolbar icon nearest the mouse pointer.

Upload Status indicator



The **upload status indicator** shows the progress of the transfer of data from a controller's datalog to the **Datalog Manager** program.

Live Data indicator



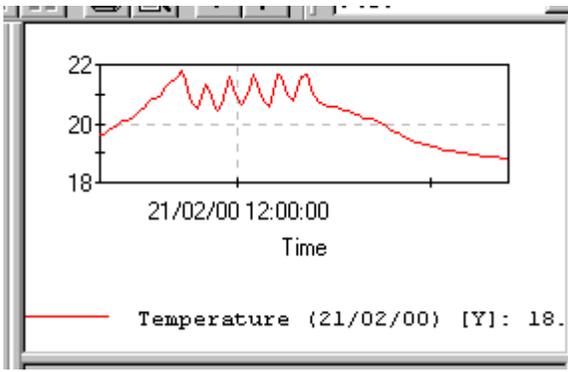
The **Live Data indicator** shows whether or not points within a controller are being monitored by the **Datalog Manager** in real time.

When points are being monitored live, the indicator displays an animation:



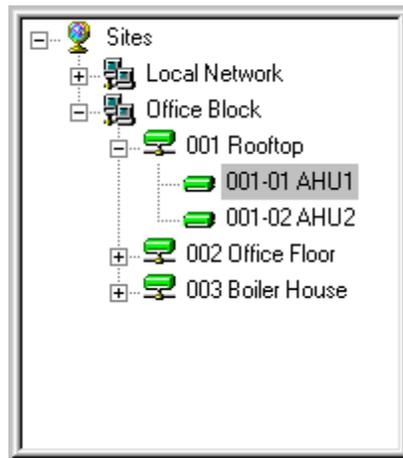
CHART DISPLAY

The main part of the **Datalog Manager**'s window is taken up by the **Chart display**, where data is displayed in one of a number of formats. This is a "Multi-Document" display, which means that several charts (depending on the PC's memory) can be displayed simultaneously, in separate windows. Data from up to 6 Datalogs can be displayed on each chart.



SITE LIST

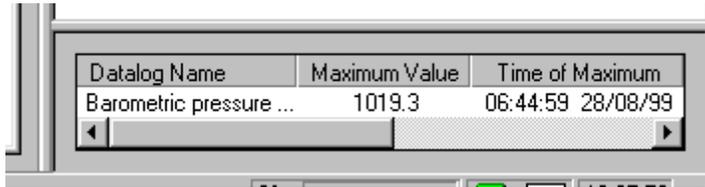
The **Datalog Manager** can receive information from any controller on a Cylon Site. In order to choose the controller, the **Datalog Manager** can display a **Site List**, which shows in an explorer-like structure all the controllers in all the sites installed on the PC.



STATISTICS WINDOW

When viewing a chart in the **Datalog Manager**, it is possible to display a list of useful statistics about the chart – such as maximum or minimum recorded values, the time at which the maximum value occurred, etc.

These statistics are shown in a window below the displayed chart:



Datalog Name	Maximum Value	Time of Maximum
Barometric pressure ...	1019.3	06:44:59 28/08/99

KEEPING THE DATALOG MANAGER INTERFACE ON TOP

The **Datalog Manager** can be set to stay on top of your computer's display. This means you can work in other programs and applications, while still viewing input from virtual datalogs.

To do this, press the **Topmost Window** button  on the File and Control toolbar. The icon on that button changes to indicate that the **Datalog Manager** is set to always be on top of the display: 

8 Appendix 3 : Toolbars

TOOLBARS

The **Datalog Manager** has two toolbars, which contain buttons that act as shortcuts for the more common menu commands. By default they are both 'docked' at the top of the screen (just under the menus):



The toolbars can be dragged away from the top of the screen to become free-floating tool palettes.

The two toolbars in the **Datalog Manager** are: the **File and Control** toolbar and the **Chart Details and Statistics** toolbar.

THE FILE AND CONTROL TOOLBAR



This toolbar contains buttons that control opening, saving and printing files, and communicating with Cylon controller networks.

Open Chart button

 Opens a live chart (see *Open Chart* on page 81)

Open Archive button

 Opens an archive created by the **CCreport** module (see *Open Archive from file...* on page 82.)

Save datalog button

 Saves the data from the plots on the current chart so that they can be imported into another chart without re-loading data from the controller. The setup of the chart is also saved, so that the plots can be opened as a new chart. (see also *Save Datalog* on page 83)

Save Group button

 Saves the setup of the current chart, so that subsequent data can be uploaded from the same datalogs and viewed in the same way without having to build a new chart. (see also *Save Group* on page 83)

Copy to Clipboard button

 Copies an image of the current chart, which can then be pasted into another application, such as a word processor or graphics editor. (see also *Copy to Clipboard* on page 84)

Abort button

 Stops the upload of data from the controller network.

Rescan button

 Uploads fresh data from the controller network, and refreshes the chart display. (see also *Rescan* on page 86)

Stop Virtual button



When the **Datalog Manager** is scanning a controller network, pressing this button will stop the uploading of data. This is the same as the Stop Virtual item in the **Edit** menu. (see also *Stop Virtual* on page 86)

Pause Scanning button



temporarily stops the **Datalog Manager** from uploading data. Uploading can be restarted, by pressing this button again. This is the same as the Pause option in the **Edit** menu. (See also *Pause* on page 86)

Print button



Prints the current chart (see also *Print...* on page 84)

Print Preview button



Displays the current chart as it would print out on paper (see also *Print Preview* on page 85)

Print Statistics button



This toolbar button sends the chart statistics to the printer.

View Statistics button



This toolbar button toggles the display of chart statistics (see

Displaying Statistics for each plot on page 51)

Context Help button



Pressing this button and then selecting an item in the **Datalog Manager** window will open a help file relevant to the selected item.

Topmost Window button



Keeps the **Datalog Manager** visible when you are working in other applications (see *Keeping the Datalog Manager interface on top* on page 74).

THE CHART DETAILS AND STATISTICS TOOLBAR



This toolbar contains buttons that control presentation and analysis of displayed datalog charts.

Chart Format button



This toolbar list selects the format of the displayed chart. This is equivalent to the format section on the Type tab of the **Properties** dialog (see

Changing the Format of a Chart on page 42)

Properties button



Clicking this toolbar button opens the **Properties** dialog box (see page 61).

Chart Legend button



This toolbar button toggles the display of the chart legend.

Chart Heading button



This toolbar button toggles the display of the heading text for the current chart.

24-hour mode button



24h mode

Clicking on this toolbar button overlays charts of archived data, for comparison. (see *Superimposing data from several datalog archives* on page 49)

Chart Limits button



This toolbar button toggles the display of limit lines, if they have been defined (see

Drawing limit lines against each plot on page 53).

Set Y Axis to 0 button



When this button is pressed, the chart will be scaled to show 0 as the minimum value on the Y-axis.

If this button is not pressed, the chart will set the minimum value on the Y-axis close to the minimum value in all the displayed datalogs.

Scroll Left button



When the displayed graph has been zoomed (see *Zooming in on parts of the graph* on page 47), clicking on this toolbar button scrolls the display to the left.

Scroll Up button



When the displayed graph has been zoomed (see *Zooming in on parts of the graph* on page 47), clicking on this toolbar button scrolls the display upwards.

Scroll Down button



When the displayed graph has been zoomed (see *Zooming in on parts of the graph* on page 47), clicking on this toolbar button scrolls the display downwards.

Scroll Right button



When the displayed graph has been zoomed (see *Zooming in on parts of the graph* on page 47), clicking on this toolbar button scrolls the display to the right.

Reset Zoom button

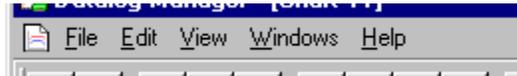


When the displayed graph has been zoomed (see *Zooming in on parts of the graph* on page 47), clicking on this toolbar button 'zooms out' to display the full chart.

9 Appendix 4 : Menus

THE MENU BAR

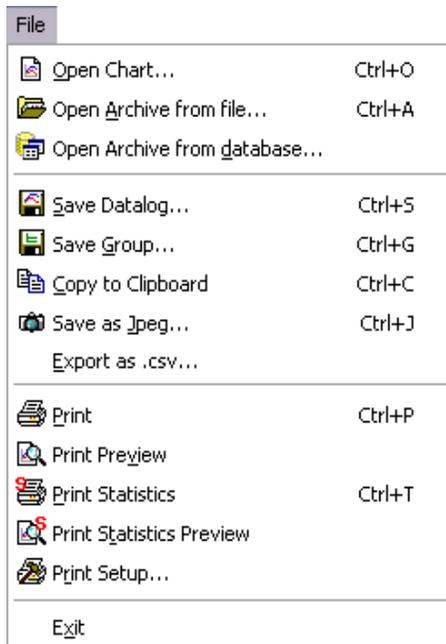
The Menu Bar is located just below the Title Bar in the main **Datalog Manager** window.



All of the **Datalog Manager**'s functions can be accessed from these menus.

THE FILE MENU

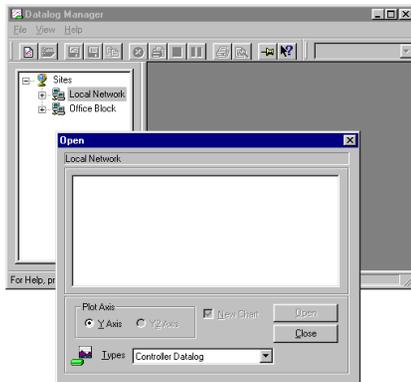
The file menu lists functions which concern opening and saving files, communicating with Cylon Controllers, and printing charts.



Open Chart

This menu option generates a chart from selected controller data.

When you select Open Chart, the following screen is displayed:



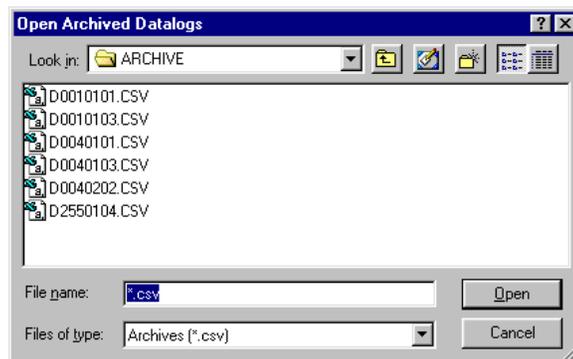
Both the **Site List** (see page 73) and the **Open File** dialog box (see page 10) are active at once – you can ‘browse’ through the site’s controllers using the **Site List**, and see the available files on each controller in the **Open** dialog.

Open Archive from file...

Open Archive from database...

Selecting either of the Open Archive options from the File menu (Open Archive from file... or Open

Archive from database...), or pressing the Open Archive button  generates a chart from archived data. (see also *Opening an Archived Datalog* on page 34.)



Look in:

This selects the directory to be displayed in the File list.

File list

Lists all the relevant files (those with the extension “.csv”) in the selected directory.

Up one level

Changes the directory to the parent of the current directory.

Create new directory

Creates a new subdirectory in the current directory.

List

Displays files as a list of name.

Details

Displays file names with file type, size and saved date.

File Name

Enter the name of the archive to be opened, either by typing in this box, or by clicking on the name in the File list.

File of type

Selects the type of file to be displayed in the file list.

Open as read-only

Opens a file but does not allow any subsequent changes to be saved.

Open

Opens the selected archive as a chart.

Cancel

Closes the **Open Archive** dialog without opening the selected archive as a chart.

Save Datalog

This menu option saves the data from the plots on the current chart so that they can be imported into another chart without re-loading data from the controller. The setup of the chart is also saved, so that the plots can be opened as a new chart (see *Saving a chart as a Saved Datalog* on page 54).

Save Group

Selecting **Save Group** from the File menu, or pressing the Save group button  on the File and Control toolbar, saves the setup of datalogs and points on the current chart. The data from the Datalogs or points is NOT saved with the group. This allows you to create, at a later time, a chart that reads up-to-date information from the same points or datalogs.

A saved group can only be re-opened as a new chart, and cannot be imported into another existing chart.

When you select Save Group, the Save as Datalog Group dialog opens:



Save in:

This selects the directory to be displayed in the **File list**.

File list

Lists all the relevant files (those with the extension “.grp”) in the selected directory.



Up one level

Changes the directory to the parent of the current directory.



Create new directory

Creates a new subdirectory in the current directory.



List

Displays files as a list of names



Details

Displays file names with file type, size and saved date.

File Name

Type the name under which the group is to be saved here.

Save as type

Displays the type of file being saved, i.e. Datalog Group (.grp)

Save

Saves the current chart setup as a group.

Cancel

Closes the **Save Group** dialog without saving the current chart setup.

Copy to Clipboard

Selecting **Copy to Clipboard** from the **File Menu**, or pressing the **Copy** button  on the **File and Control toolbar**, copies a picture of the current chart display as a 'bitmap' in the windows clipboard.

What this means is that you can take a 'snapshot' of the current chart, and paste it into another application such as a word-processor for use in reports, presentations, instructions etc.

Save as Jpeg

Selecting **Save as Jpeg** from the **File Menu** creates a "Jpeg" bitmap file on your PC's disc, containing a picture of the current chart display.

This file can be imported into other applications, such as word-processors, for use in reports, presentations, instructions etc.

Export as CSV

Selecting **Export as CSV** from the **File Menu** creates a text file on your PC's disc, containing the data of all plots on the current chart.

This can be imported into other applications, such as spreadsheets, for detailed analysis, reporting etc.

For details about the format of this .csv file, see **Appendix 4** on page 90.

Note: The .csv file created by this command is **NOT** in the same format as the .csv file used for Archived datalogs.

Print...

Selecting **Print** from the **File Menu**, or pressing the **Print** button  on the **File and Control toolbar** sends the current chart to a printer. The standard Windows dialog is used.

Print Preview

Selecting **Print Preview** from the **File Menu**, or pressing the **Print Preview** button  on the **File and Control** toolbar, displays the current chart as it would print out.

From the print preview display, the following commands are available:

Print

Opens the print dialog (see *Print...* on page 84,).

Next page

Moves the display to the next page. This is relevant for Text plots only.

Previous page

Moves the display to the previous page. This is relevant for Text plots only.

Two page

Displays two pages at once. This is relevant for Text plots only.

Zoom in

Enlarges the print preview display.

Zoom out

Reduces the print preview display.

Close

Closes the **print preview** display, and returns you to the main chart display.

Print setup...

This menu option opens the standard Windows **Print Setup** dialog.

Printer

Select the printer to be used in the **Name** box. The Status, Type, and location of the printer will be displayed under the name.

Properties (button)

Press this button to set options for to the selected printer.

Paper

In this section of the dialog you can specific the paper size and source you want to use. The source option depends on the selected printer.

Orientation

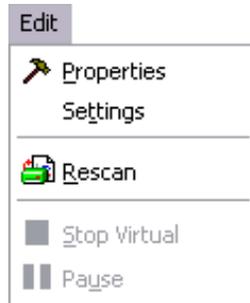
Selects whether the printout should be Portrait (for long documents, e.g. text lists), or Landscape (for wide documents, e.g. graphic charts).

Exit

Selecting **Exit** from the **File Menu** closes the **Datalog Manager**.

THE EDIT MENU

The Edit menu lists options that affect the way that charts are displayed on screen.

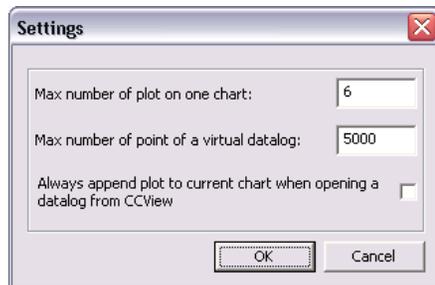


Properties

Selecting **Properties** from the Edit Menu, or pressing  on the Chart Details toolbar, opens the **Properties** dialog box (see page 61)

Settings

Selecting Settings from the Edit menu opens the plot settings, allowing you to set the maximum number of plots on the chart, the maximum number of points in a virtual datalog, and whether or not plots opened from CCView will be appended to the current chart.



Rescan

Selecting **Rescan** from the **Edit** menu, or pressing the **rescan** button  forces the **Datalog Manager** to reload data from controllers or archives. This ensures that the chart on screen reflects the current state of the controller network.

Stop Virtual

When the **Datalog Manager** is scanning a controller network, the uploading of data can be stopped by selecting **Stop Virtual** from edit menu, pressing the **Stop Scanning** button  on the **File and Control** toolbar, or pressing the **[Break]** key.

Pause

Selecting **Pause** from the **Edit** Menu, pressing the **Pause** button  on the **File and Control** toolbar, or pressing the **[Shift]** and **[Break]** keys together, temporarily stops the **Datalog Manager** from uploading data. Unlike the **Stop Virtual** option, uploading can be restarted, by selecting **Pause** again.

THE VIEW MENU

The View menu controls the display of **Toolbars**, **Site List** and **Status bar**.



View Toolbars

Clicking on **Toolbar** in the **View** menu will put a tick beside it if there is none, or remove it if there is.

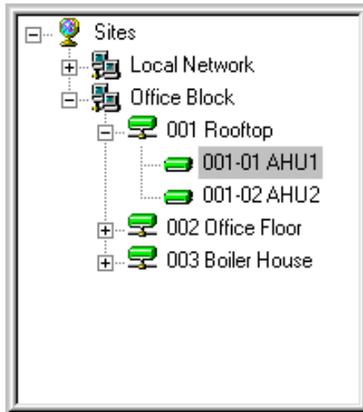
When this menu option is ticked, the **Toolbars** (see page 75) are visible under the menu bar, or at user selected positions on the screen.



View Site List

Clicking on **Site List** in the **View** menu will put a tick beside it if there is none, or remove it if there is.

When this menu option is ticked, the **Site List** is visible on the left hand side of the screen.



View Status Bar

Clicking on **Status Bar** in the **View** menu will put a tick beside it if there is none, or remove it if there is.

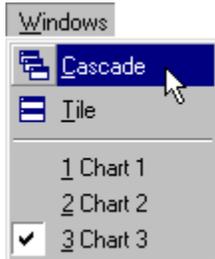
When this menu option is ticked, the **status bar** is visible at the bottom of the screen.



THE WINDOWS MENU

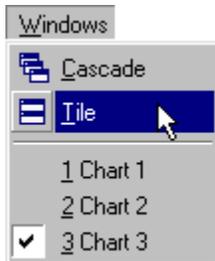
The **Windows** menu controls the display of open windows in the **Datalog Manager**, if you have more than one chart open at a time.

Cascade Windows



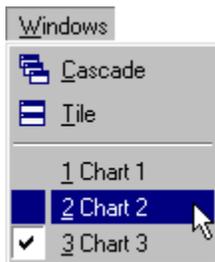
Choosing this menu option causes all open charts to be displayed as cascaded windows, layered on top of one another.

Tile Windows



Choosing this menu option causes all open charts to be displayed as tiled windows, displayed side-by-side.

The open windows list

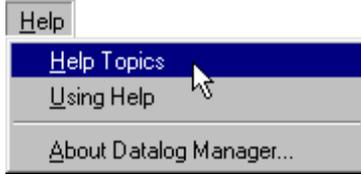


The lower part of the **Windows** menu shows a list of charts, which are currently open. Clicking on a chart name displays that chart as the topmost window..

THE HELP MENU

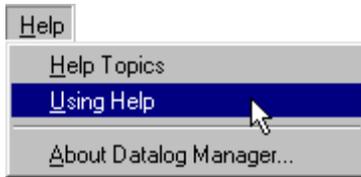
This menu opens the on-line Help file, and gives information about the **CXpro^{HD} Datalog Manager**.

Help Topics



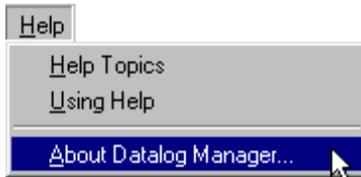
Selecting this menu option opens the on-line help file.

Help menu - Using Help



Selecting this menu option opens a window explaining how to use Windows Help.

About Datalog Manager



Selecting this menu option gives version and copyright information about the **Datalog Manager**.

10 Appendix 5 : Format for exported data

EXPORT DATA FORMAT FROM DATALOG MANAGER

The format of the comma delimited (.csv) files exported by **Datalog Manager 5.1** is shown in the table below as it would appear after importing into Excel. There may be up to six data series (labelled as A,B...F in the table). The start of an actual spreadsheet of data is shown below.

Title(A)		Title(B)	.....	Title(F)		
No DataA	Units(A)	No DataB	Units(B)	.....	No. DataF	Units(F)
Points(n)		Points(m)			Points(n)	
Time(A1)	Data(A1)	Time(B1)	Data(B1)	.....	Time(A1)	Data(A1)
Time(A2)	Data(A2)	Time(B2)	Data(B2)	.....	Time(A2)	Data(A2)
.....
.....
Time(An)	Data(An)	.....	.....	.....	Time(An)	Data(An)
				
		Time(Bm)	Data(Bm)			

	A	B	C	D	E	F
1	Room temp [Y]		Rel. Humidity [Y]		Atmos. Press. [Y2]	
2	192	°C	192	%	192	hPa
3	36613.3958	23.8131	36613.39583	18.4316	36612.39583	1016.22
4	36613.401	23.5829	36613.40104	18.8135	36612.40625	1016.71
5	36613.4063	23.4413	36613.40625	18.8235	36612.41667	1016.22
6	36613.4115	23.5684	36613.41146	18.8235	36612.42708	1014.53
7	36613.4167	23.8151	36613.41667	18.8235	36612.4375	1016.47
8	36613.4219	23.9702	36613.42188	18.4423	36612.44792	1016.14
9	36613.4271	23.7673	36613.42708	18.456	36612.45833	1015.72
10						
11						

Notes:

1. Unlike the format used for archives, the data values are saved in columns. Since an Excel spreadsheet can have 65536 rows but only 256 columns far more data points can be stored in this manner.
2. Time values are saved in the DATE (or COleDateTime) format used by Excel.
3. Since the time (or X-axis) values are all saved, it is not necessary to have a uniform time interval between points.
4. The field to the right of the title is not used at the moment and could be used for other information later without making existing files unreadable.
5. Different numbers of points for chart series presents no problems (as for the example above) as blanks are inserted to pad out all columns to the length of that with the maximum number of points.



ABB CYLON CONTROLS

Clonsaugh Business &
Technology Park
Clonsaugh
Dublin 17
Ireland

Tel.: +353 1 245 0500
Fax: +353 1 245 0501
Email: info@cylon.com

ABB CYLON CONTROLS

ONE TECHNOLOGY LANE
EXPORT,
PA 15632

Tel.: +1 724 733-2000
Fax: +1 724 327-6124