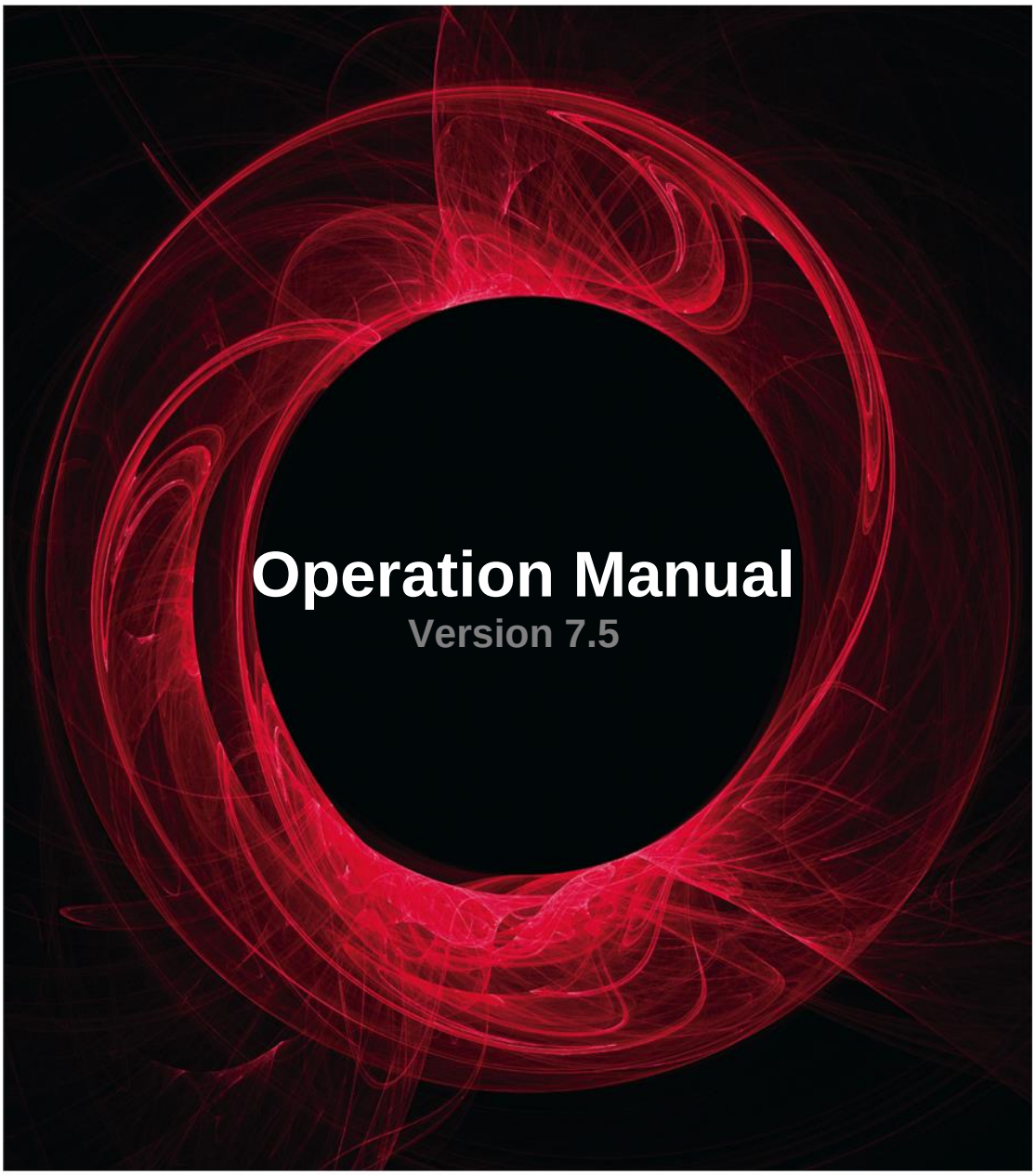
VENTURIONE



Operation Manual

Version 7.5

AppliedCytometry

Pioneering Software Simplicity

nqa ISO 9001 QUALITY MANAGEMENT

VenturiOne Operation Manual

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Section 1

End User Licence Agreement

1 End User Licence Agreement

The End User Licence Agreement can be found in the EULA VenturiOne CD 000-906.1.pdf document located in the root folder of the VenturiOne Media Disk.

VenturiOne is a registered trademark of Applied Cytometry.

VENTURIONE

Section 2

Getting Started

Introduction
Contact Details
Application Window
License Control Mechanism
Licensing Options Dialog

2 Getting Started

2.1 Introduction

Welcome to VenturiOne Software

VenturiOne® software is a powerful and intuitive flow cytometry analysis package, designed from the ground up for maximum performance and simplicity of use.

This document describes all elements of the VenturiOne software. The actual windows and dialogs within the software will vary according to the operating system and theme applied. With different operating systems, the look changes but the functionality remains essentially the same, any differences in behavior will be documented.

If using Apple macOS please also see the separate Getting Started MacOS guide

Playlists and Worklists created in this version will not load in versions of VenturiOne prior to 7.0. However, this version of VenturiOne will load files created in previous VenturiOne versions.

System Requirements

Platforms:

Windows 7 (32bit)
Windows 10 (64bit)
Apple macOS (Mojave, Catalina and Big Sur

Display resolution:	1920x1080 of higher Recommend for best viewing
Processor:	**Intel Core i3 or higher** recommended
RAM:	8GB or higher recommended 32GB+ recommended for analysis of very large or many files

FCS File Format

VenturiOne supports all the common FCS data files and the following file formats:

- FCS 2.0
- FCS 3.0
- FCS 3.1

VenturiOne Software is for research use only

2.2 Contact Details

To speak to one of our team telephone +44 (0)1909 547210 or email customersupport@appliedcytometry.com

Contact us by post at the following address:

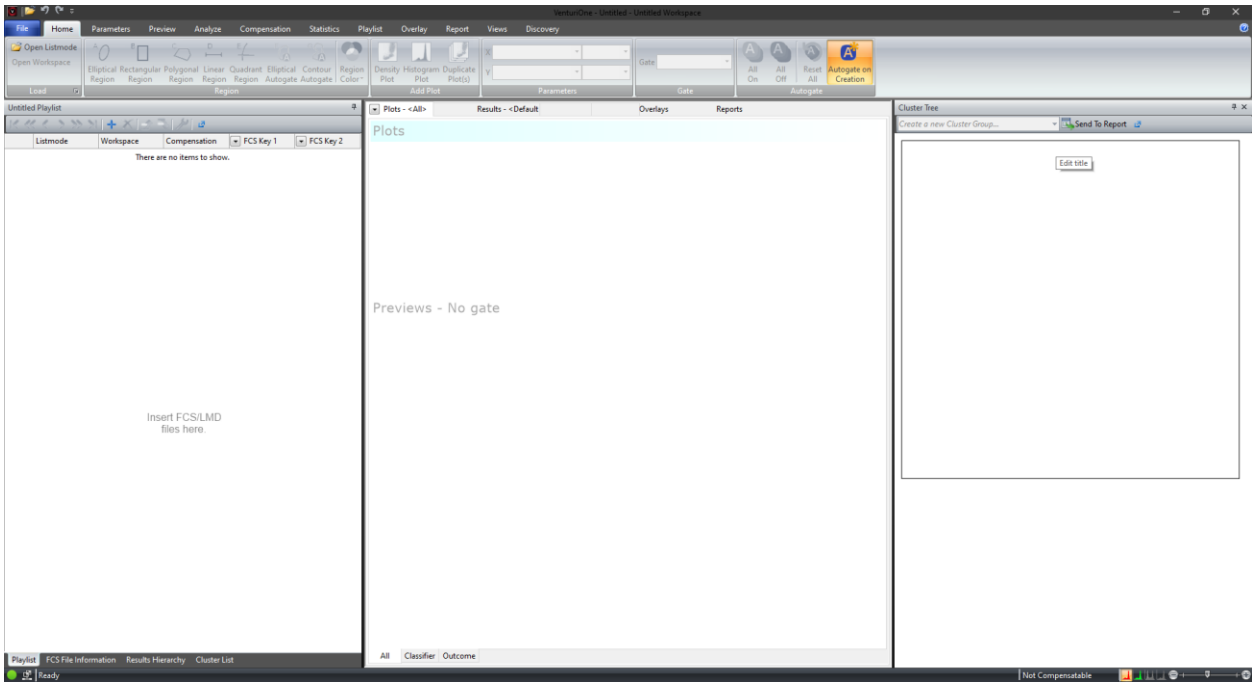
Applied Cytometry
Matrix House,
Nobel Way,
Dinnington,
South Yorkshire,
S25 3QB
UK

Visit us online at www.appliedcytometry.com

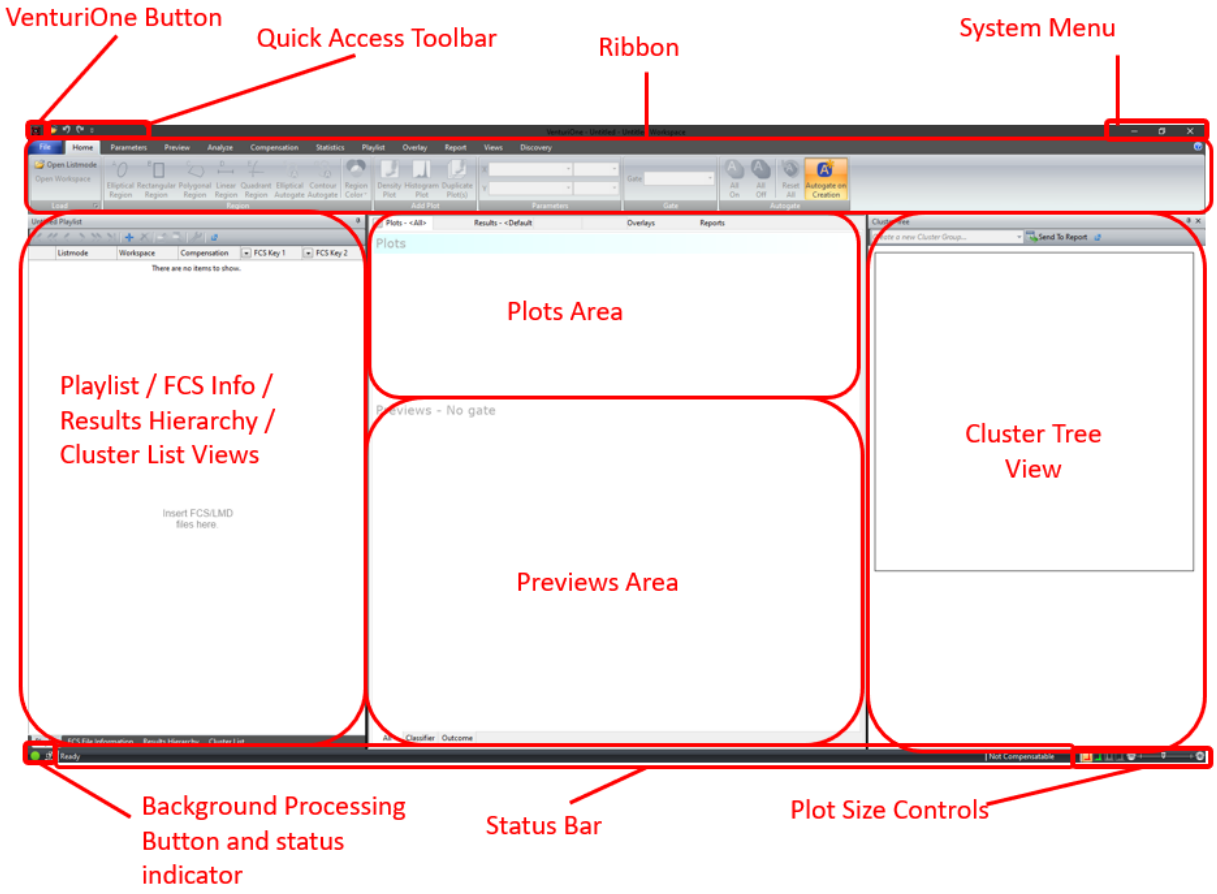
2.3 Application Window

To open the software, click the **VenturiOne** menu item  from the Windows **Start Menu**. Double clicking a VenturiOne playlist file also launches the VenturiOne software.

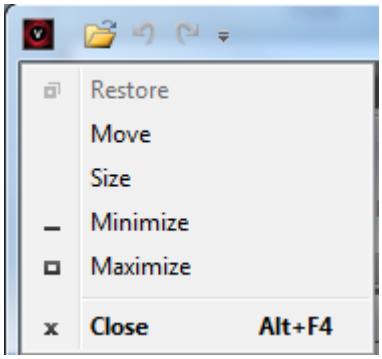
The **Application Window** is displayed as illustrated below:



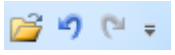
The **Application Window** is divided into several areas:



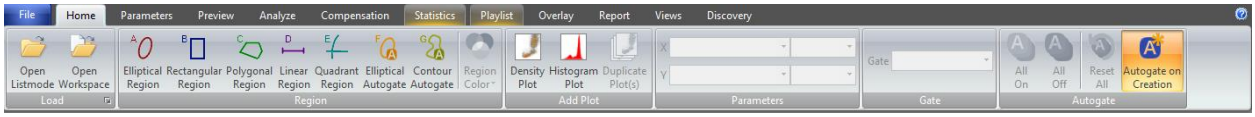
At the top left corner of the application is the **VenturiOne** button  , which displays the **VenturiOne Menu**.



These options allow you to control the main application window or close the application.

Next to the **VenturiOne** button is the **Quick Access** toolbar  . The **Quick Access** toolbar provides quick access to some of the most used options in VenturiOne. The displayed options are user selectable. See section 3 for more details.

The **Ribbon** is the area at the top of the **Application Window** that presents an easy-to-browse main set of commands for VenturiOne software. The majority of commands are accessible from the **Ribbon**.



The **Ribbon** is organized into a set of tabs which represent the main functionality groups of the software:

File tab - contains file open, file save, export and printing options. See section 4 for details.

Home tab – this is the default tab and provides all the essential controls for analyzing files in one convenient place. See section 9 for details.

Parameters tab - provides controls for selecting the parameters displayed; see section 10 for details.

Preview tab - provides controls for the modification of the plots displayed in the **Previews** area; see section 11 for details.

Analyze tab - provides controls for analyzing and modifying the plots in the **Plots** area; see section 10 for details.

Compensation tab - provides controls allowing you to calculate fluorescence compensation; see section 14 for details.

Statistics tab - provides controls for selecting which statistic is displayed on the plot(s) and which statistic(s) are presented in the associated results table; see section 15 for details.

Playlist tab - provides controls for modification of all aspects of a **Playlist** including playlist items, FCS files, workspace files and compensation files; see section 6 for details.

Overlay tab – provides controls for creating single and dual parameter plot overlay; see section 18 for details.

Report tab – provides controls for creating page-based reports from a single playlist item or a group of playlist items; see section 21 for details.

Views Tab – provides controls to hide or show different views and reset them to the default positions. Plot tooltips can be disabled here. See Section 22 for details

Discovery Tab - provides controls to enable and interact with the cluster tree and also to create new custom cluster groups. See section 23 for more details.

Plot Format tab - options here allow you to adjust settings on a per plot basis; see section 8 for details.

Region Format tab - The options here allow you to modify the appearance and type of region displayed on the selected plot. The region label can also be re-positioned, and the regions can be tracked to other regions; see section 13 for details.

Under the **Ribbon** are the **Playlist Panel, the Cluster Tree Panel** and the **Workspace**.

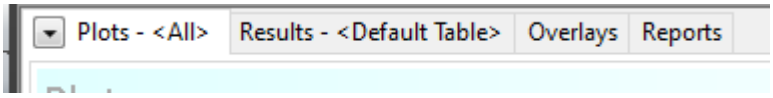
The **Playlist Panel** allows you to select multiple files for simultaneous analyses, files can be re-ordered, and Workspace and Compensation files applied to each file as desired. See section 5 for details. The Playlist Panel is by default docked with the **FCS Information Panel,** the **Results Hierarchy Panel** and the Cluster List Panel.

The **FCS File Information Panel** displays information contained within the FCS file in an easily read format.

The **Results Hierarchy Panel** displays stats information in a hierarchical format.

The Cluster List Panel displays a list of all the clusters present in the selected cluster parameter

The **Workspace** has four tabs:



Plots tab - When the VenturiOne software is launched the **Plots** tab is opened by default. The **Plots** tab contains two areas: **Plots** and **Previews**. The **Previews** area automatically displays plots once an FCS file is opened. Plots can be added to the **Plots** area in several ways. See section 7 for details.

Overlays tab - allows the creation of single and dual parameter overlay plots. See section 17 for details.

Results tab - displays the statistics selected in the **Statistics tab** of the **Ribbon**; see section 16 for details.

Reports tab - allows you to create and modify reports; see section 21 for details.

To the right of the workspace by default is the **Cluster Tree Panel.** This panel displays the cluster tree plot and allows you to create cluster groups**.**

2.4 License Control Mechanism

A license control mechanism, in the form of a DESkey device, an ACULA cloud License or valid software license is required for the operation of the VenturiOne software.

For Apple MacOS systems The ACULA Cloud License or a valid software license key is used.

If a valid license mechanism is not detected when VenturiOne is started, the **Licensing Options** dialog is launched. This allows you to log in to the ACULA licensing system or a valid DESkey device to be inserted.

You can enter a voucher code, if you have one, or request a trial license or enter the limited use free mode using the ACULA Cloud Dongle licensing system.

The **Licensing Options** dialog is described in more detail in section 2.5

2.5 Licensing Options Dialog

You can use the options in this dialog to request a software license, then enter and validate your license.

The **Licensing Options** dialog is displayed automatically when you try to open the VenturiOne software, and no license is detected on your system.

The **Cloud License** options are used to sign in to the ACULA Cloud Licensing system and to access the free trial or free tier (limited number of files) mode.

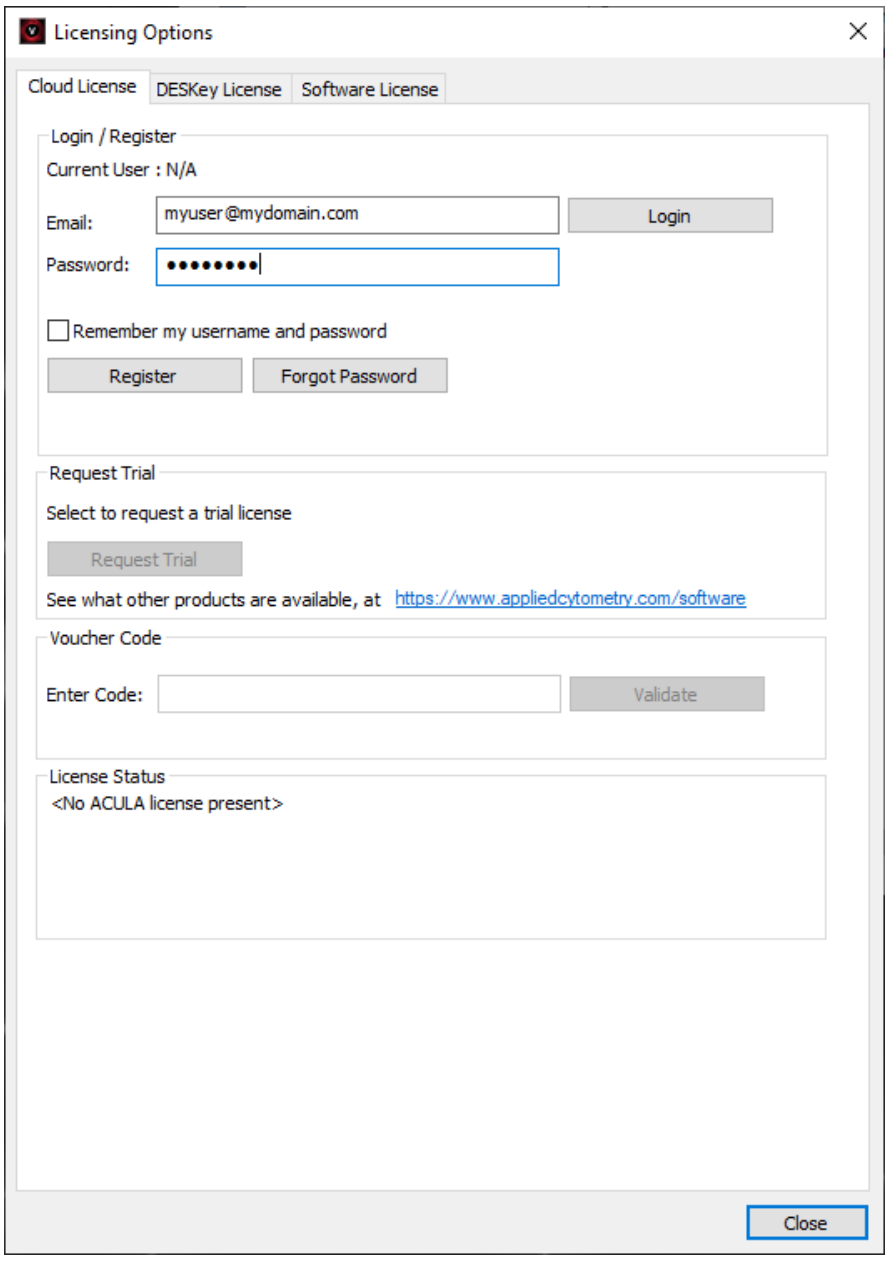
The **Deskey License** options tab is used when you have purchased the software and have a Deskey USB device,

The options on the **Software License** tab can be used if no internet connection is available on the computer on which the software is installed.

2.5.1 Cloud License Page

The ACULA cloud licensing page allows you to register for a free trial, use a supplied license voucher code or use the free tier limited use version of the VenturiOne software.

The use of a cloud license requires an internet connection to validate upon logging in and periodically during software use.

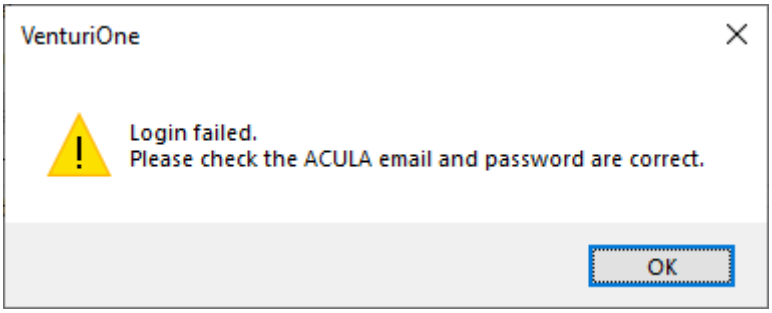


If you have not yet registered with the ACULA Cloud Licensing system, select the **Register** button to register your email address and password.

2.5.1.1 LogIn

If you have already registered with the ACULA Licensing system, enter the registered email and password, then select the **Login** button to log in to the software.

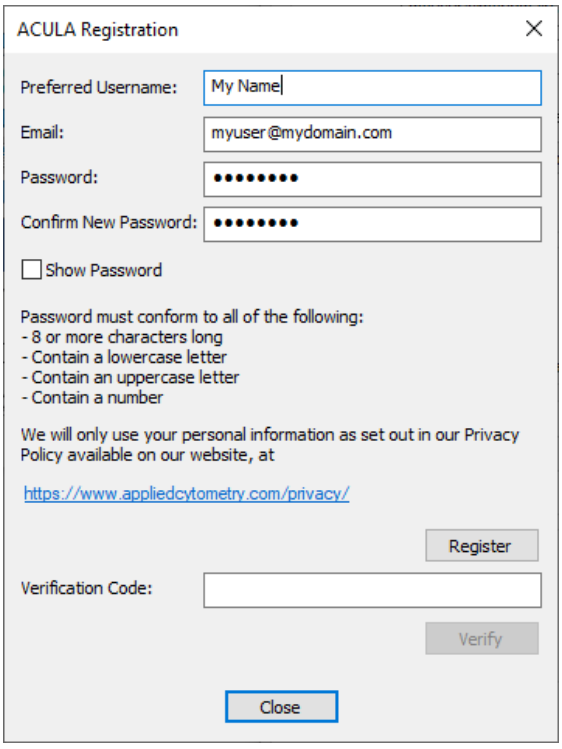
If you enter the incorrect details a warning message will be displayed, and you will not be logged in.



Select the **Remember my username and password** option to have the software automatically fill in your details next time you open the software. Uncheck this option to make the software forget your details.

2.5.1.2 Register

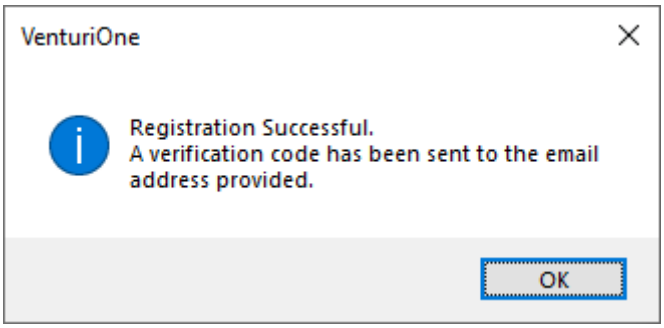
If you have not yet registered with the ACULA Cloud License system, select the Register button to register your email and password.



Enter your preferred username, email address and password, then confirm your password.
Select the **Show Password** option to display the current password text.

Select Register to register your email address

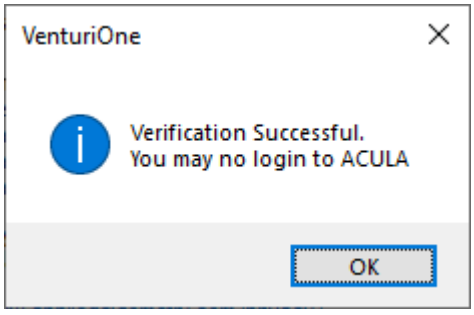
When you register with the ACULA licensing system you will be sent a verification code from **no-reply@acula.appliedcytometry.com** –



if you do not receive a verification code, please check your spam folders.

To complete registration, enter the verification code sent to you and select **Verify**

You should then receive the verification successful message

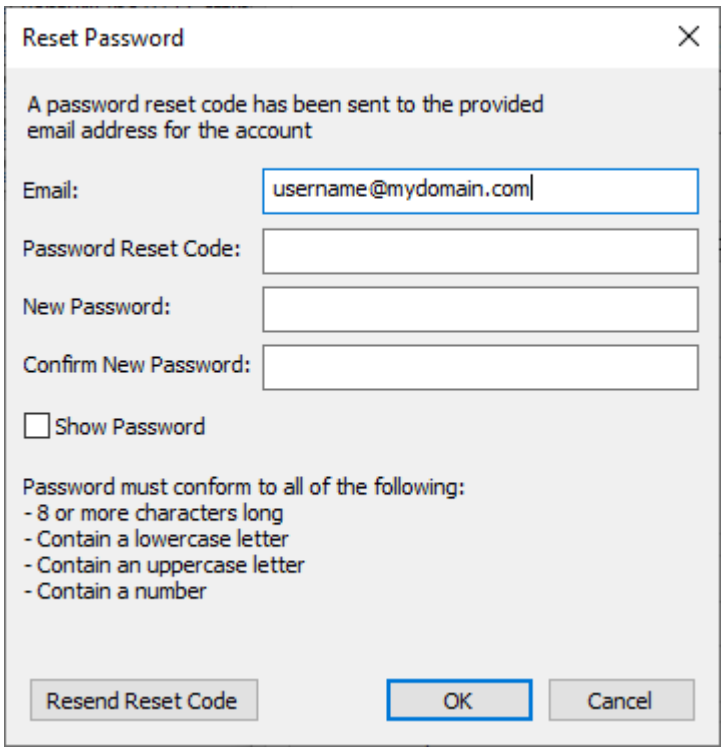


2.5.1.3 Forgot Password

If you have forgotten your password, select the **Forgot Password** button to initiate the process of entering a new password.

A verification code will be sent to the stated email address, enter the verification code here and the new password.

If you did not receive an email press the **Resend Reset Code** to resend the verification code, check your spam folders if the email does not arrive.



2.5.1.4 Request Trial

Once you have logged in you can use the **Request Trial** button to claim your free trial for this PC. You can only claim one free trial for each PC.

2.5.1.5 Voucher Code

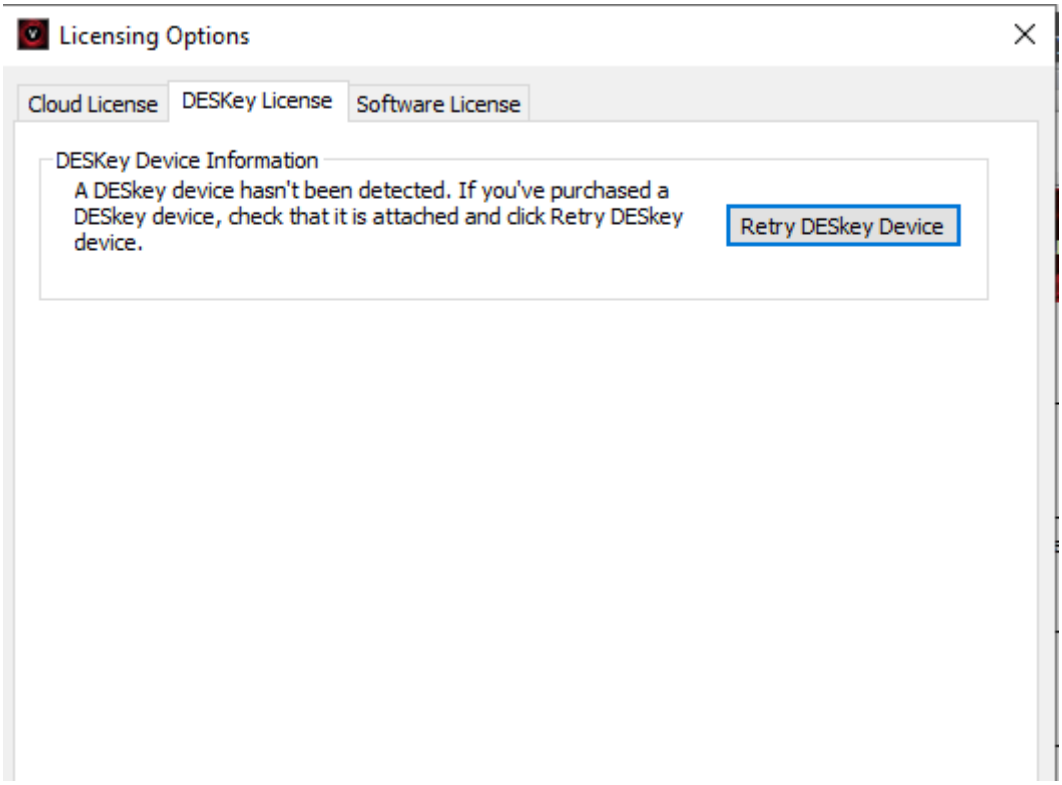
If you have been given a voucher code, first register & and log in to ACULA then enter your voucher code into the voucher code box and press **Validate**.

2.5.1.6 License Status

The status of your ACULA Cloud License will be displayed in the License Status area.

If you are logged in to ACULA licensing system and do not have any other valid license, the software will operate in the Free Tier mode. In this mode you are allowed to analyze a limited number of files each month. The License Status area will display information relating to the number of files analyzed, the file limit and the date at which your allowance will be reset.

2.5.2 Deskey License Page

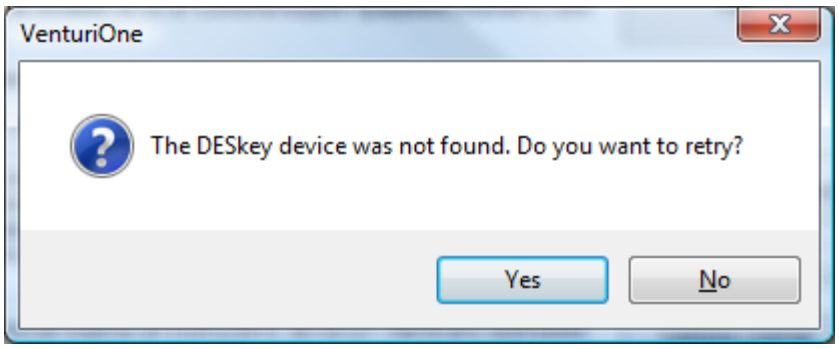


If you have purchased the software, depending on the version you may have a USB deskey device.

Please see the VenturiOne Installation Guide for details of how to install the deskey drivers. If you have purchased a Network Deskey Licensing product you should see the Network DK2 DESkey Installation Guide.

If no DESkey device is inserted, or a wrongly programmed DESkey device is inserted or no DESkey device drivers have been detected, insert a correctly programmed DESkey device and then click the **Retry DESkey Device** button to open the VenturiOne software.

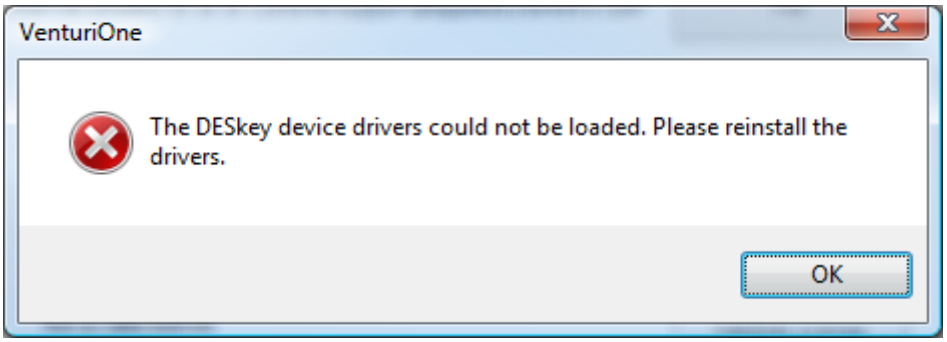
If the DESkey device is not found, the following message is displayed:



Click the **No** button to return to the **Licensing Options** dialog without retrying the DESkey device.

Insert the correctly programmed DESkey device and click the **Yes** button to open the VenturiOne software.

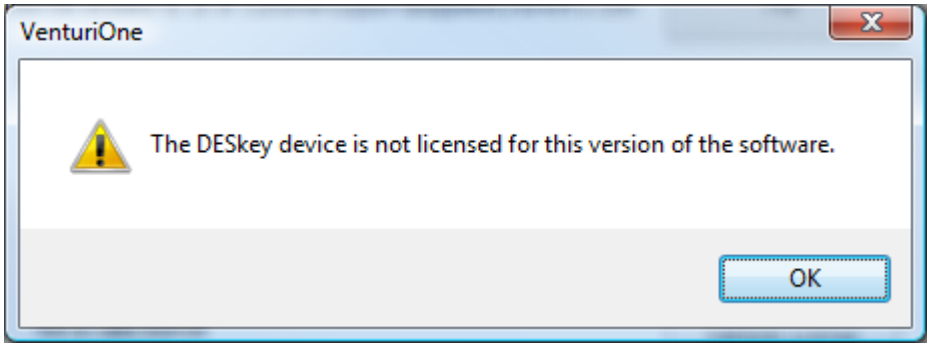
If the DESkey device drivers are not found on the system, the following message is displayed:



To correct this issue, you need to install or reinstall the DESkey drivers by running the setup program located in the DESkey folder of the VenturiOne installation CD.

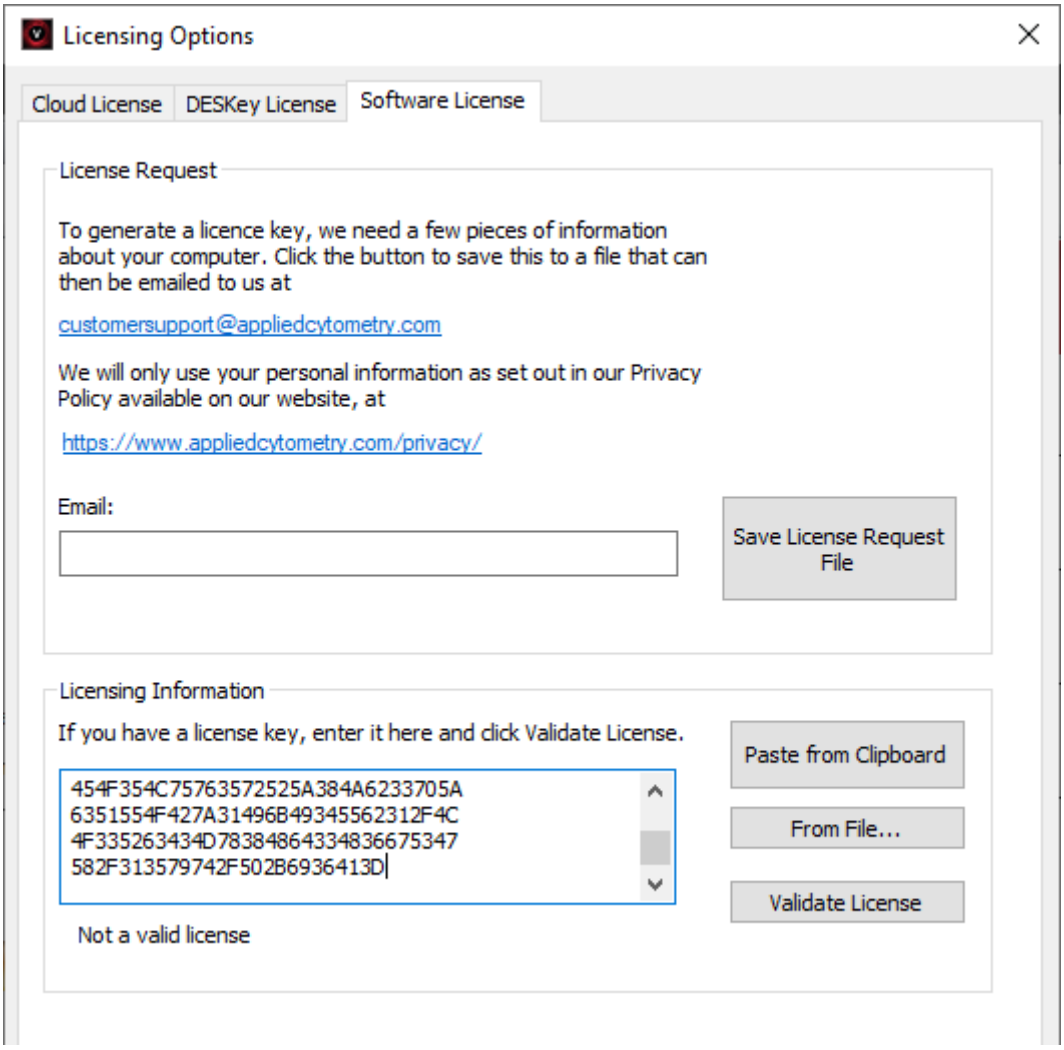
If you have downloaded the VenturiOne installation files from the Applied Cytometry web site, the DESkey folder can be found in the location where you downloaded the files.

If the DESkey device is not licensed for this version of the software, the following message is displayed:



Insert the DESkey device licensed for this version of VenturiOne.

2.5.3 Software License Page



You can request a trial software license by entering your email address and a voucher code if you have one, then select the **Save License Request File** button. A file will be generated which contains the relevant information which is required to generate a license key.

Email this file to us at customersupport@appliedcytometry.com**.**

When you request a new license key from Applied Cytometry you must ensure that the file you email to us is generated on the same computer on which you propose to run VenturiOne, otherwise the license will not be valid, and you will not be able to open the software.

Once you have received the license file you can copy the key from the file and paste it in the **Enter License Key** field. Or select **Paste from Clipboard** to paste it. You can also click the **From File…** button and locate the license file; this will enter the key in the **Enter License Key** field.

Once a key has been entered you must press the **Validate License** button for your license to become active.

The information relating to the license expiration is also detailed in the **Licensing Options** dialog.

You will be notified when the expiration date is approaching. Multiple levels of warning will be given when opening the software.

Section 3

Quick Access Toolbar

Default Options
Customize Quick Access Toolbar Drop-down List
Customize Quick Access Toolbar Dialog
Quick Access Toolbar Context Menu

3 Quick Access Toolbar

VenturiOne provides a **Quick Access** toolbar allowing you to access some of the most common features in the software. The **Quick Access** toolbar is located to the right of the **VenturiOne** button.

3.1 Default Options

By default, the **Quick Access** toolbar contains the **Open**, **Undo** and **Redo** buttons:



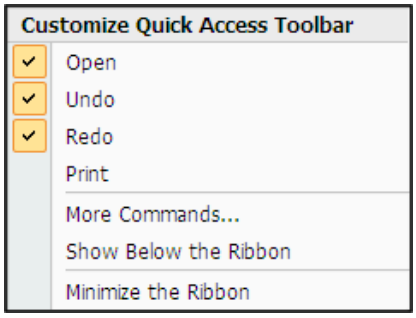
Click the **Open** button to open an existing FCS file.

Click the **Undo** button to undo the last action.

Click the **Redo** button to redo a previously undone action.

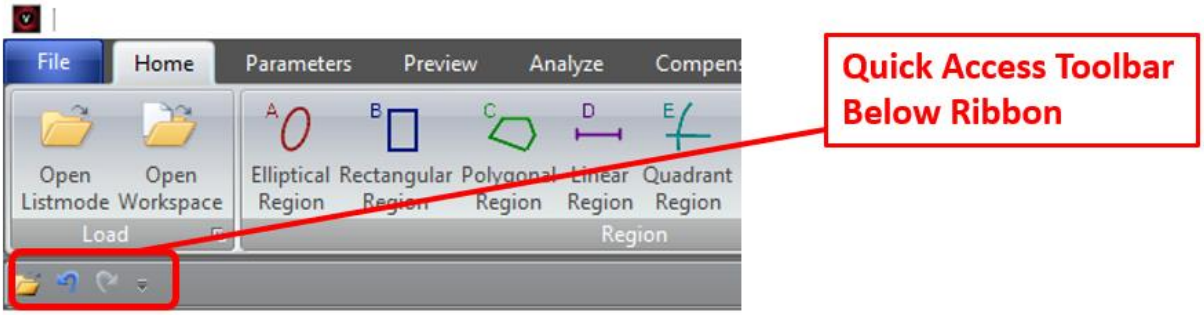
The arrow next to the buttons opens the **Customize Quick Access Toolbar** drop-down list:

3.2 Customize Quick Access Toolbar Drop-down List



The **Open**, **Undo**, **Redo** and **Print** menu items allow you to add or remove the respective **Quick Access** toolbar buttons. Check or uncheck the menu item to add or remove the corresponding button.

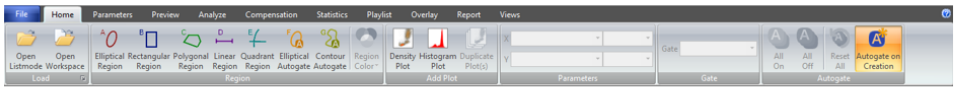
Click the **Show Below the Ribbon** menu item to display the **Quick Access** toolbar below the **Ribbon**:



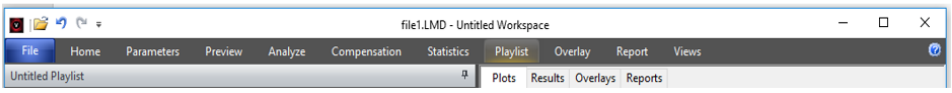
When the **Quick Access** toolbar is below the **Ribbon,** click the **Show Above the Ribbon** menu item to display the **Quick Access** toolbar above the **Ribbon**.

Check or un-check the **Minimize the Ribbon** menu item to toggle the **Ribbon** between minimized and restored.

When the **Ribbon** is minimized the tabs are still active. Changing to another tab restores the **Ribbon**.



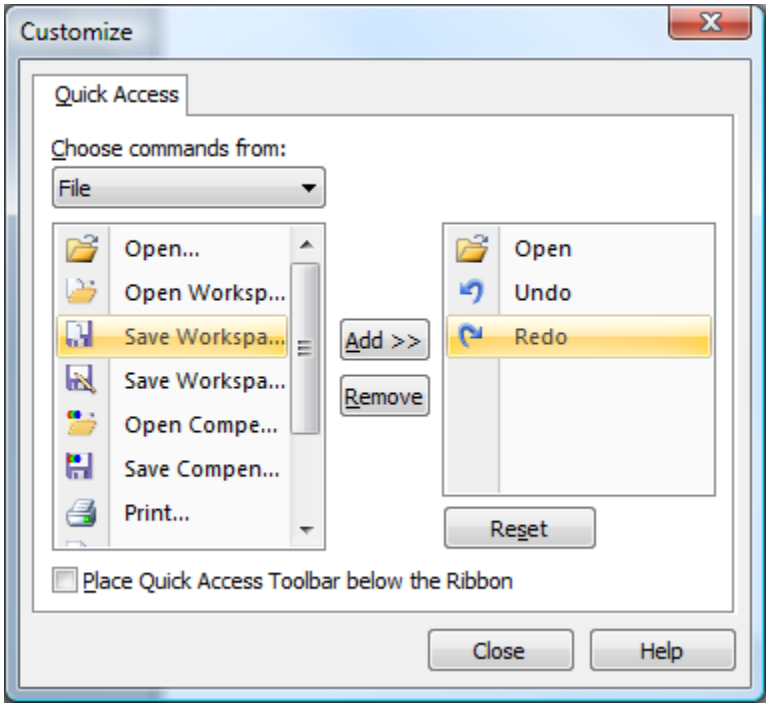
Ribbon Maximized



Ribbon Minimized

3.3 Customize Quick Access Toolbar Dialog

The **Customize** dialog is launched from the **More Commands** menu item and allows you to add or remove buttons to the **Quick Access** toolbar.



The **Choose commands from:** drop-down list has only one selection: **File.**

The list on the left under the **Choose commands from:** drop-down list contains all commands available for adding to the **Quick Access** toolbar. The functionality of these commands is the same as for the respective commands in the **File Menu**.

The list on the right contains all commands that are already on the **Quick Access** toolbar.

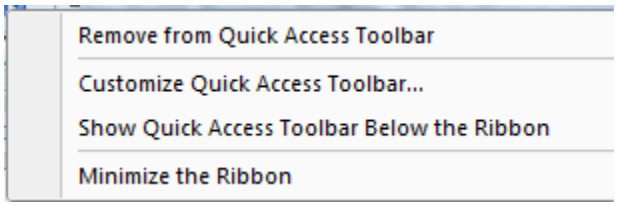
To add a command to the **Quick Access** toolbar select it and then click the **Add** button. The command is added to the list on the right and to the **Quick Access** toolbar.

If you select a command that is already in the list on the right, the **Add** button is disabled.

To remove a command from the **Quick Access** toolbar select it in the list on the right and click the **Remove** button.

3.4 Quick Access Toolbar Context Menu

Right click on any button on the **Quick Access** toolbar to open the following context menu:



Select **Remove from Quick Access Toolbar** to remove the button from the **Quick Access** toolbar.

Select **Customize Quick Access Toolbar**…to open the **Customize Quick Access** dialog.

Show Quick Access Toolbar Below / Above the Ribbon toggles the **Quick Access** toolbar to show below or above the Ribbon; the text on the menu item toggles between **Show Quick Access Toolbar Below the Ribbon** and **Show Quick Access Toolbar Above the Ribbon.**

Checking / un-checking the **Minimize the Ribbon** menu item toggles the **Ribbon** between minimized and restored.

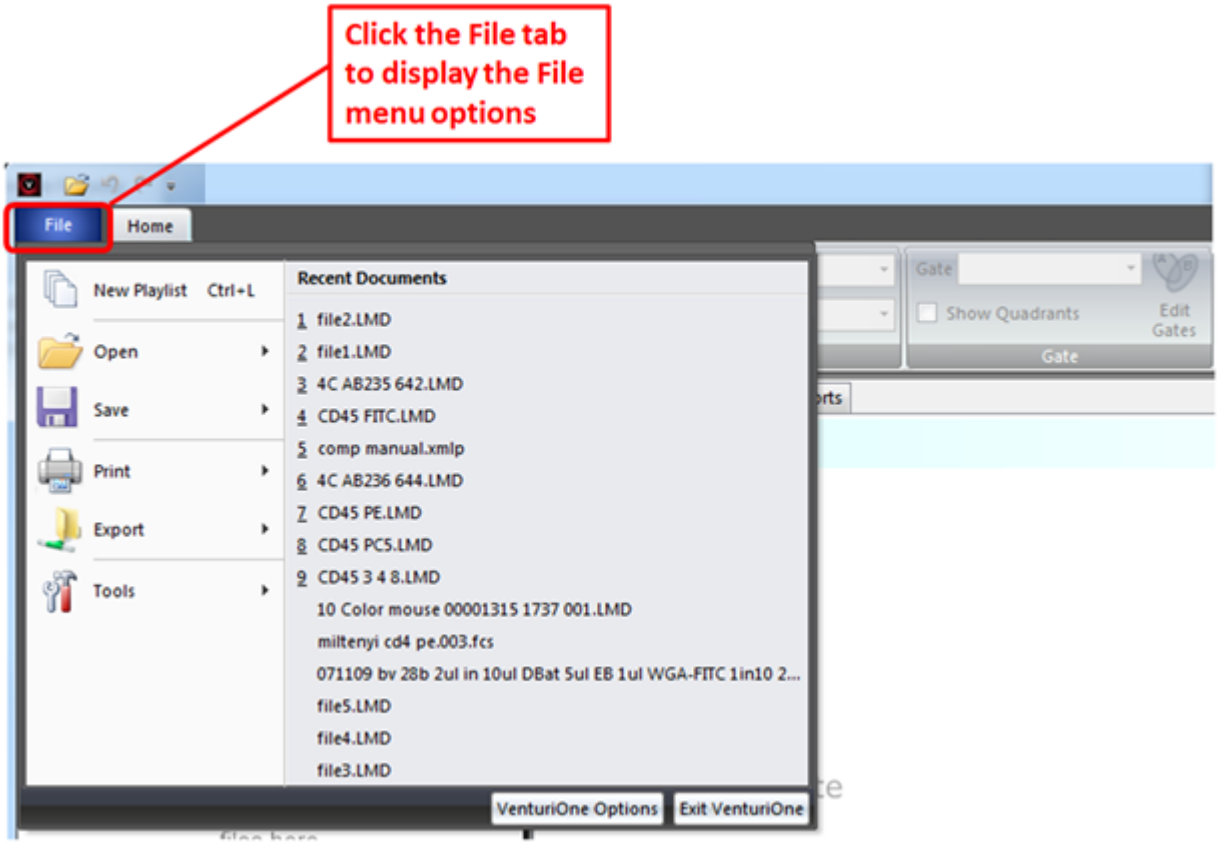
Section 4

File Tab Menu Items

New Playlist
Open Menu
Save Menu
Print Menu
Export Menu
Tools Menu
Recent Documents
VenturiOne Options
Exit VenturiOne

4 File Tab Menu Items

Click the **File** tab on the Ribbon to display the **File Menu** illustrated below:

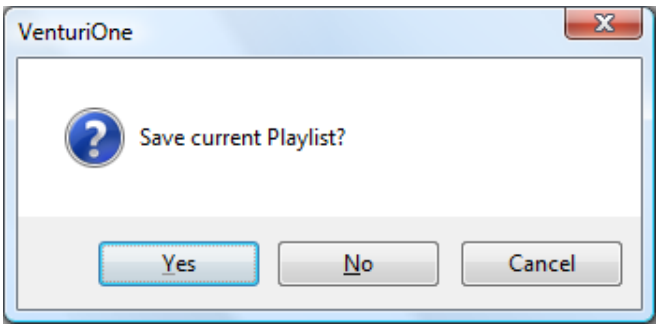


4.1 New Playlist

To open a new **Playlist**, click the **New Playlist** menu item**.**

Selecting this option will clear the current **Playlist**; all plots, results and reports will also be cleared.

If a modified **playlist** is currently open a message is displayed allowing you to save the current **Playlist** as illustrated below:



Click the **Yes** button to display the **Save As** dialog from which you can save the current playlist file. Once the playlist file has been saved a new blank playlist will be displayed in the **Playlist Panel**.

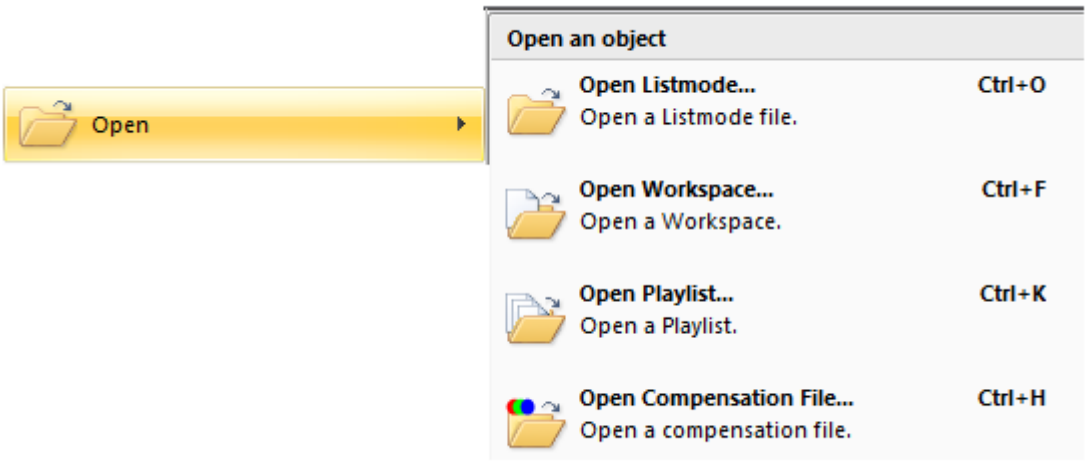
Click the **No** button to close the dialog and open a new blank **Playlist** in the **Playlist Panel** without saving the current **Playlist**.

Click the **Cancel** button to close the **Save Changes** dialog and return to the current workspace.

Click the **Close** button (**X** top right) to close the **Save Changes** dialog and return to the current workspace.

4.2 Open Menu

The **Open** menu contains options for opening FCS Listmode, workspace, playlist and compensation files.



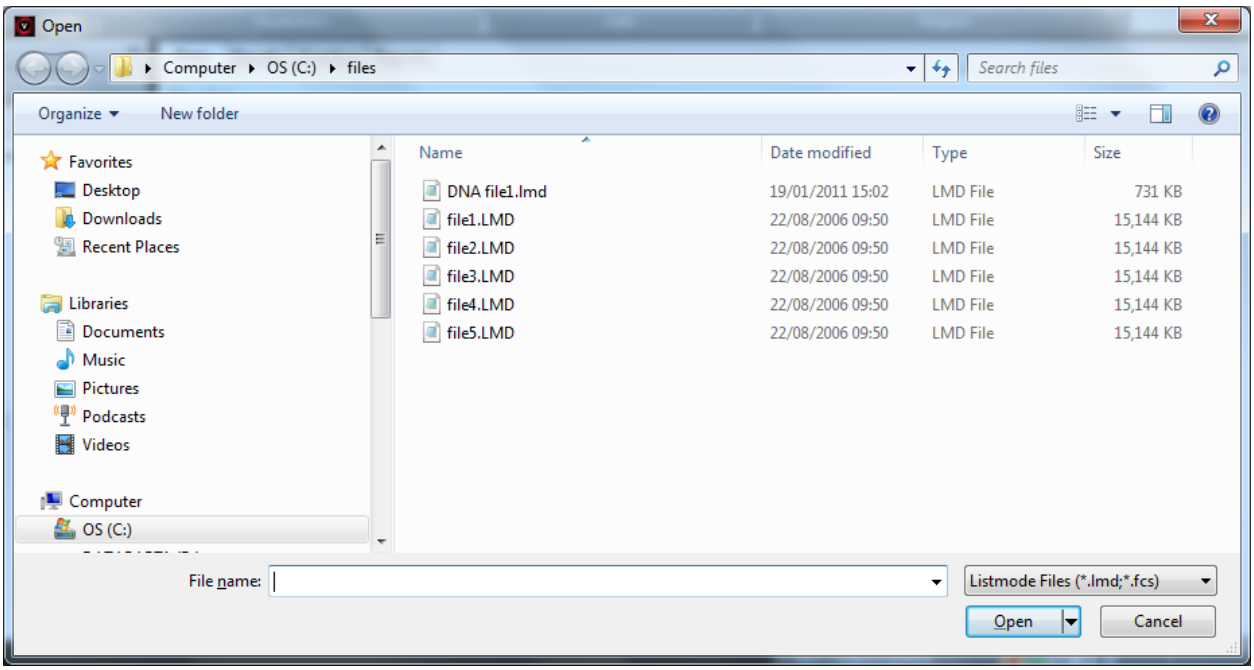
4.2.1 Open Listmode File

Click the **Open Listmode...** option (or press the **Ctrl+O** keys).

The Windows **Open** dialog is displayed, listing the files present in the last used folder or **My Documents** if this is the first time you have used the software.

Select the desired FCS files and click the **Open** button to add the selected files to the VenturiOne **Playlist**.

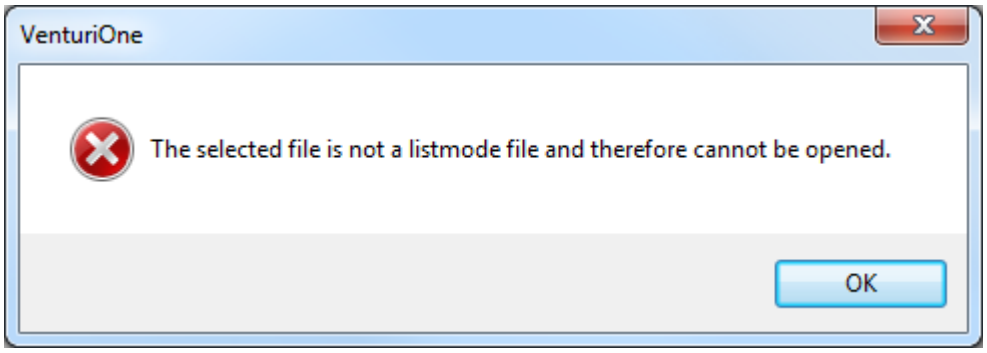
If the current folder is not the one containing your FCS files, you need to browse to the correct folder.



The files of type displays **Listmode Files (*.lmd, *.fcs)** by default, but can be changed to **All Files (*.*)** if your files are not displayed.

The supported file types are described in section 2.1.

If the opened file is not a valid FCS file, an error message is displayed describing the cause of the error.



If a file is rejected, send it to customersupport@appliedcytometry.com for assessment.

4.2.2 Open Workspace

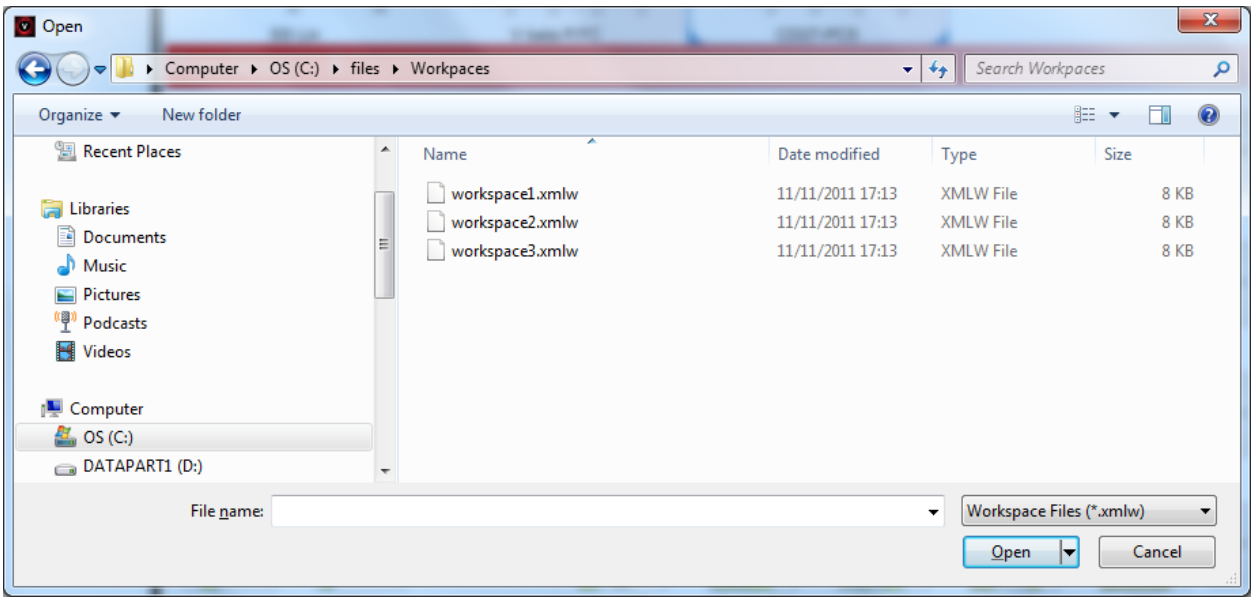
This menu item is only enabled if an FCS file is open in the workspace.

To open an existing Workspace file, click the **Open Workspace…** option (or press the **Ctrl+F** keys).

The Windows **Open** dialog is displayed, listing the files present in the last used folder or **My Documents** if this is the first time you have used the software.

Select the desired workspace file and click the **Open** button to load the workspace file with the currently open FCS file.

If the current folder is not the one containing your workspace files, you need to browse to the correct folder.



The files of type displays **Workspace Files (*.xmlw)** by default, this can be changed to display **All Files (*.*).**

Double clicking on a file in this dialog has the same functionality as selecting it and clicking the **Open** button.

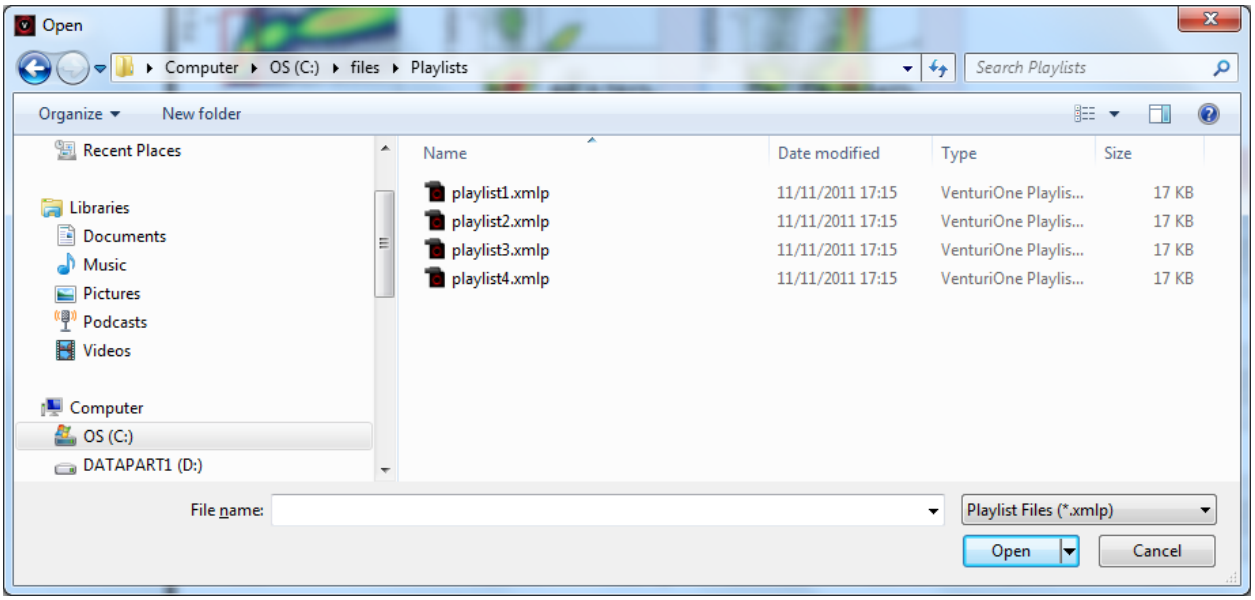
4.2.3 Open Playlist

To open an existing playlist file, click the **Open Playlist…** option (or press the **Ctrl+K** keys).

The Windows **Open** dialog is displayed, listing the files present in the last used folder or **My Documents** if this is the first time you have used the software.

Select the desired playlist file and click the **Open** button to load it into the **Playlist Panel**. Playlist files contain playlist Items (FCS, workspace and compensation files) and their associated report(s).

If the current folder is not the one containing your playlist files, you need to browse to the correct folder.



The files of type displays '**Playlist Files (*.xmlp)**' by default, this can be changed to display **All Files (*.*).**

Double clicking a file in the dialog has the same functionality as selecting it and clicking the **Open** button.

Only one playlist file can be opened at a time.

Opening a playlist file will clear the undo/redo history.

4.2.4 Open Compensation File

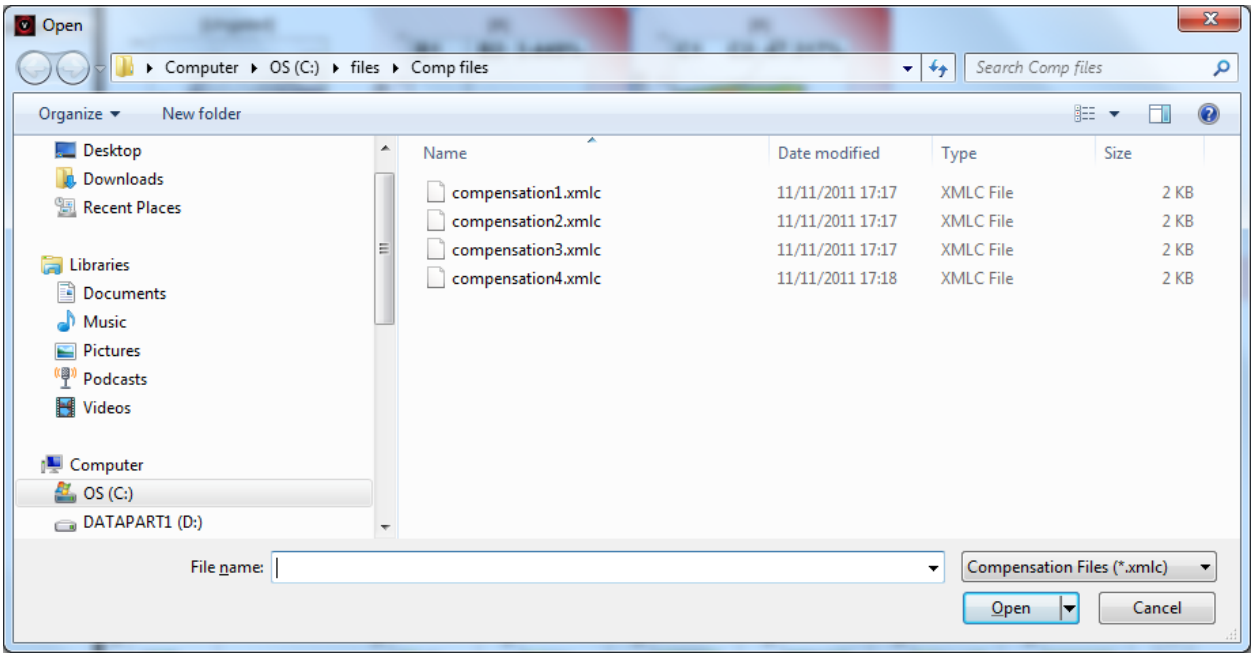
This menu item is only enabled when an FCS file which is able to be compensated is open in the workspace.

To open an existing compensation file, click the **Open Compensation File …** option (or press the **Ctrl+H** keys).

The Windows **Open** dialog is displayed, listing the files present in the last used folder or **My Documents** if this is the first time you have used the software.

Select the desired compensation file and click the **Open** button to load the compensation file into the currently opened playlist item.

If the current folder is not the one containing your compensation files, you need to browse to the correct folder.

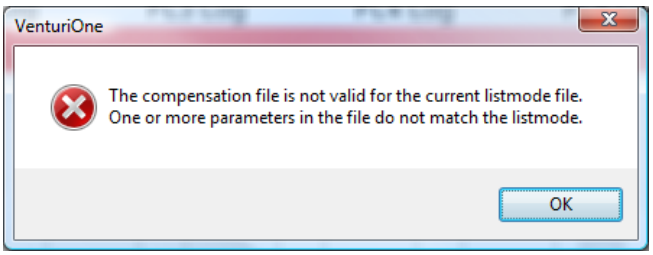


The files of type displays '**Compensation Files (*.xmlc)**' by default, this can be changed to display '**All Files (*.*)'.**

If a new compensation file is selected this will replace the one currently loaded. Only one compensation file can be opened at any one time and compensation is only available on high resolution files.

Double clicking a file in this dialog has the same functionality as selecting it and clicking the **Open** button.

If you attempt to open a replacement compensation file that has different parameters to the FCS file open in the workspace, the following message is displayed:

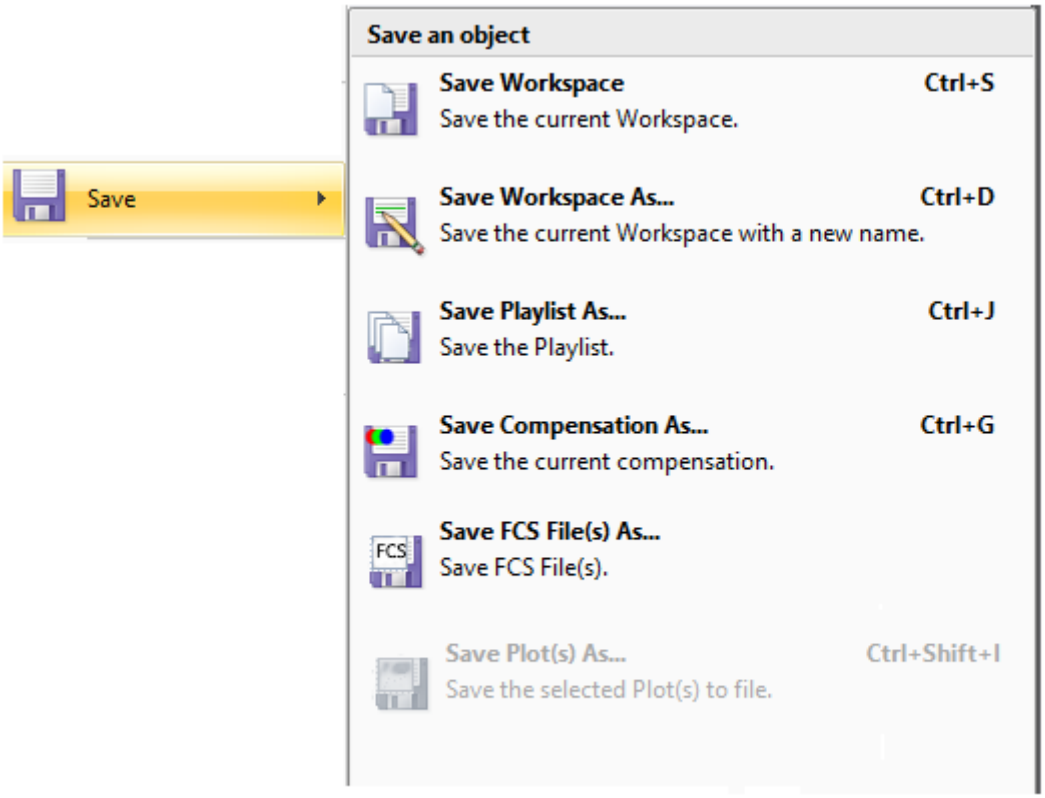


Click the **OK** button to close the dialog. The compensation file is not replaced.

Click the **Close** button (**X** top right) to close the dialog. The compensation file is not replaced.

4.3 Save Menu

The **Save** menu contains options for saving workspace, playlist, compensation and plot image files:



4.3.1 Save Workspace

A VenturiOne workspace includes plots, regions, gates, color precedence, selected statistics and displayed parameters. A workspace can be saved for later opening.

To save a current workspace with the current workspace file name, click the **Save Workspace** option or press the Ctrl+S keys.

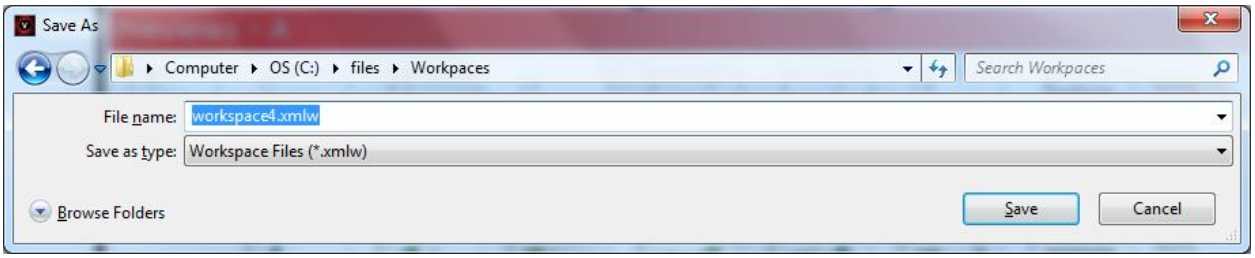
The file is always saved with an **xmlw** extension.

If a modified untitled workspace file is to be saved, a **Save As** dialog is displayed, allowing you to save the current workspace with a new name.

4.3.2 Save Workspace As…

To save the current workspace with a new file name, click the **Save Workspace As...** option (or press the Ctrl + D keys).

The **Save As** dialog is displayed to allow the assignment of a relevant file name as illustrated below:



The dialog defaults to the last used folder or **My Documents** if there is no last used folder information.

The **File name:** field contains **workspace** by default.

Workspace Files (*.xmlw) appears in the **Save as type:** drop-down menu.

The **Save as type:** drop-down menu can also be changed to '**All Files' (*.*)**.

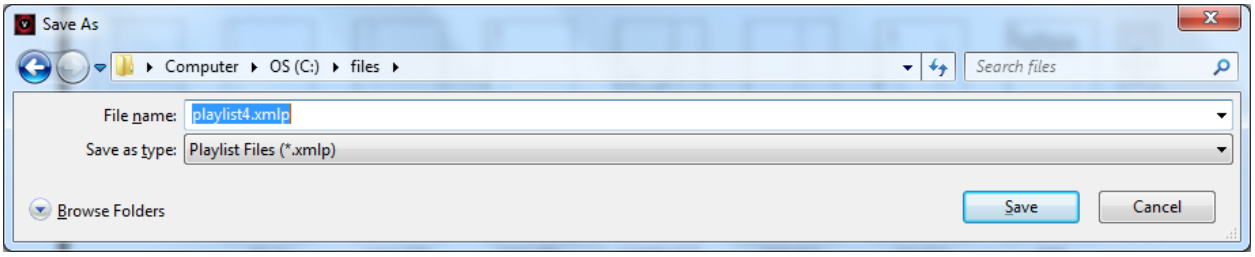
You can enter a suitable name for the workspace.

Click the **Save** button to save the current workspace with the chosen name. If the selected file name already exists, you will have the option to overwrite or change the file name.

Click the **Cancel** button or **Close** button (**X** top right) on the **Save As** dialog, to close the dialog without saving the workspace file.

4.3.3 Save Playlist As

To save the current **Playlist** click the **Save Playlist** As…option (or press the Ctrl + J keys) to display the **Save As** dialog, as illustrated below:



The dialog defaults to the last used folder or **My Documents** if there is no last used folder information.

The **File name:** field contains '**Playlist**' by default and '**Playlist File (*.xmlp)**' appears in the **Save as type:** dropdown menu.

The **Save as type:** dropdown menu can also be changed to '**All Files (*.*)**'.

You can enter a suitable name for the playlist file.

Click the **Save** button to save the current **Playlist** with the chosen name. If the selected file name already exists, you will have the option to overwrite or change the file name.

Click the **Cancel** button or **Close** button (**X** top right) displayed on the **Save As** dialog, to close the dialog without saving the playlist file.

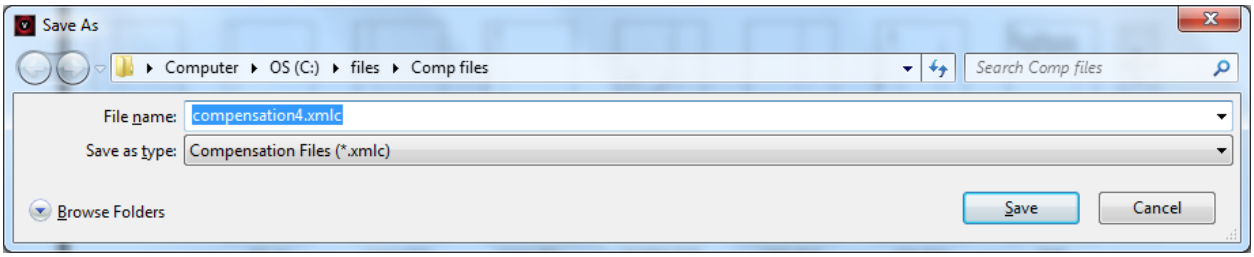
! If you want to open a playlist on a system other than the one it was created on, you must first export the playlist. For an exported playlist to open properly the folder structure of the export folder has to be preserved.

4.3.4 Save Compensation File

The fluorescence compensation settings that are applied to a workspace can be saved and applied to other FCS files which are able to be compensated files.

To save the current compensation file click the **Save Compensation As...** option (or press the Ctrl + G keys).

The **Save As** dialog is displayed to allow the assignment of a relevant file name as illustrated below:



The default folder is the last used folder, or **My Documents** if there is no last used folder information.

The file is always saved with an **xmlc** extension.

The **File name** edit box will default to compensation.

The **Save as type** will display **Compensation Files (*.xmlc)** by default but can be changed to **All Files (*.*).**

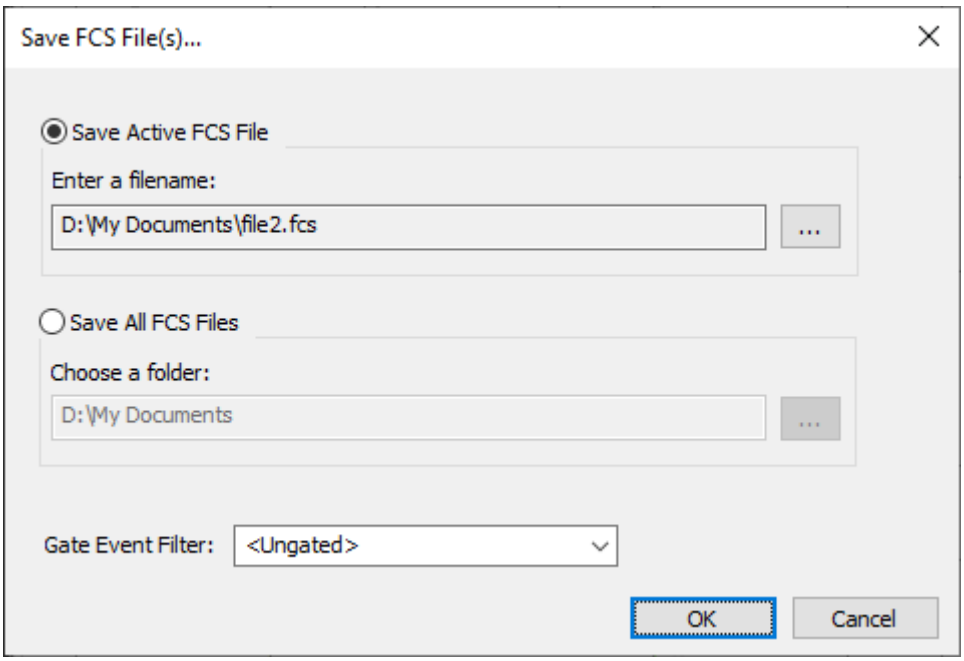
You can enter a suitable name for the compensation file.

Click the **Save** button to save the current compensation file with the chosen name. If the selected file name already exists, you will have the option to overwrite or change the file name.

Click the **Cancel** button or **Close** button (**X** top right), to close the **Save As** dialog without saving.

4.3.5 Save FCS File(s) As…

When one or more FCS files are present in the playlist, select the Save FCS file(s) option to open the Save FCS file(s) dialog.



Select the Save Active FCS file to save only the currently active FCS file.

Select the Save All FCS Files option to save all the FCS files in the playlist

By default, files will be saved to the My Documents folder with the current file name. To set a different location or name select the  button.

To save only those events within a particular gate, select the required Gate from the Gate Event Filter list. Gates from the currently active file will be displayed.

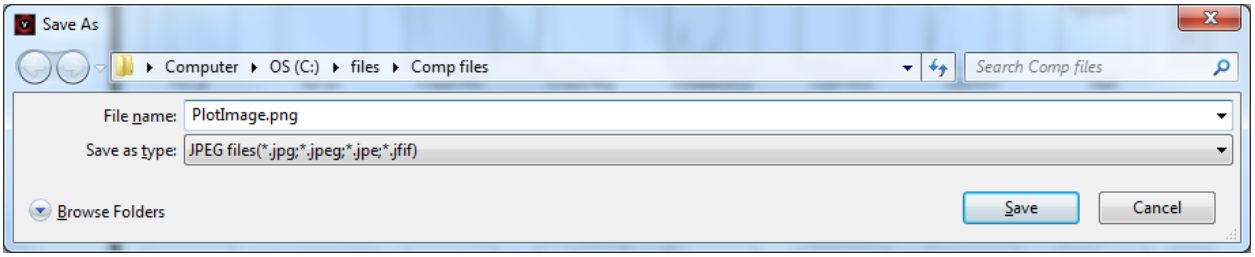


The default option is <Ungated> which will save all data within the file(s)

Only FCS 3.0 or FCS 3.1 compliant files can be saved.
FCS 2.0 files will be rejected.
Files containing an FCS 3.x and an FCS 2.0 segment will save only the FCS 3.x segment.

4.3.6 Save Plot(s) As…

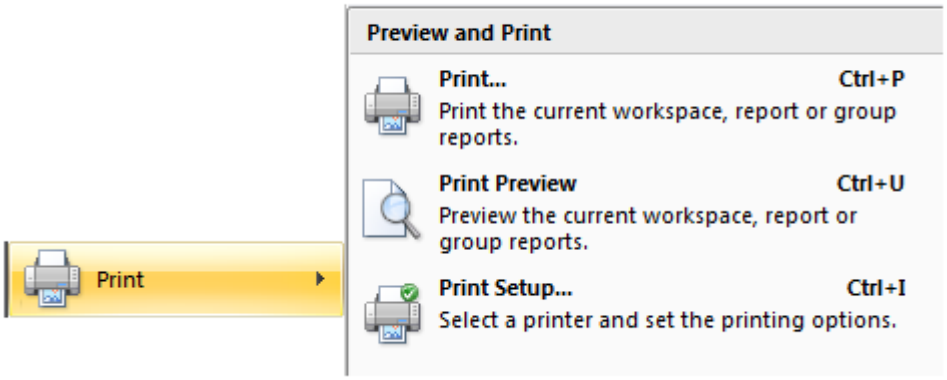
When one or more plots in the Plots area are highlighted the Save Plot(s) As option is available. Using this option, you can save the selected plot images as files. Selecting this option displays a **Save As…** dialog allowing you to enter a file name and select the format for the image. Available formats are BMP bitmap image files, JPEG, GIF, TIFF and PNG.



The size of the plot in the plots area will determine the size of the saved image, to increase the size of the saved image, increase the size of the plot using the **Plot Resize Slider**. See section 7.4.5 for more details.

4.4 Print Menu

The **Print** menu contains options for printing.



4.4.1 Print

Click the **Print…** option, (or press the **Ctrl**+**P** keys) to display the **Print** dialog described in detail in section 24.1.

4.4.2 Print Preview

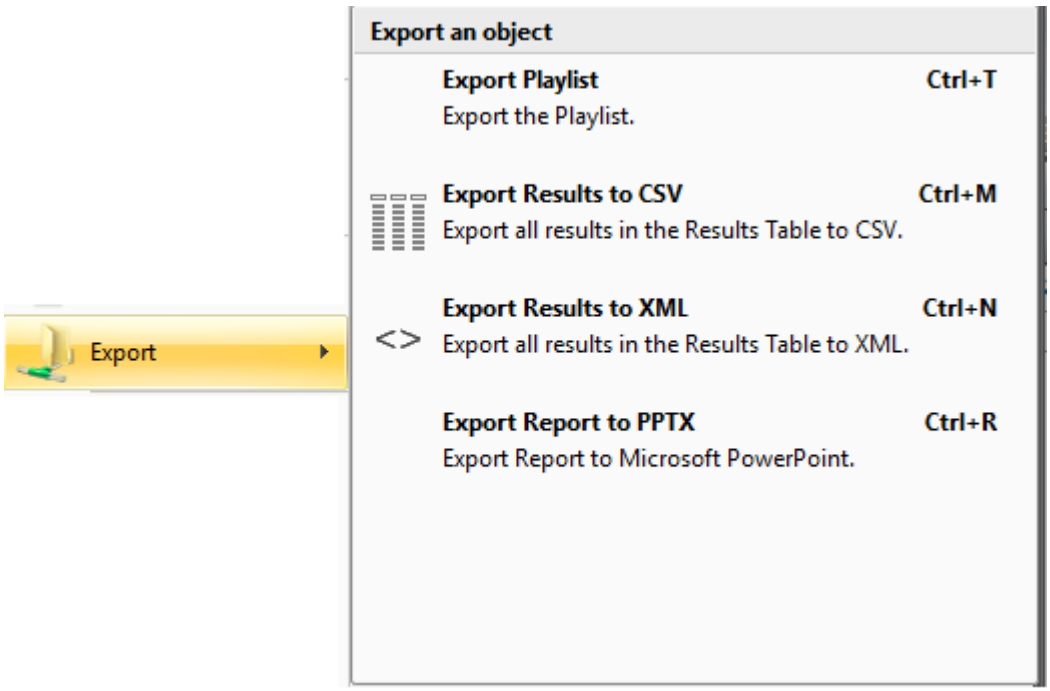
Click the **Print Preview** option (or use the **Ctrl + U** keys) to display the **Print Preview**. See section 24.1 for detailed description of the **Print Preview** screen.

4.4.3 Print Setup

Click the **Print Setup…** option (or use the **Ctrl + I** key) to display the **Print Setup** dialog. See section 24.3 for a detailed description.

4.5 Export Menu

The **Export** menu contains options for exporting results and **Playlists**.



4.5.1 Export Results to CSV

The **Export Results to CSV** menu item is only enabled when there are results present in the results table.

Select the **Export Results to CSV** menu item (or press **the Ctrl + M** keys) to save a CSV formatted file containing the all the results of the current results table. The results are exported to a CSV file.

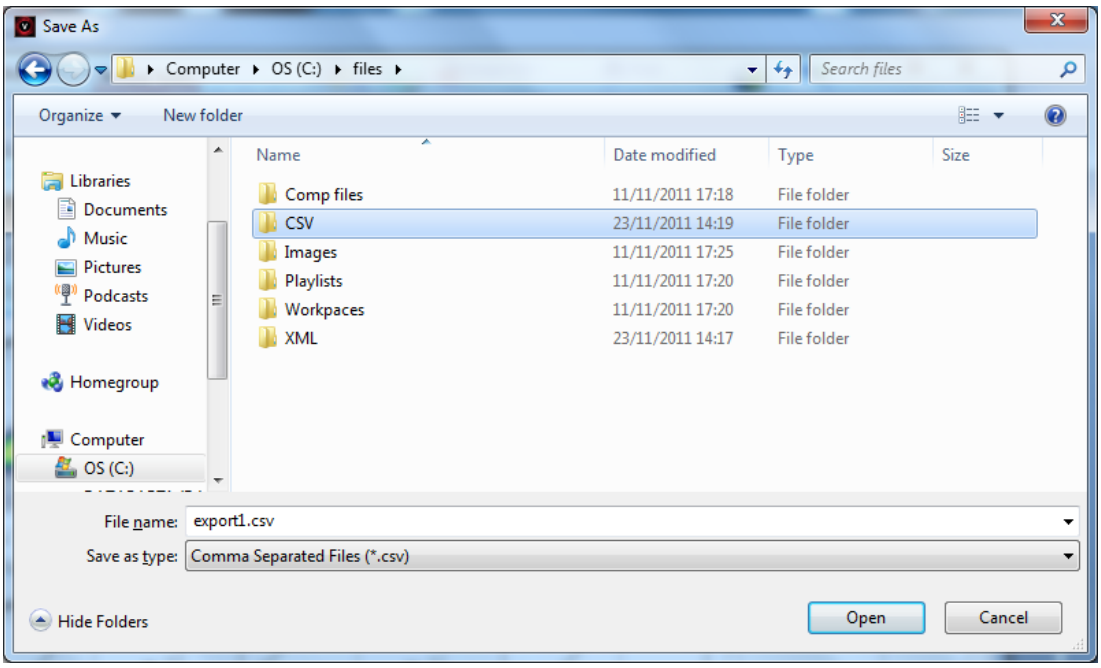
The format of the export is either single row per file or one row per result, depending on the selection in the **VenturiOne Options** dialog, see section 25.1.5.

The export can be simplified by deselecting standard fields using **the CSV Result Include Fields** selections in the **VenturiOne Options** dialog, see section 25.1.5.

This CSV formatted file can be opened in Microsoft Excel or similar programs.

The **Save As** dialog is displayed to allow the assignment of a relevant file name as illustrated below:

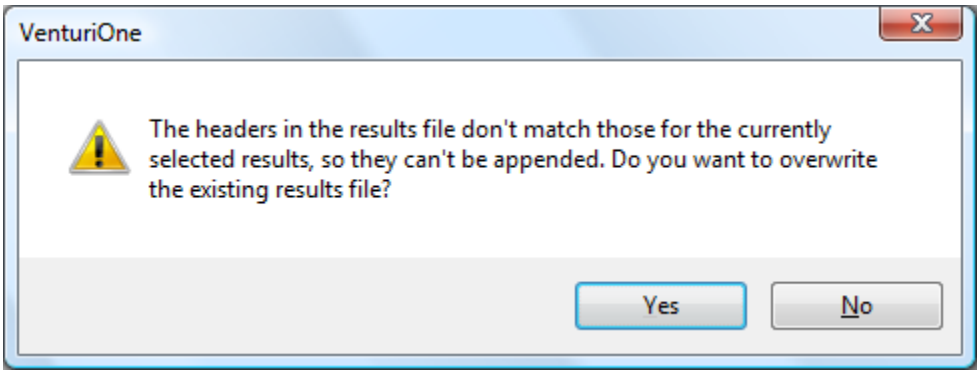
All results from the current results table will be exported, you can reduce the amount of information using the Results Table options described in section 15.2



If a new file name is entered the results are saved as a CSV file with the selected name.

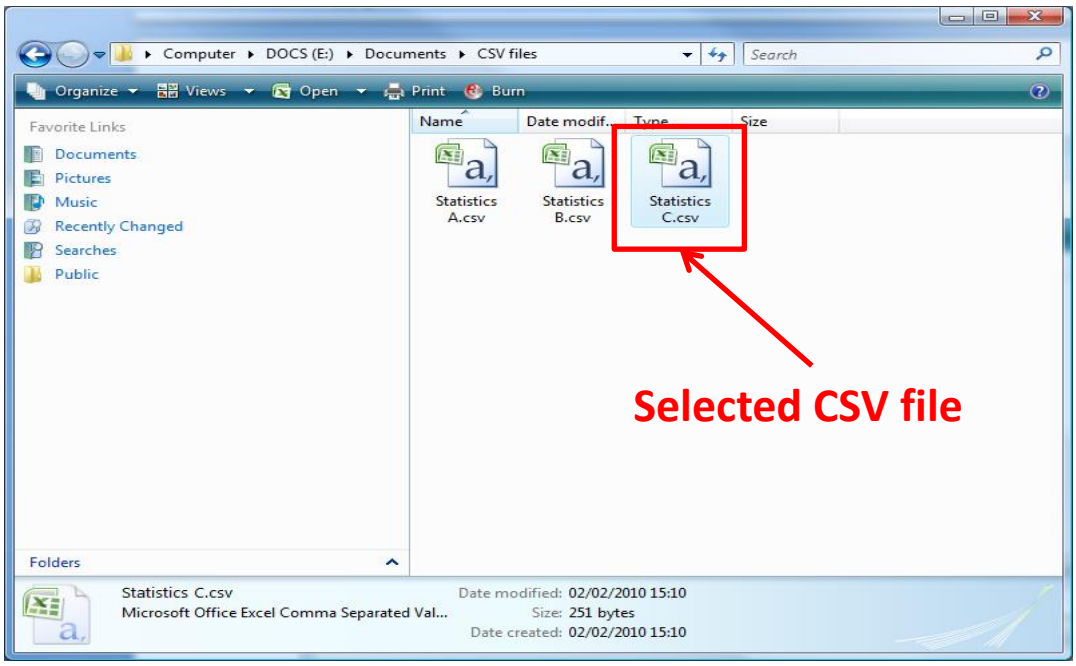
If an existing file name is entered and the format of the exported data matches the formatting of data in the file, the results are appended to those already in the file.

If an existing file name is entered and the headers in the two files do not match, the following message is displayed:



If you click the **No** button the results are not exported. If you click the **Yes** button results are exported and the existing file overwritten.

After the file has been saved Windows Explorer opens with the exported file highlighted:



Double click the highlighted file to display the results table in an Excel format.

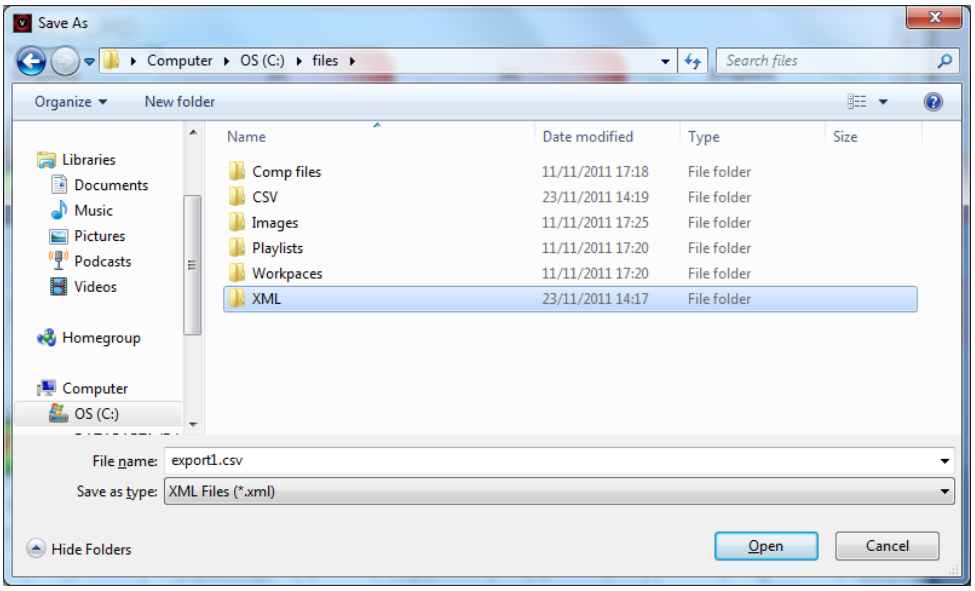
The exported CSV file will by default include the selected statistics, the FCS file name, workspace file name, username, compensation matrix, and timestamp. To remove these options from the export, deselect unwanted **CSV Result Include Fields** selections in the **VenturiOne Options** dialog, see section 25.1.5.

! When using Microsoft Excel 2003 the maximum number of columns is limited to 256, if the export format in VenturiOne is set to **Single row per file** it is possible to exceed this limit. In this case Excel 2003 will truncate the table at 256 columns. This issue does not occur with Excel 2007 or later. If you need to generate tables with more than 256 columns you should upgrade to Excel 2007 or later.

4.5.2 Export Results to XML

Select the **Export Results to XML** menu item (or press **the Ctrl + N** keys) to save an XML-formatted file. This exported file can then be opened in a suitable XML viewer (e.g. xmlspy, internet explorer).

The **Save As** dialog is displayed to allow the assignment of a relevant file name as illustrated below:



After saving, open the XML file in a suitable XML viewer (e.g. xmlspy, internet explorer).

The exported XML file will include the full FCS file name (path and name), full workspace file name (path and name), user name, time and date stamp, all the statistics from the current results table, primary FCS keywords and active compensation values.

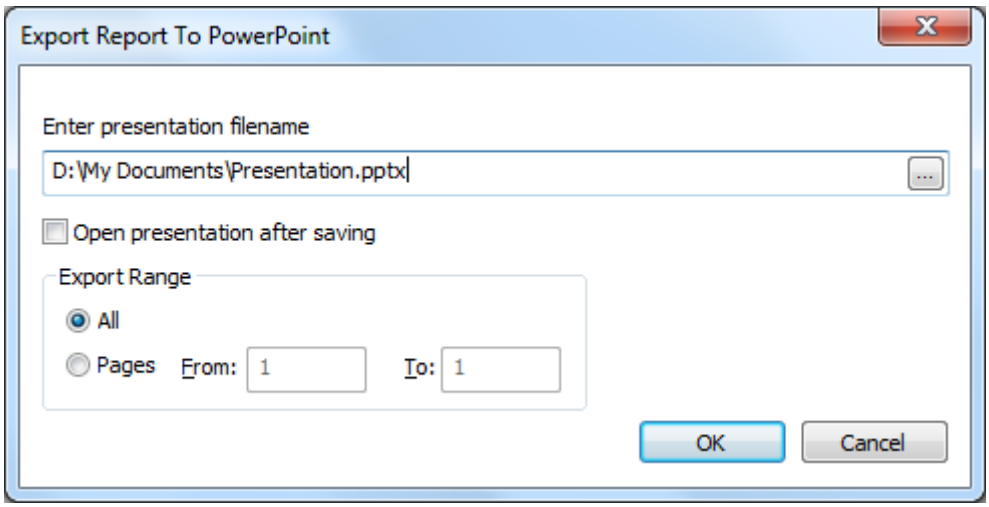
If an existing file name is chosen results will be appended.

4.5.3 Export Playlist

The **Export Playlist** menu item allows you to export a **Playlist** for sharing with other users and colleagues or for archiving. See section 5.6 for details.

4.5.4 Export Report to PPTX

The **Export Report to PPTX** menu item allows you to export a **Report** to a Microsoft Office PowerPoint (PPTX) file.



The dialog allows the selection of a file to save the presentation to, an option to view the presentation on completion and a method of selecting the number of pages to export.

! Note: This option is only enabled if Microsoft PowerPoint is installed.

4.5.4.1 Presentation Filename

The presentation filename edit box defaults to the same name and location as the current playlist, but with a .pptx extension.

If the playlist is untitled, then the presentation file will be named Presentation.pptx and saved in the My Documents folder.

The browse button launches a File Save As dialog to allow the modification of the filename or location of the presentation file.

4.5.4.2 Open Presentation File After Saving

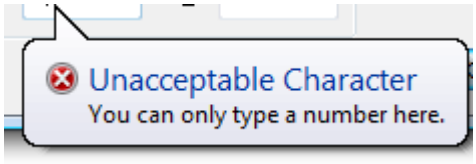
If this option is checked the PowerPoint will be displayed immediately after the presentation is saved, allowing the user to view and then close PowerPoint at their convenience.

The default option is unchecked.

4.5.4.3 Export Range

The Export Range radio buttons allow the selection of the pages to be exported.

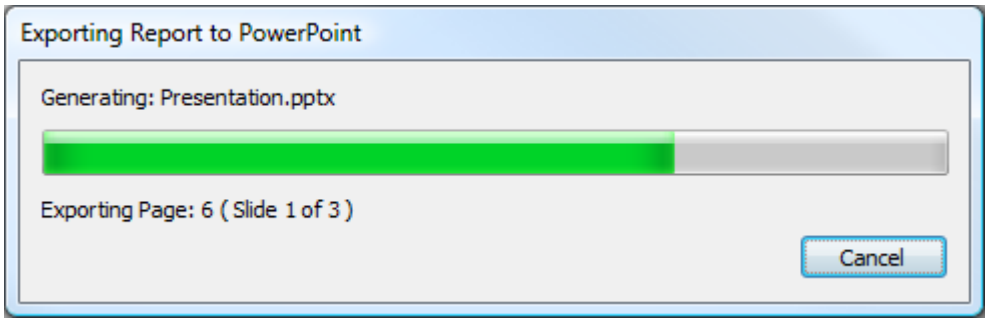
The edit boxes will only allow numeric characters to be entered. If an invalid entry is made a warning is displayed.



The start and end page edit boxes will only be enabled if the Pages radio button is selected and their contents at launch of the dialog will be the ranges of pages available.

Clicking OK will proceed to launch the Export to PowerPoint progress dialog.

4.5.4.4 Export Report to PowerPoint dialog



The dialog shows the progress of the export to PowerPoint.

The progress bar itself is graduated based on the total number of objects on the selected range of pages plus one for the saving action and advances by one position as each object is added to the presentation.

Above the progress bar is an indication of the current activity i.e. generating the presentation, saving the presentation or aborting.

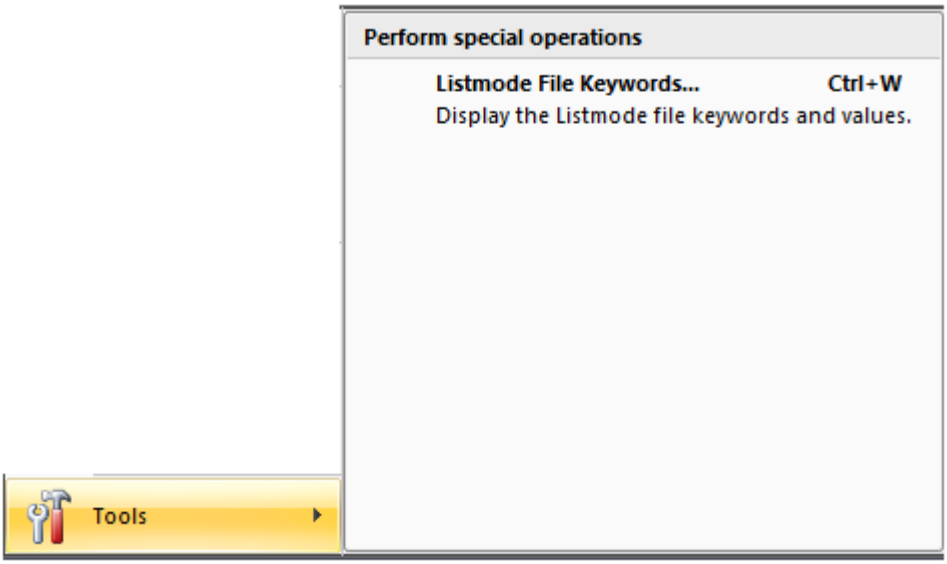
Below the progress bar, an indication of the current page being exported is given along with the slide number being generated. This updates as each page is processed.

The Cancel button can be pressed at any point before the export completes and terminates the export process.

The dialog will automatically close on completion of the export. If the option for opening the presentation after saving had been selected, it will be displayed once this dialog has closed.

4.6 Tools Menu

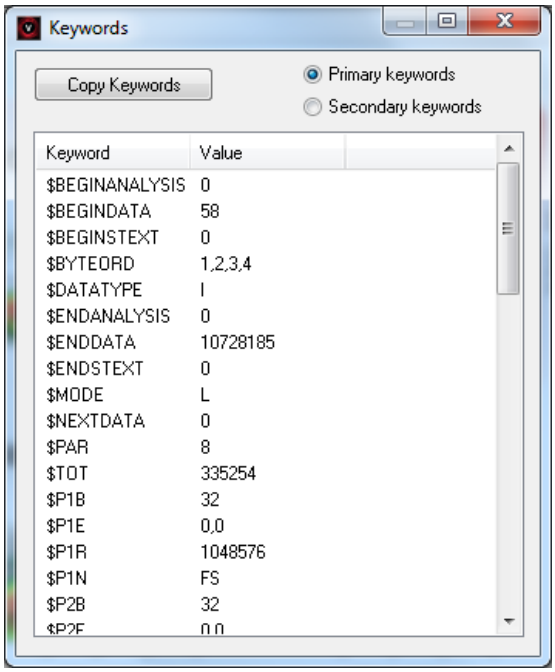
The **Tools** menu contains options for viewing FCS header information.



4.6.1 Listmode File Keywords

This menu item is only enabled if an FCS file is open in the workspace.

Click the **Listmode File Keywords...** button, to display the **Keywords** dialog, as illustrated below:



The dialog displays the FCS header information within the currently open FCS file.

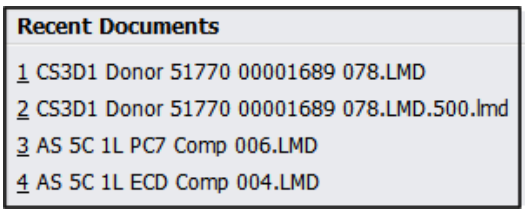
For Beckman Coulter FC500 series FCS file additional options are available and you can select whether **Primary keywords** or **Secondary keywords** are displayed.

The **Primary keywords** are those from the FCS 3.0 segment of the file. The **Secondary keywords** are those from the FCS 2.0 segment.

Click the **Copy Keywords** button to copy the keywords and values displayed in the dialog. This list can then be pasted into other applications (e.g. Excel).

4.7 Recent Documents

To open recently used files, click on the desired document listed in the **Recent Documents** window illustrated below:



A maximum of 10 files can be presented in this list. The list comprises of recently used FCS, workspace compensation and playlist files.

Selecting a file from the list will perform exactly the same function as opening the respective file type from the **File** menu items.

4.8 VenturiOne Options

Click the **VenturiOne Options** button, positioned in the **File Menu**, to display the **VenturiOne Options** dialog, described in detail in section 25.1.

4.9 Exit VenturiOne

Click the **Exit VenturiOne** button from the **File** Menu, or double click **VenturiOne** button  to close the VenturiOne software.

If changes have been made you will be prompted to save the **Playlist** before closing the software.

Section 5

Using the Docking Panels

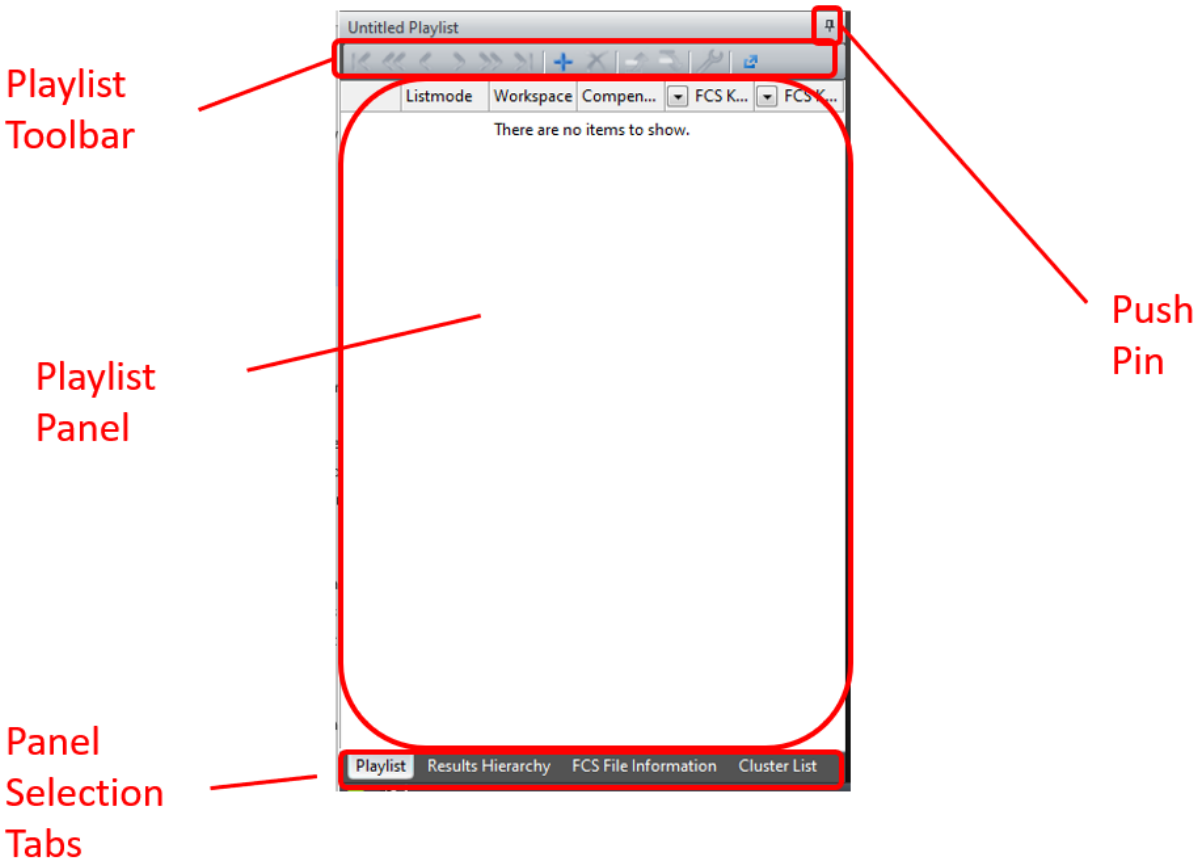
Playlist Panel
Create a Playlist
Playlist Toolbar
Playlist Errors
Export Playlist
FCS Information Panel
Results Hierarchy Panel
Cluster List Panel
Cluster Tree Panel

5 Using the Docking Panels

VenturiOne allows you to organize your files using the **Playlist.**, FCS header information of the current file can be viewed in the **FCS File Information** panel and results from the current workspace can be viewed in the **Results Hierarchy** panel. All of these views are docking panels.

5.1 Docking Panel Views

By default, the **Playlist Panel** is open and pinned to the left-hand side of the **Application Workspace**, docked with the **FCS Information Panel**, **Results Hierarchy Panel** and Cluster List Panel as illustrated in the figure below:

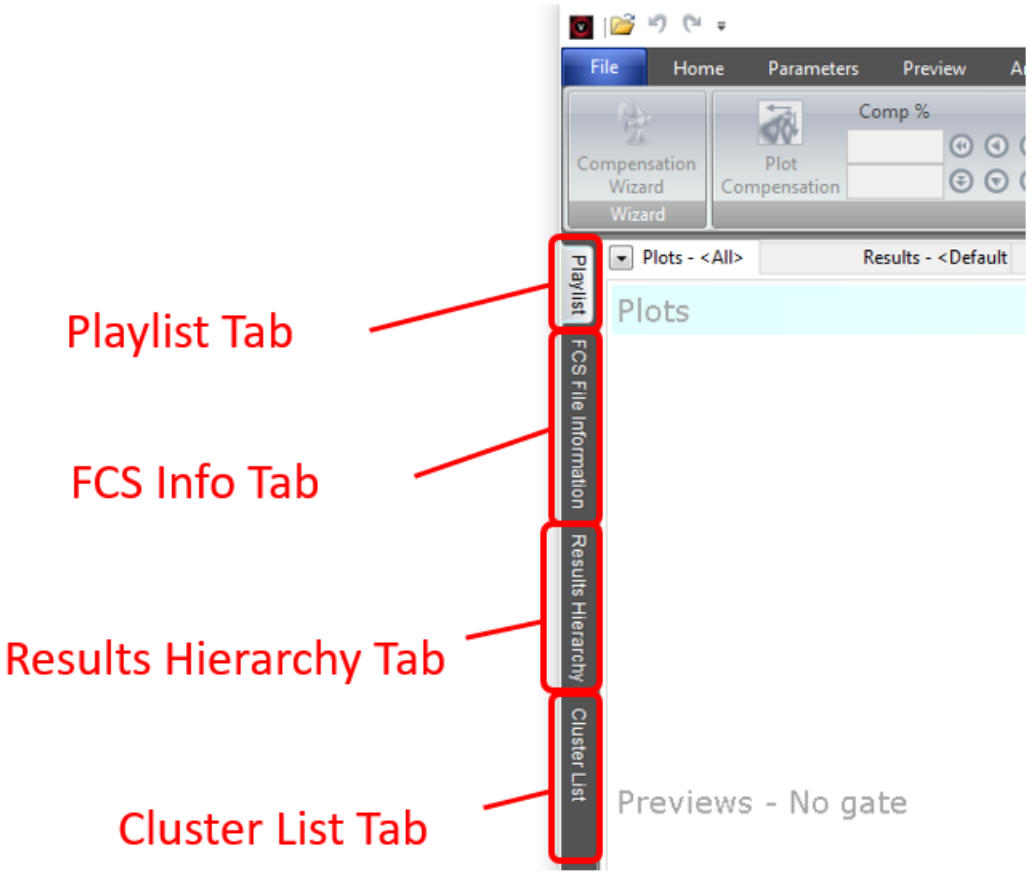


You can switch between the **Playlist** panel, **FCS Information** panel, the **Results Hierarchy** panel and the **Cluster List** Panel by selecting the required tab.

The Cluster Tree panel will be docked by default to the right-hand side of the application.

The tabs can be re-ordered by dragging a tab to a new position.

To auto-hide the entire Panel, click the **Push Pin.** The docked panels are hidden, each tab appears in the top left-hand corner of the workspace, as illustrated below:



Click a tab to re-display the **panel**. Click the **Push Pin** to fix the **panel** in the open position so it is always visible. This fixing of the Panel resizes the **Workspace** accordingly.

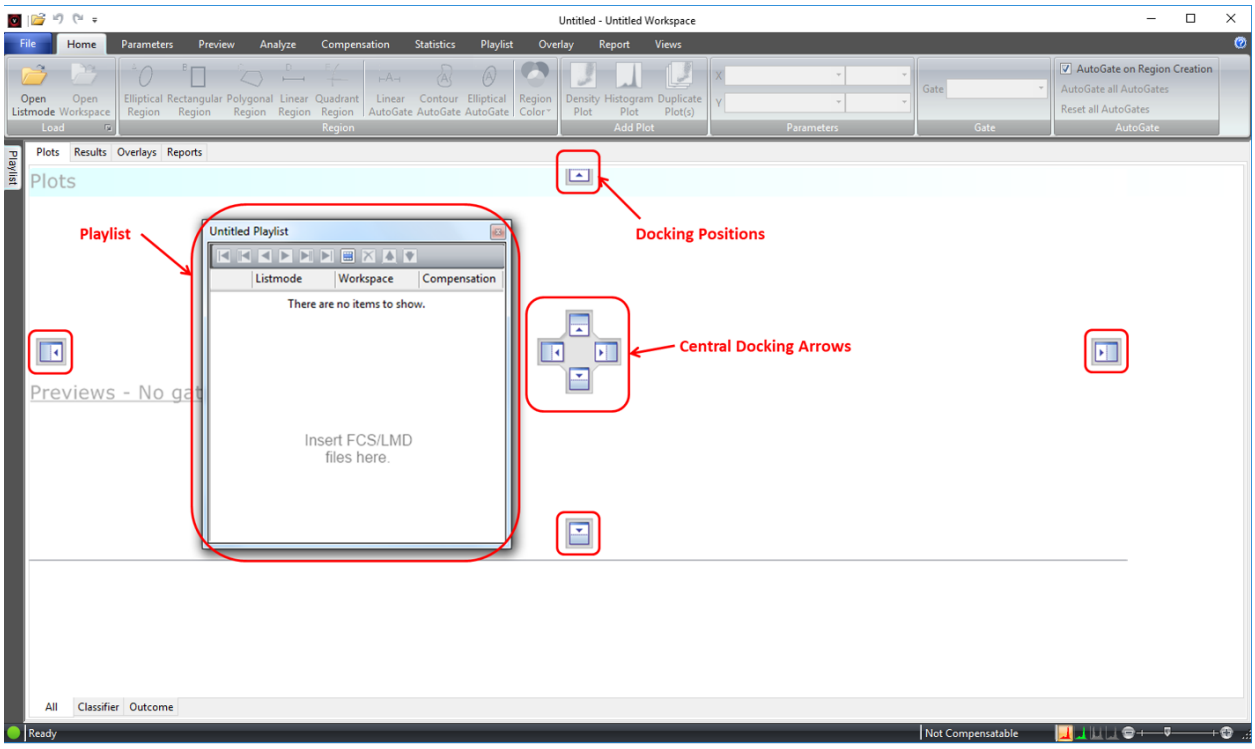
The size of the **panel** can be adjusted by dragging the splitter bar to the desired position.

5.1.1 Relocate a Panel

The position of a panel can be modified. Double clicking the title bar alternates between docked and un-docked modes.

A pinned (not hidden) panel can be dragged to a new position anywhere on the desktop.by selecting the tab and dragging to a new location

Click and drag the un-docked **Playlist Panel** over the **Application Workspace** to display the blue relocation arrows as illustrated below:



Each of the blue arrows can be used to dock the **panel being dragged** to bottom, top, right or left of the **Application Workspace**.

5.2 Playlist Panel

VenturiOne allows you to organize your files using the Playlist. A Playlist is a collection of playlist items. Playlist items are made up of FCS files, workspace files and compensation files. The Playlist can be saved as a playlist file. The Playlist is displayed within the Playlist Panel.

The **Playlist Panel** allows you to create a list of files that you wish to analyze and contains controls for navigating through the files.

5.2.1 Playlist Panel Title

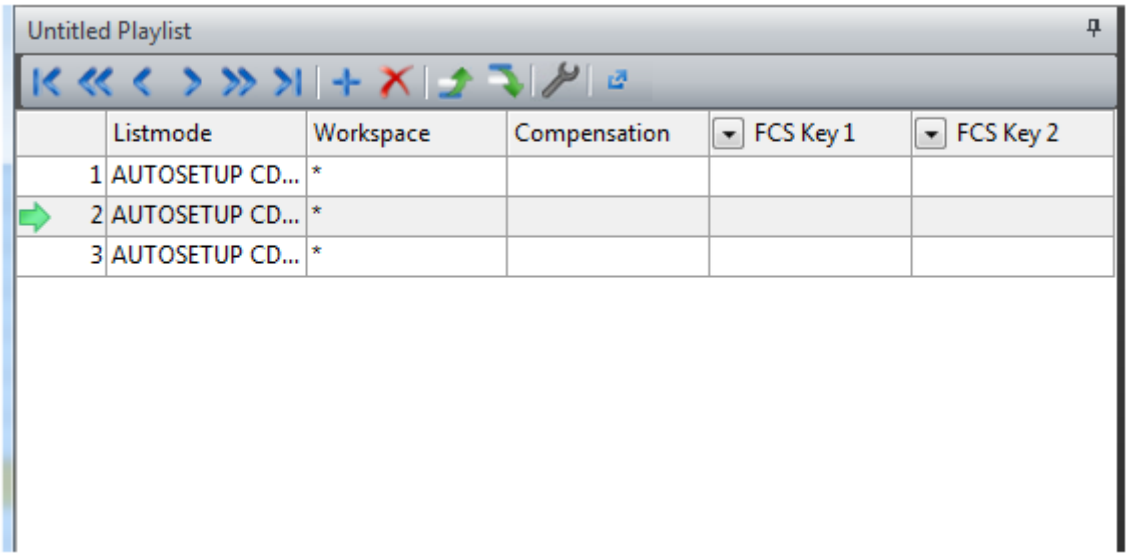
When a **Playlist** that has not been saved is displayed in the **Playlist Panel** the title of the **Playlist Panel** is 'Untitled Playlist'.

When a **Playlist** that has been saved is displayed in the **Playlist Panel** the name of the playlist file is shown in the title of the **Playlist Panel**.

5.2.2 Playlist Panel Columns

There are 7 columns in the **Playlist Panel**:

- **A column containing a green arrow when the indicated item is open in the workspace**
- **Item Number**
- **Listmode**
- **Workspace**
- **Compensation**
- **FCS Key1**
- **FCS Key 2**



The column headers of the first two columns are not width adjustable.

All other column headers are width adjustable. To adjust the width, drag the column dividers to the left or right. If you double click the column dividers adjustable columns, they will resize to display their contents optimally.

The FCS Key columns can be used to display an FCS keyword from the header of the file.

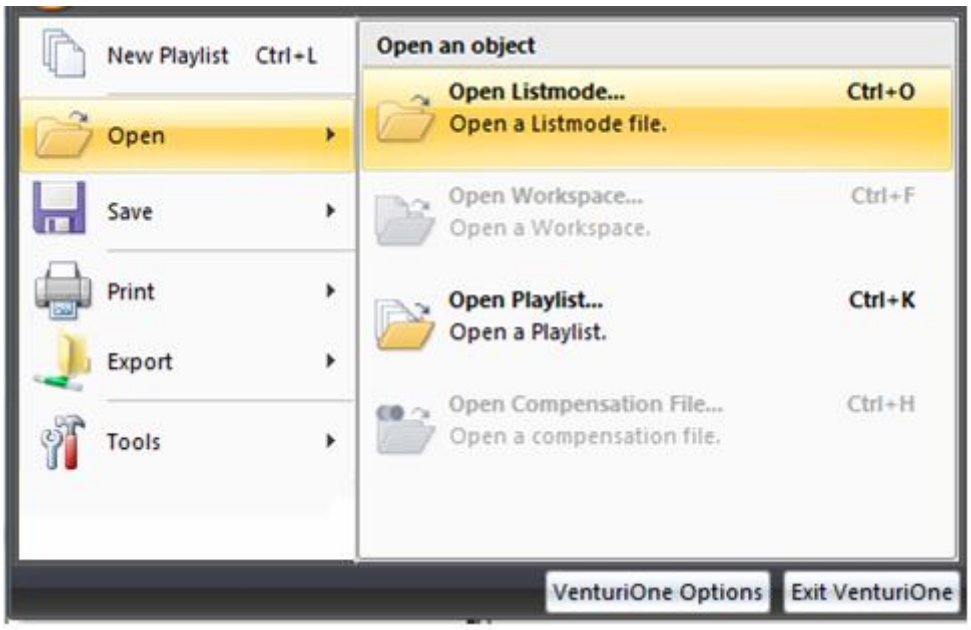
5.3 Create a Playlist

To create a **Playlist,** you need to add FCS files and associated with them workspace and compensation files.

5.3.1 Add FCS Files to the Playlist

To add an FCS file to the **Playlist,** select one of the following three options:

- Select the **Open Listmode…** menu item from the **File Menu**:

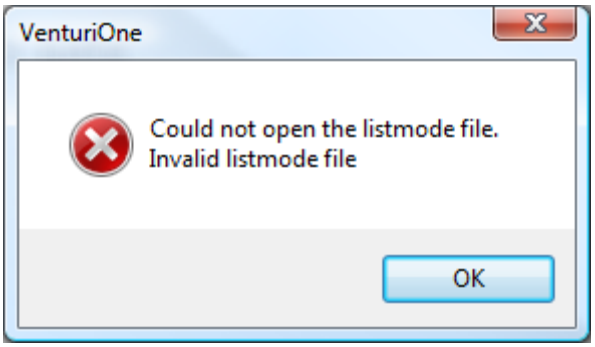


- Click the **Open Listmode**  button on the **Quick Access Toolbar**.
- Press the **Ctrl+O** keys.

Any of the above options will display a Windows **Open** dialog allowing you to select up to 400 files to be added to the **Playlist**.

You can also use Windows Explorer to drag and drop files directly into the **Playlist Panel**.

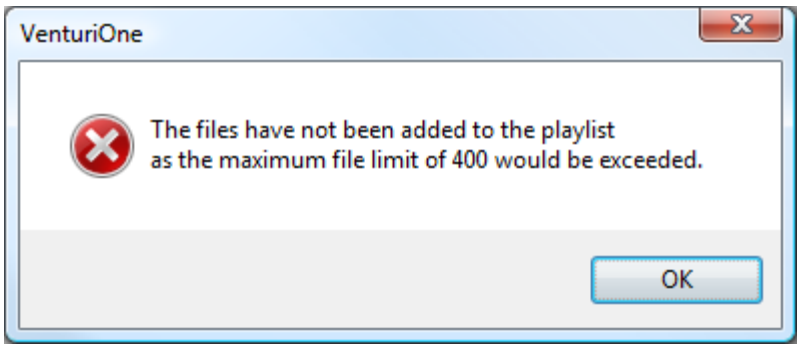
Windows will allow any type of file to be dragged and dropped into the **Playlist Panel**; however, VenturiOne will reject any files that are not valid FCS files and the following warning will be displayed:



Click **OK** to close this message. You should deselect the incorrect file types.

Additional error and warning message associated with adding an FCS file to the **Playlist** are described in section 5.5.

If the addition of FCS files to the **Playlist** would result in the maximum number of 400 files being exceeded, the following message is displayed:

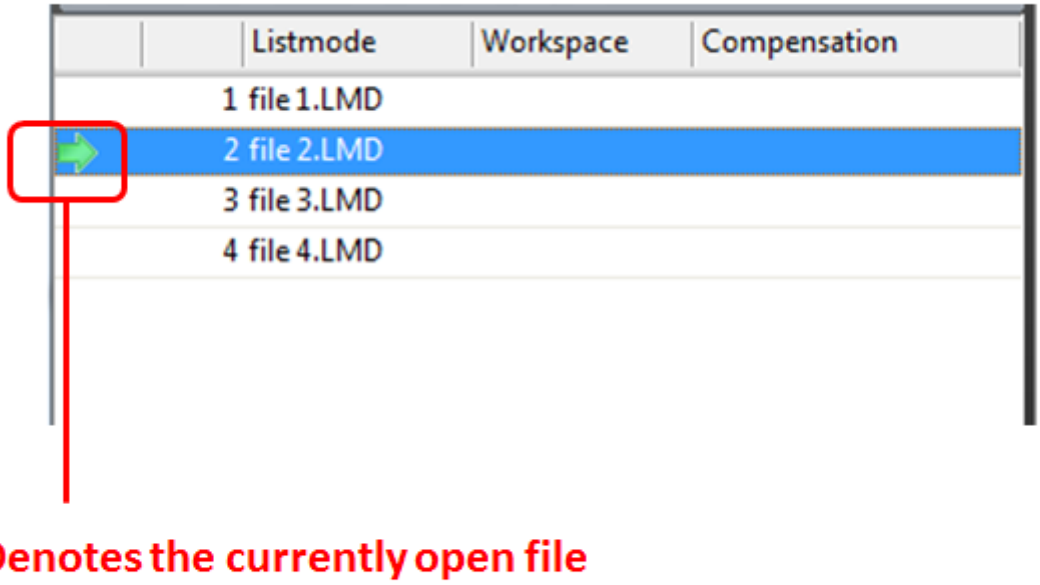


Click **OK** to close this message; you will need to reduce the number of files you have selected to make sure that the 400-file limit is not exceeded.

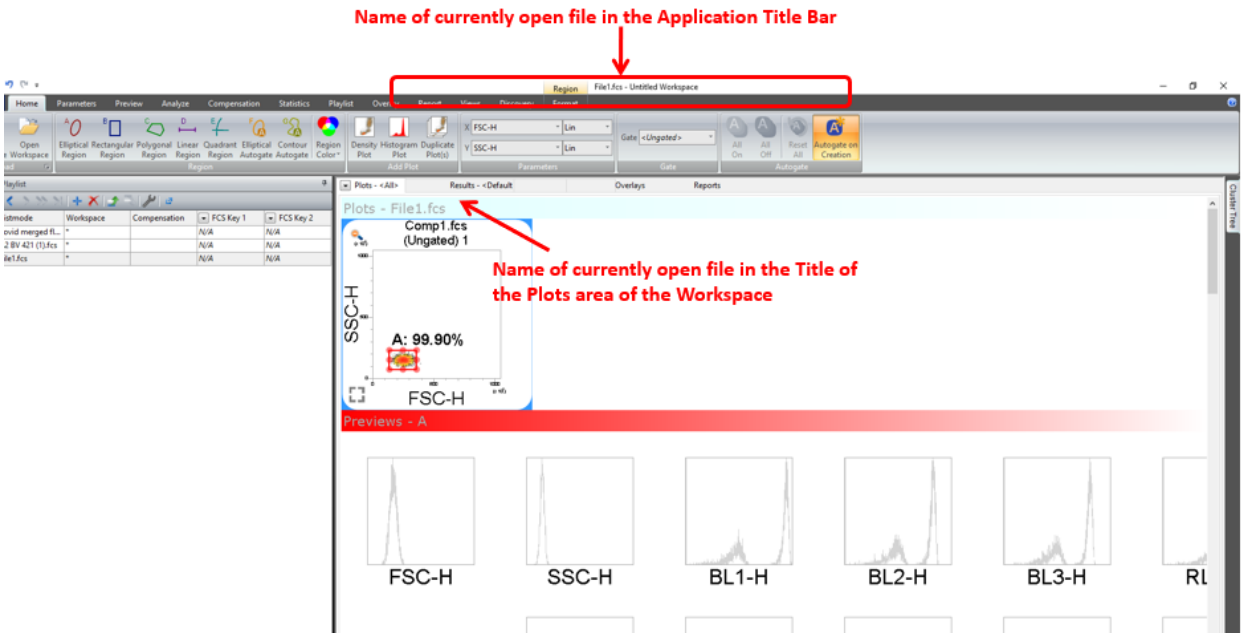
! Check the Playlist after adding files, particularly when using Windows XP, to ensure all files are in the expected positions and re-order if necessary.

By default, new files are appended to the playlist in file name order. If you wish to append files in date order you can switch between options in the VenturiOne Options dialog Playlist page as described in section 25.1.2

Depending on how you selected the FCS files, a file may already be open in the **Workspace**, if not you can double click on an item in the **Playlist** to open a file. The currently open file is shown in the **Playlist Panel** by a green arrow, as demonstrated below:



The filename of the currently open file is displayed in the VenturiOne **Application Title Bar** and in the **Title** of the **Plots** area of the **Workspace**, as illustrated in the picture below:



If you need to verify further details about the loaded FCS file you can use the **Listmode File Keywords** dialog to view the keywords present in the file header, see section 4.6.1.

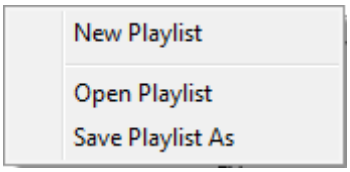
5.3.2 Add Workspace and Compensation Files to the Playlist

You can associate workspace and / or compensation files with the FCS files in the **Playlist**. This is done using the options on the **Playlist** tab of the **Ribbon** (see section 6) or the playlist item **Context Menu** described in the section below.

! You should make sure that you have selected the correct workspace and compensation file for each FCS file.

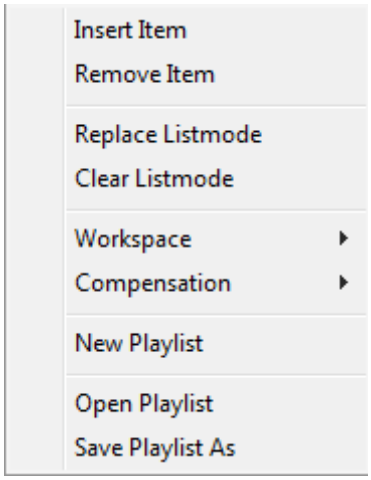
5.3.3 Playlist Context Menus

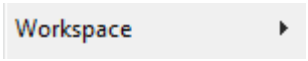
When you right click on the blank area of the **Playlist Panel** the following context menu is displayed:

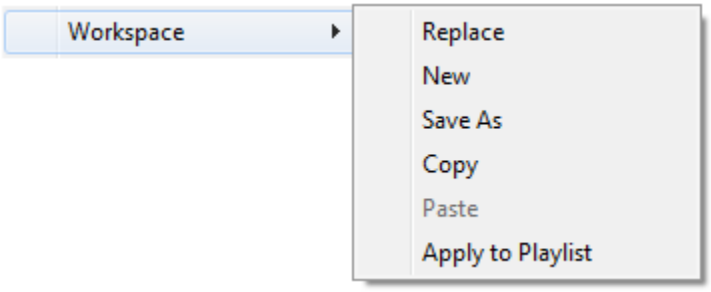


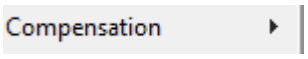
These items affect the entire **Playlist** and allow you to create a **New Playlist, Open Playlist** and **Save Playlist As**. These options are the same as the respective options in the **File Menu**.

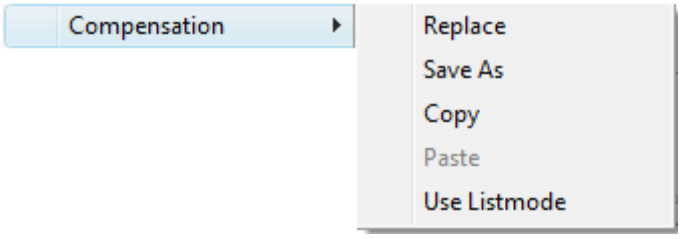
Right clicking on the file name of a playlist item in the **Playlist Panel** displays the following context menu:



Selecting  displays the following sub-menu:

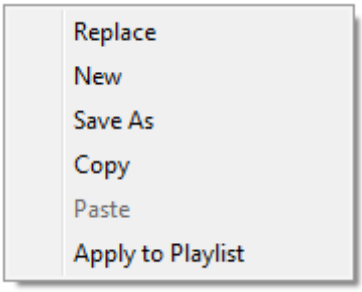


Select the  menu item to display the following sub-menu:



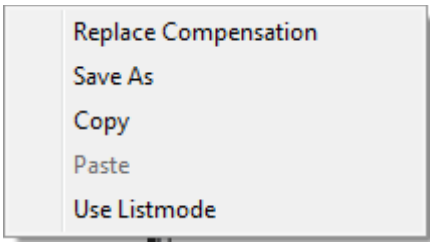
The additional items here will affect only the selected items in the **Playlist**, allowing the association of workspaces and compensation files with an FCS file. Their functionality is the same as that of the corresponding buttons on the **Playlist** tab of the **Ribbon** and is described in section 6.

Right clicking on the Workspace cell of the playlist displays a context menu offering only Workspace options.



An option to apply the workspace of the currently selected item to all items in the worklist is also displayed here.

Right clicking on the Compensation cell of the playlist displays a context menu offering only Compensation options.



5.3.4 Playlist Colors

Color is used in the **Playlist** to indicate error and warning conditions. Playlist items can be represented in either black text, orange text or red text.

Playlist items which have no errors are displayed in black.

Playlist items that have **orange** text have FCS files with different scaling information to their associated workspace file.

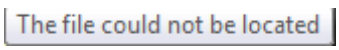
Playlist items colored **red** are invalid and denote files which are not compatible with the current workspace or compensation coefficients in the FCS file or files that cannot be accessed.

5.3.5 Playlist Tooltips

Moving the mouse cursor over the **Listmode** column of a playlist item will display a tooltip containing the FCS file path as illustrated in the example below:



If the FCS field is blank or the FCS file is missing the software will display the tooltip:



Moving the mouse cursor over the **Workspace** column of a playlist item will display a tooltip containing the workspace file path as illustrated in the example below:



Moving the mouse cursor over the **Compensation** column of a playlist item will display a tooltip containing the compensation file path as illustrated in the example below:



The tooltips also display information regarding errors associated with a playlist item.

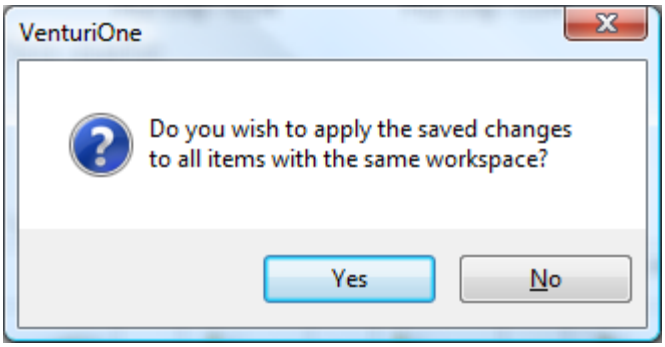
If a playlist item has multiple errors/warnings associated with it (i.e. a parameter mismatch and missing FCS header information) the tooltip only displays one error at a time.

The error tooltips are described in section 5.5.

5.3.6 Modified File Indicators

Asterisks are used in the **Playlist** to indicate when modifications have been made to Workspaces or Compensation settings.

If a modified workspace file occurs more than once in the **Playlist** when it is saved, the message below is displayed:



Click the **Yes** button to save the modification to all instances of that workspace file in the **Playlist**.

Click the **No** button to save the modification to the current workspace file only.

5.3.7 Select Playlist Items

In order to associate workspace or compensation files with an FCS file, or if you wish to delete or reorder playlist items, you must first select the items you wish to modify.

Click on a playlist item to select it.

Holding down the Ctrl key or Shift key allows multiple items to be selected.

Ctrl+A selects all the items in the **Playlist**.

Ctrl+Shift+End selects all items from the currently selected one to the end of the list.

Ctrl+Shift+Home selects all items from the currently selected one to the beginning of the list.

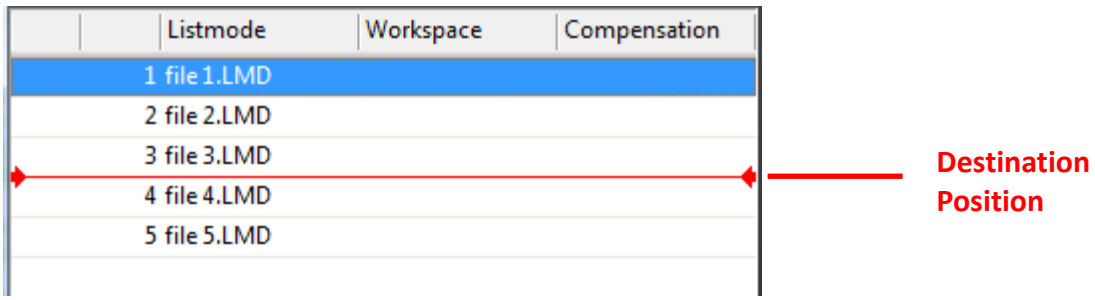
Ctrl+Shift+A inverts the selection.

Selected playlist items are highlighted in blue.

5.3.8 Re-ordering Playlist Items

Playlist items can be re-ordered within the **Playlist Panel** by dragging them to a new position.

While a playlist item is being dragged a red line appears denoting where the item will be relocated when dropped:



5.3.9 Save Playlist

After you have created your desired **Playlist** you can save it as a playlist file by using the **Save Playlist As** option on the **File Menu** (see section 4.3.3) or the **Playlist Panel** Context menu (see section 5.3.3).

5.3.10 Open Playlist

You can open existing playlist files by selecting the **Open Playlist** option in the **File Menu** (see section 4.2.3) or in the **Playlist Panel** Context menu (see section 5.3.3).

5.3.11 Using Groups in the Playlist

When analyzing similar samples, you can use groups in the **Playlist** to simplify the reporting of the samples.

Using groups, you only need to create a report for the current group. This **Group Report** can then be applied to all samples in the **Playlist**.

If you do not use groups, you can only create a **Playlist Report** which will require you to add all the required items from each sample in the **Playlist** that you wish to report.

Refer to section 20.1 for details of **Group** and **Playlist** reports.

To create groups, use the controls in the **Groups** section of the **Playlist** tab. See section 6.1.

5.4 Playlist Toolbar

The **Playlist Panel** has its own toolbar, as illustrated below:



These options allow you to navigate through a **Playlist**, re-order or delete items in the **Playlist**.

5.4.1 Skip to the First File 

Click the **Skip to the First File** button to skip to the first file in the **Playlist** and open the file in the associated **Workspace**.

The button is enabled when the **Playlist** contains a minimum of two playlist items and the open playlist item is not at the top of the **Playlist**.

5.4.2 Skip to the Previous Group 

The **Skip to the Previous Group** button is only enabled when the **Use Groups** checkbox is checked (see section 6.1.1) and the **Playlist** contains at least 2 groups.

Click this button to open the first item of the previous group in the **Playlist**.

5.4.3 Skip to the Previous File 

Click the **Skip to the Previous File** button to skip to the previous file in the **Playlist** and open the file in the associated **Workspace**.

The button is enabled when the **Playlist** contains a minimum of 2 playlist items and the open playlist item is not at the top of the **Playlist**.

5.4.4 Skip to the Next File 

Click the **Skip to the Next File** button to skip to the next file in the **Playlist** and open the file in the associated **Workspace**.

The button is enabled when the **Playlist** contains a minimum of 2 playlist items and the currently open playlist item is not at the bottom of the **Playlist**.

5.4.5 Skip to the Next Group 

The **Skip to the Next Group** button is only enabled when the **Use Groups** checkbox is checked, and the **Playlist** contains at least 2 groups.

Click this button to open the first item of the next group in the **Playlist**.

5.4.6 Skip to the Last File 

Click the **Skip to the Last File** button to skip to the last file in the **Playlist** and open the file in the associated **Workspace**.

The button is enabled when the **Playlist** contains a minimum of 2 playlist items and the currently open Playlist item is not at the bottom of the **Playlist**.

5.4.7 Insert Item 

Clicking on the **Insert Item** button will insert a new blank playlist item above the currently selected item. When you insert an item the newly inserted line will become selected.

5.4.8 Remove Item 

The **Remove Item** button is enabled when 1 or more playlist items are selected in the **Playlist**.

Clicking on the **Remove Item** button will remove any selected playlist items from the **Playlist**.

Removing an item removes the item's results from the results table and invalidates any report items for the removed playlist item. If the item is currently open the workspace will be cleared.

5.4.9 Move Up 

The **Move Up** button is disabled when the **Playlist** is empty or when all of the selected playlist items are at the top of the **Playlist**.

Clicking the **Move Up** button moves any currently selected items one position up in the **Playlist**.

If multiple playlist items are selected, they will be grouped together and then moved.

5.4.10 Move Down 

The **Move Down** button is disabled when the **Playlist** is empty or if all of the selected items are at the bottom of the list.

Clicking the **Move Down** button moves any currently selected items one position down in the **Playlist**.

If multiple playlist items are selected, they will be grouped together and then moved.

5.4.11 Repair Path 

The **Repair Path** option can be used when FCS Listmode files have been moved from the location stored in the Playlist.

Clicking the **Repair Path** button to displays a Windows **Folder Select dialog.** This allows you to select the required file path to use for all files or individually selected files.

5.4.1 Float / Dock 

Selecting the float Icon floats the Playlist Panel and allows it to be placed anywhere on your desktop, the Float Icon then changes to a Dock Icon, Selecting Dock (or double clicking the title bar) will re-dock the panel in its original position.

5.5 Playlist Errors

When files are added to the **Playlist** if an error occurs it is indicated using color as described in section 5.3.4.

A tooltip describing the error will be displayed when the mouse is over the item.

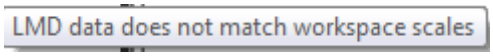
When you double click to open an item for which an error state exists an error message will be displayed.

The same error messages are displayed if error occurs when opening FCS files via the **File Open** dialog.

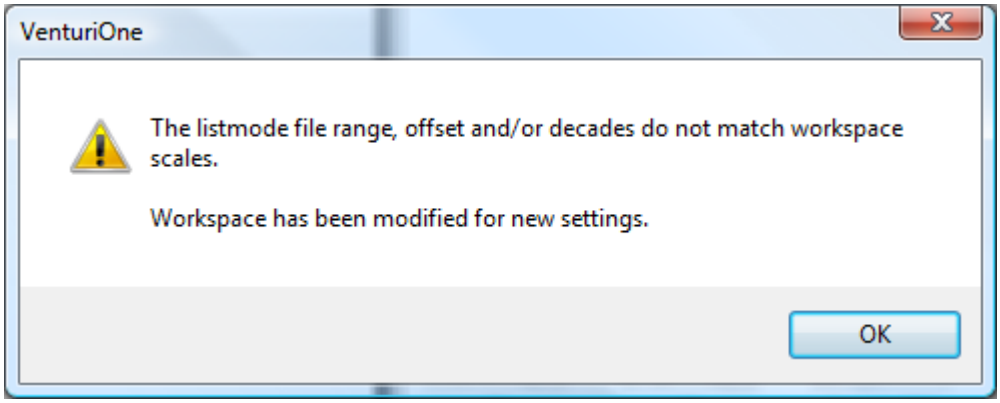
The possible errors, tooltips and messages are as follows:

5.5.1 Workspace Scales Error

If the FCS file data does not match workspace scales the following tooltip is displayed:



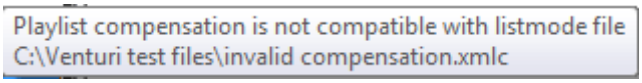
The following error message is displayed if you try to open such a file:



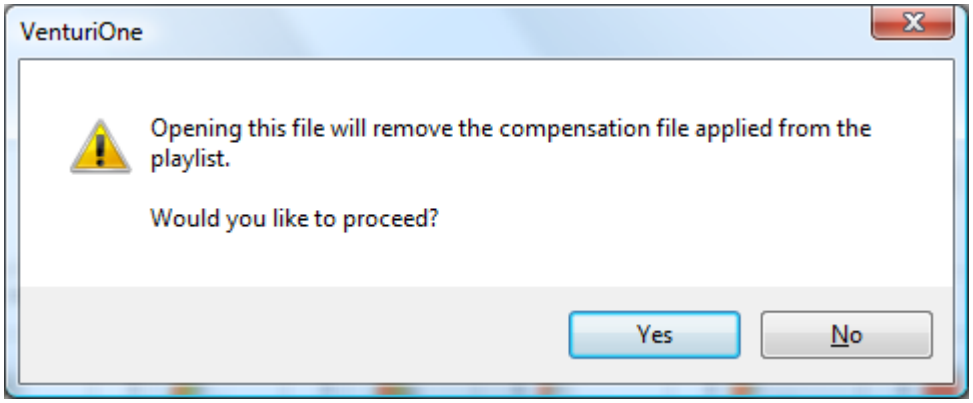
If you receive this error message, pressing **OK** will update the current workspace to match the settings in the current FCS file.

5.5.2 Incompatible Compensation File Error

When compensation file set in the **Playlist** is not compatible with the FCS file the following tooltip is displayed:



The following error message is displayed if you try to open such a file:



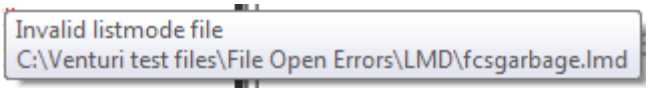
Select **Yes** to remove the compensation file from the **Playlist** and select a compatible compensation file. Select **No** to leave the compensation file in the **Playlist**. You need to select a different FCS file before it can be loaded.

5.5.3 Invalid Listmode Data File

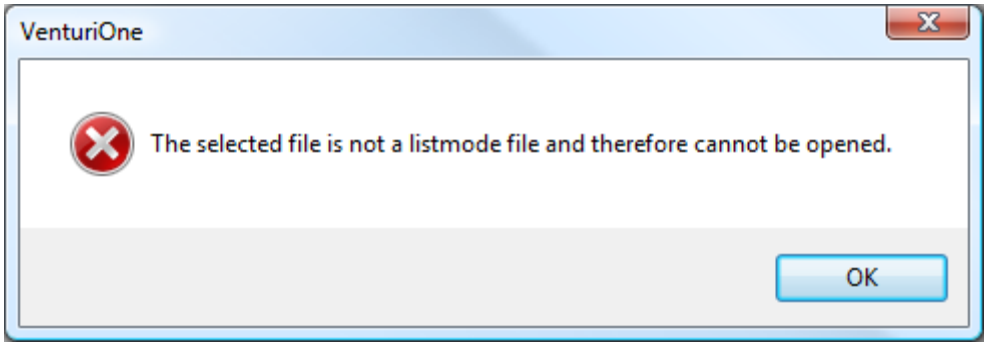
If you receive any of the Invalid FCS file errors, you should remove the file causing the error from the **Playlist**.

5.5.3.1 Corrupt or Malformed Listmode File

If the file in the **Listmode** column is an invalid or corrupt FCS file, the following tooltip is displayed:

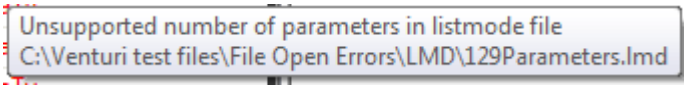


The following error message is displayed if you try to open such a file:



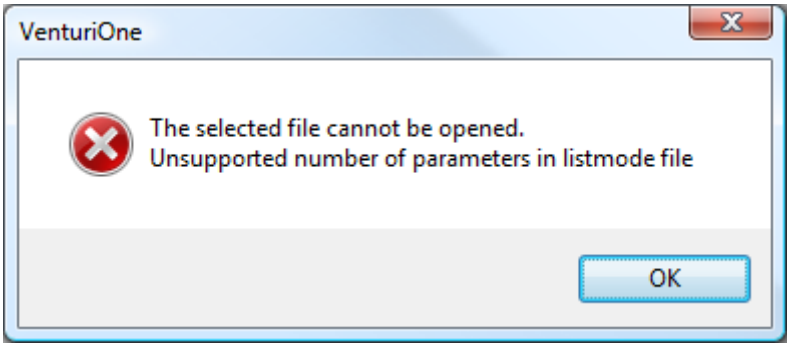
5.5.3.2 Unsupported Number of Parameters

If the FCS file contains an unsupported number of parameters (more than 128) the following tooltip is displayed:



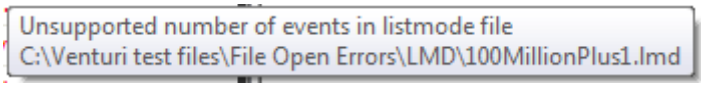
The text of this playlist item will appear red when this error occurs.
.

The following error message is displayed if you try to open such a file:



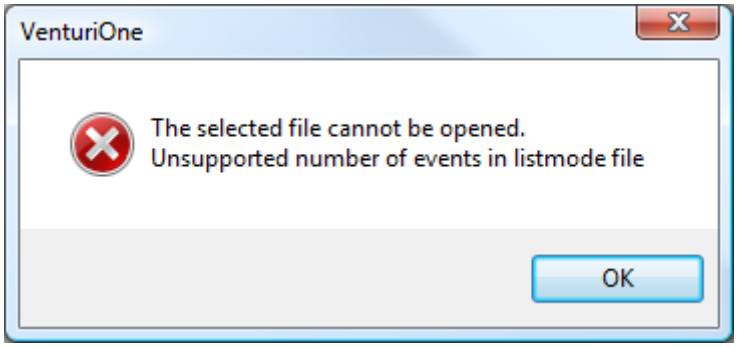
5.5.3.3 Unsupported Number of Events

If an FCS file contains an unsupported number of events (more than 100,000,000) the following tooltip is displayed:



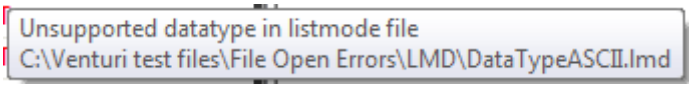
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



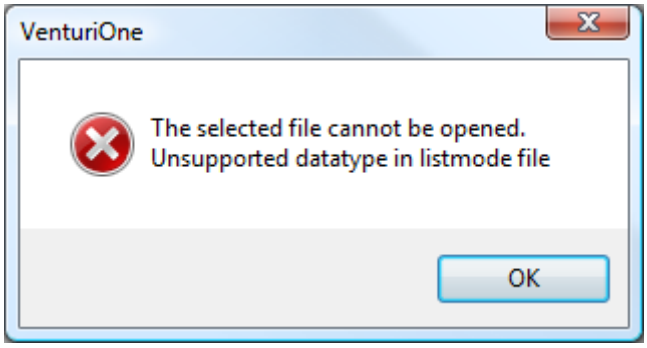
5.5.3.4 Unsupported Data type

If an FCS file contains an unsupported data type (value must be an integer) the following tooltip is displayed:



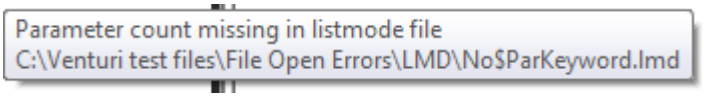
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



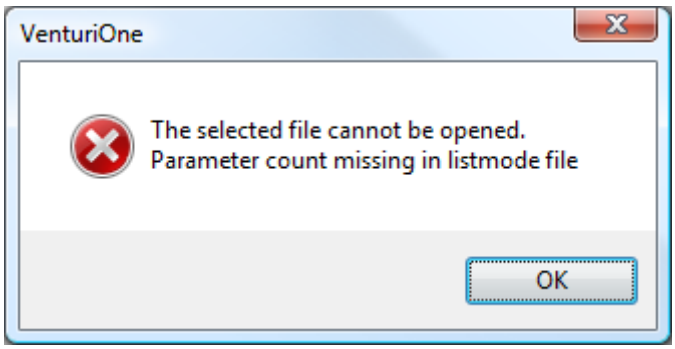
5.5.3.5 Parameter Count Missing

If an FCS file is missing the parameter count the following tooltip is displayed:



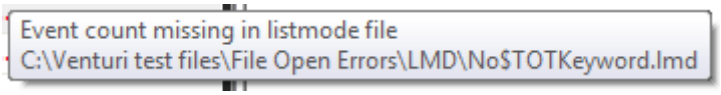
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



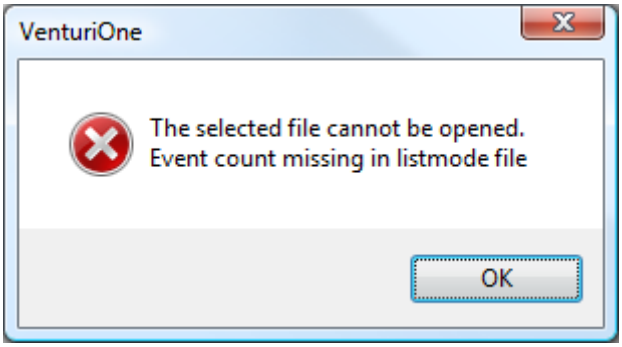
5.5.3.6 Event Count Missing

If an FCS file is missing the event count is the following tooltip is displayed:



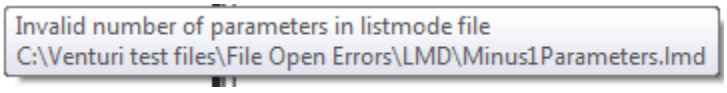
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



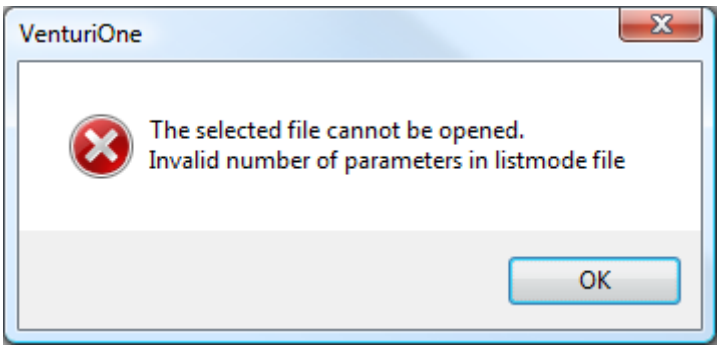
5.5.3.7 Invalid Number of Parameters

If an FCS file has an invalid number of parameters (must be positive integer) the following tooltip is displayed:



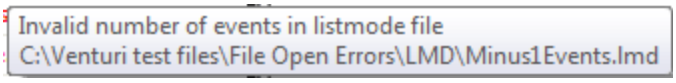
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



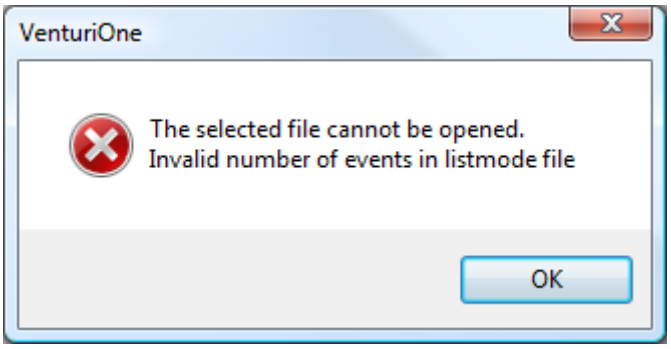
5.5.3.8 Invalid Number of Events

If an FCS file has an invalid number of events (must be positive integer) the following tooltip is displayed:



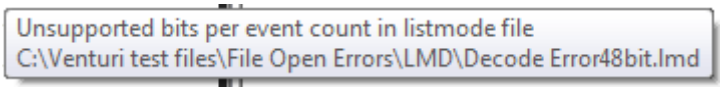
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



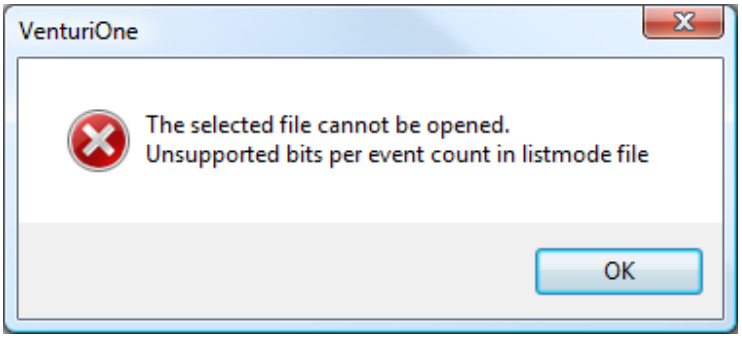
5.5.3.9 Unsupported Number of Bits per Event

If an FCS file has an unsupported number of bits per event (greater than 32), the following tooltip is displayed:



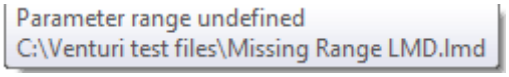
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



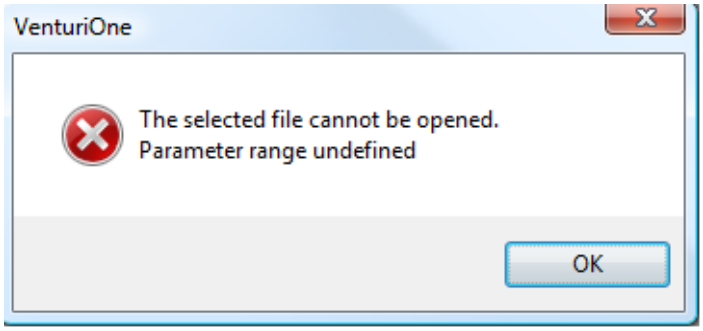
5.5.3.10 Undefined Parameter Range

If the parameter range for the FCS file is undefined, the following tooltip is displayed:



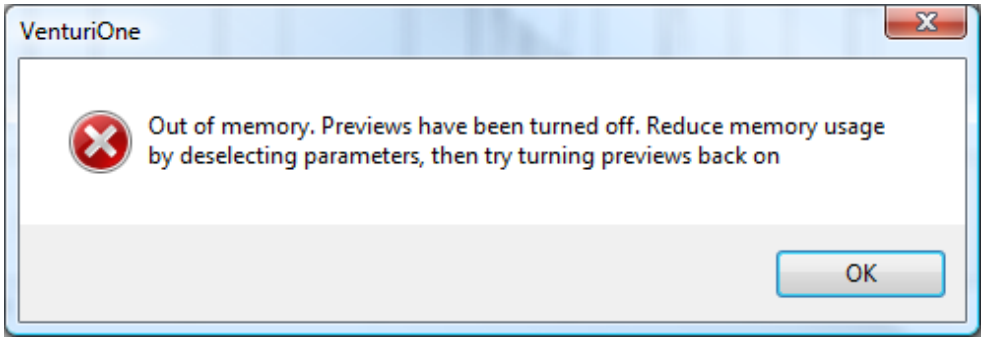
The text of this playlist item will appear red when this error occurs.

The following error message is displayed if you try to open such a file:



5.5.3.11 Insufficient Memory

If the system has insufficient memory to create the previews for an FCS file, the following message is displayed:

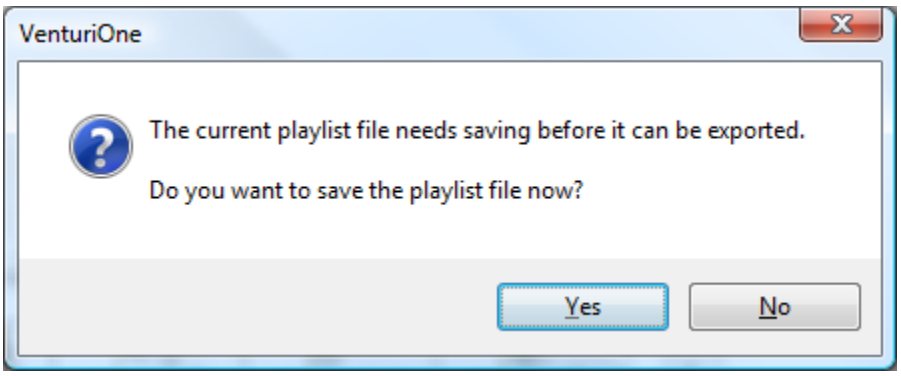


You can reduce memory usage by deselecting parameters in the **Parameters** tab of the **Ribbon**. You can minimize the memory overhead required by not showing Previews plots. You will still be able to select plots for display in the **Plots** area of the workspace by using the options in the **Add Plot** group of the **Home** tab, see section 9.3.

5.6 Export Playlist

A **Playlist** and the associated FCS files, image files and report can be exported for sharing with other users and colleagues.

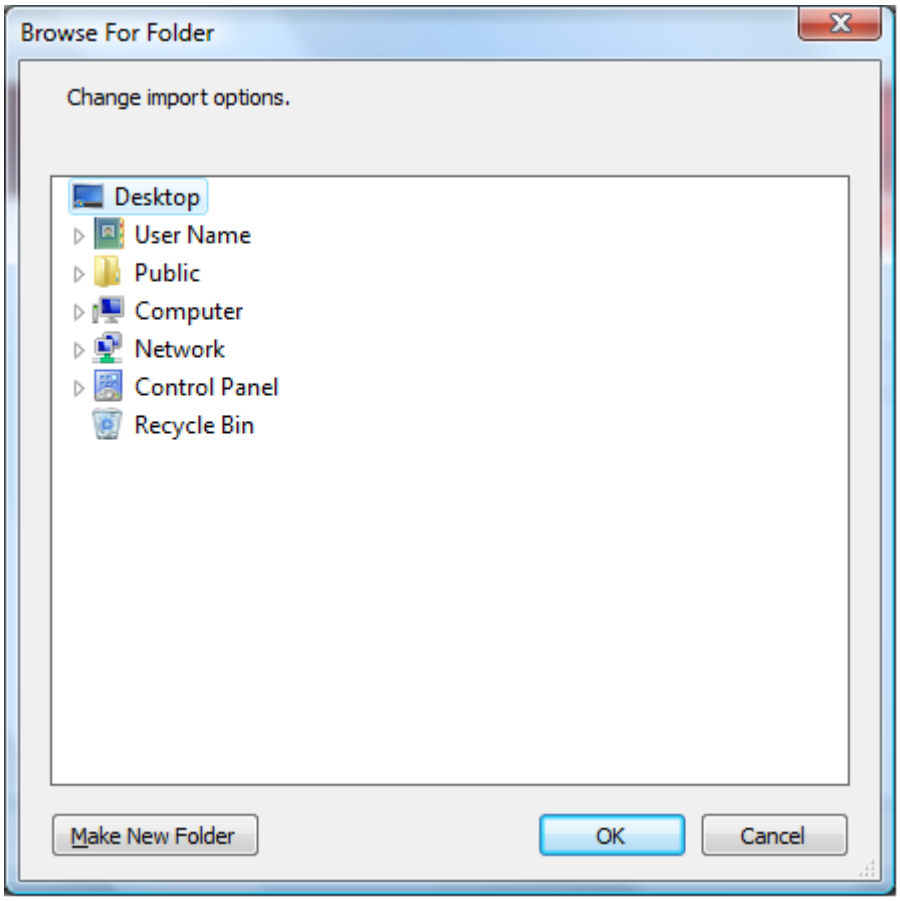
Any modifications to the **Playlist** need to be saved before it can be exported. If the **Playlist** is modified and not saved when you click **Export Playlist** on the **File Menu** (see section 4.5.3) the following message is displayed:



Click the **No** button to close the message and abort the export.

Click the **Yes** button to save the **Playlist**. A **Save As** dialog as described in section 4.3.3 is displayed allowing you to save it.

Once the **Playlist** is saved or if no saving was required, the **Browse For Folder** dialog, as demonstrated below, is displayed:



In this dialog you can select the destination folder for the export.

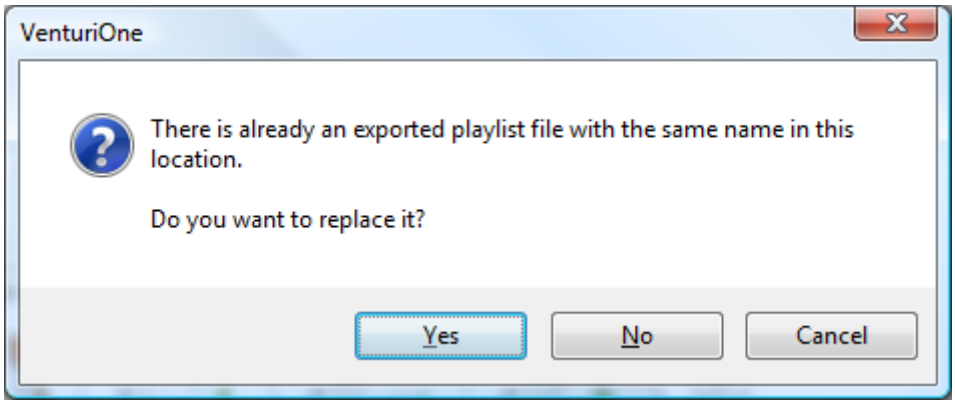
Clicking the **Cancel** button in this dialog closes it and aborts the export.

Clicking the **OK** button performs the export. A folder with the same name as the exported **Playlist** is created inside the destination folder. The exported **Playlist** is placed in it. The exported FCS files are placed in a subfolder called **LMD**. The exported image files are placed in a subfolder called **Images**.

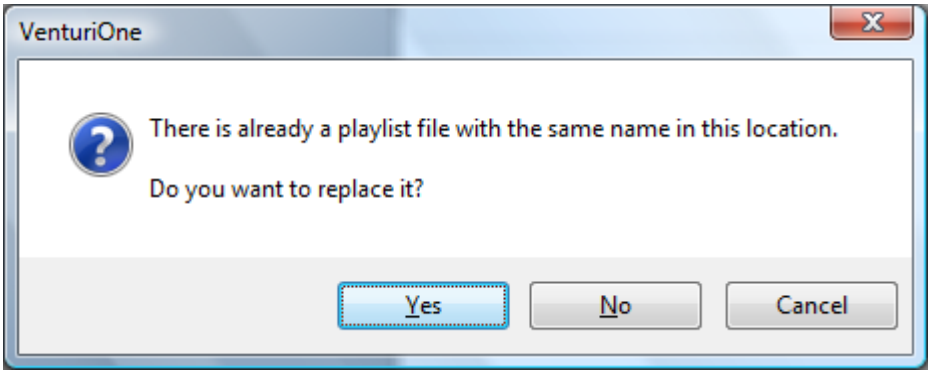
If the original **Playlist** (before export) contains the same FCS file in more than one of its items only one copy of the file is in the export LMD folder.

If the original **Playlist** (before export) contains FCS files that have the same name but are in different folders, they are all placed in the exported LMD folder with numbers in parenthesis appended to the filename, so they can be distinguished.

If the same **Playlist** is exported to a location it was previously exported to, the following message is displayed when **OK** in the **Browse For Folder** dialog is selected:



If a non-exported **Playlist** of the same name exists in the selected folder, the following message is displayed when **OK** in the **Browse For Folder** dialog is selected:



Selecting **Cancel** in either message closes the message and aborts the export.

Selecting **Yes** in either message replaces the existing **Playlist** in the export folder with the new one.

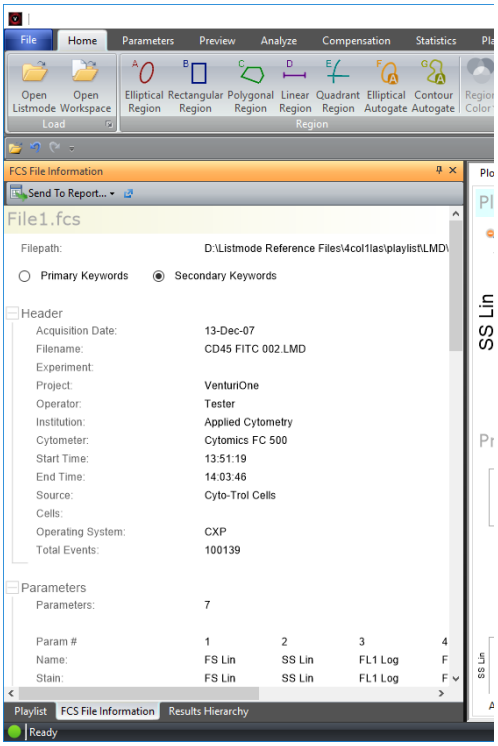
Selecting **No** in either message leaves the existing **Playlist** and creates a new one with an appended number to the name so they can be distinguished.

If some of the FCS or Image files that are to be exported have the same name as the ones in the export LMD and Images folders, the Windows **Copy File** dialog is displayed and allows you to resolve the conflicts. When re-exporting a **Playlist** to the same folder it was exported before, you should use **Copy & Replace** in the Windows **Copy File** dialog. Otherwise duplicate files will be created.

! For an exported playlist to open properly the folder structure of the export folder has to be preserved.

5.7 FCS File Information Panel

The FCS File information Panel displays FCS header information from the current file.
By default, the FCS File Information Panel is docked with the Playlist panel to the side of the application workspace.



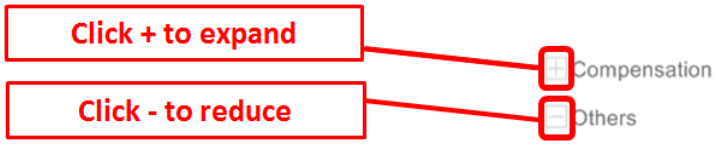
5.7.1 Panel Contents

The Panel contains the following groups of information

- Header
- Parameters
- Compensation
- Others

The exact contents of each section will vary depending on the FCS headers the instrument manufacturer stores with each file.

Clicking the + icon next to the group heading will expand the details below. Clicking the – icon will minimize the group.



5.7.2 Moving and Removing the FCS File Information Panel

The FCS File Information Panel can be hidden or moved as described in section 5.2 above. The panel can be closed by selecting the close icon on the panel.

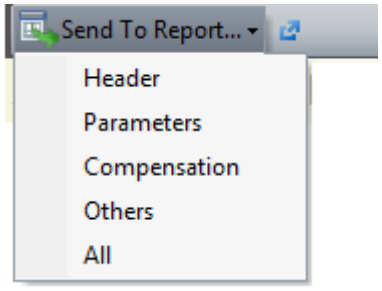


The original position of the File information Panel can be restored using the options in the Views Tab described in section 22

5.7.3 FCS File Information Toolbar

Toolbar for this panel contains two options

- Send To Report
- Float / Dock



5.7.3.1 Send To Report 

Selecting the Send To Report button displays a menu allowing you to select a group of FCS information to be sent to a new report page.

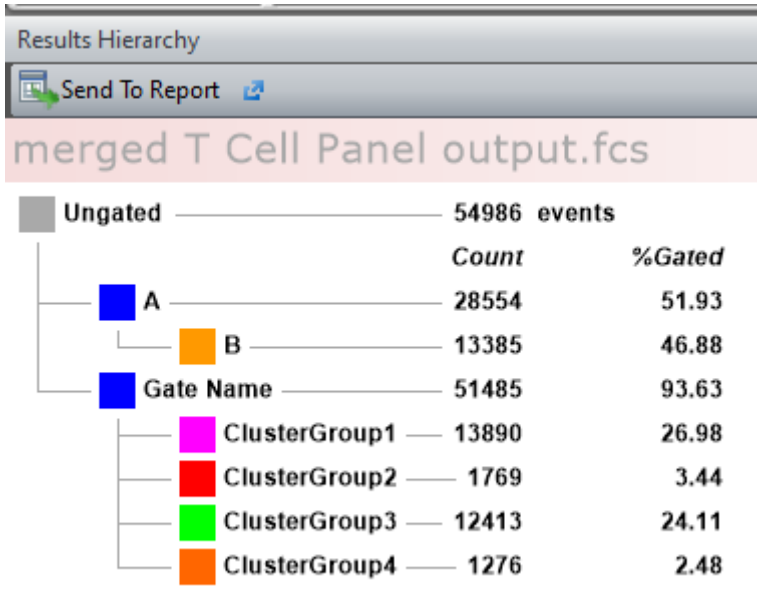
Select the All options to send all four groups to separate pages of the report

5.7.3.2 Float / Dock Button 

Selecting the float Icon floats the Panel and allows it to be placed anywhere on your desktop, the Float Icon then changes to a Dock Icon, Selecting Dock (or double clicking the title bar) will re-dock the panel in its original position.

5.8 Results Hierarchy Panel

The Results Hierarchy Panel this panel displays region and cluster group results for the currently loaded FCS file in a hierarchical format.



The results columns displayed are those selected in the **Results Tab of the Workspace** described in section 16.

The Region Name and Region Color are the same as set in the current workspace. They can be modified using the Region Format tools described in section 13.

The Cluster Group name and color can be defined in the Discovery tab of the ribbon as described in section 23

5.8.1 Moving and Removing the Results Hierarchy Panel

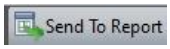
The Results Hierarchy Panel can be hidden or moved as described in section 5.2 above. The panel can be closed by selecting the close icon on the panel.



The original position of the panel can be restores using the options in the Views Tab described in section 22.

5.8.2 Results Hierarchy Toolbar

5.8.2.1 Send To Report button



Click the Send to report button to send the Results Hierarchy display to a new page of the report.

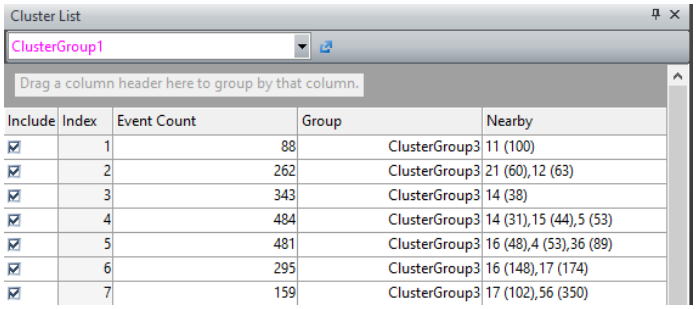
5.8.2.2 Float / Dock Button



Selecting the float Icon floats the Panel and allows it to be placed anywhere on your desktop, the Float Icon then changes to a Dock Icon, Selecting Dock (or double clicking the title bar) will re-dock the panel in its original position.

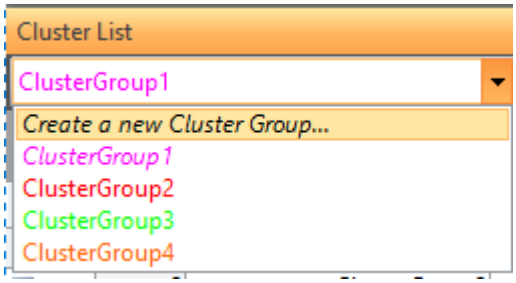
5.9 Cluster List Panel

When a file is loaded with an embedded cluster parameter (eg FlowSom) and that parameter is the selected **Tree By** in the Discovery Tab the Cluster List panel displays information about the individual clusters present.



5.9.1 Cluster Group drop down list

The Cluster Group drop down list allows you to select a cluster group to view or modify. Alternatively select the **Create a new Cluster Group** option to create a new cluster group.



The Cluster list table will update to show the properties of the selected cluster group

5.9.2 Float / Dock Button 

Selecting the float Icon floats the Panel and allows it to be placed anywhere on your desktop, the Float Icon then changes to a Dock Icon, Selecting Dock (or double clicking the title bar) will re-dock the panel in its original position.

5.9.3 Table Grouping

The Cluster list can be grouped by any column or combination of columns by dragging the column header onto the group control labelled ‘Drag a column header here to group by that column’.

This will remove that column from the list. Pressing the Ctrl key while dragging retains the column header in the table.

5.9.4 Table Columns

The table can be sorted based on the contents of any column by clicking on the column header, clicking again switched between ascending and descending order

The order of the columns can be changed by dragging the column headers

5.9.4.1 Include

A checked item indicates that the cluster belongs in the currently selected cluster group.
An unchecked item indicates that the cluster does not belong in the currently selected cluster group.

You can check or uncheck items to add or remove them from the currently selected cluster group

5.9.4.2 Index

This displays a unique identifier for each cluster

5.9.4.3 Event Count

This filed displays the number of events in a cluster

5.9.4.4 Backgated Event Count

This column is only displayed when the Cluster Tree view is in backgated mode. For each cluster this shows the number of events within the selected gate.

5.9.4.5 Group

This column shows the Cluster Group this cluster is currently assigned to.

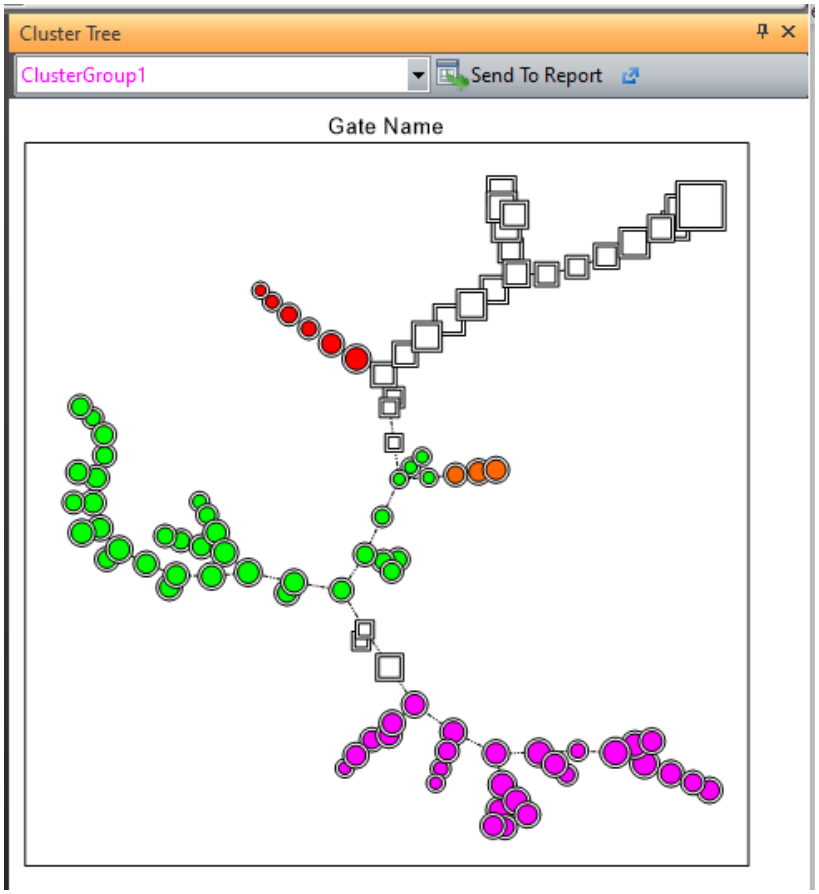
5.9.4.6 Nearby

This column displays neighboring clusters and the Chebyshev Distance from that neighbor to the cluster.

5.10 Cluster Tree Panel

The Cluster Tree panel displays the clusters found within the selected cluster parameter of the current FCS file.

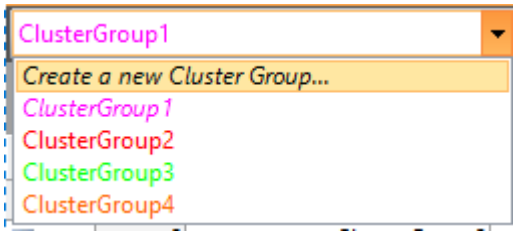
The options within the **Discovery** tab of the ribbon control the display of data within the Cluster Tree panel. See section 23 for more information.



5.10.1

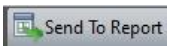
5.10.2 Cluster Group drop down list

The Cluster Group drop down list allows you to select a cluster group to view or modify. Alternatively select the **Create a new Cluster Group** option to create a new cluster group.



Clicking on a cluster within the cluster tree display adds that cluster to the currently selected cluster group. Clicking on an already assigned cluster will remove the cluster from any cluster group.

This option will be disabled when the Cluster Plot is in back gating mode. See section 23.4

5.10.3 Send to Report button 

Click the **Send to Report** button to send an image of the current Cluster Tree to a new page of the report for the current sample.

5.10.4 Plot Title

If the Cluster Tree plot has been gated (see section 23.1.1) the currently selected Gate Name appears as the plot title. If no gate has been selected, then the plot title is displayed as Ungated.

5.10.5 Float / Dock Button 

Selecting the float Icon floats the Panel and allows it to be placed anywhere on your desktop, the Float Icon then changes to a Dock Icon, Selecting Dock (or double clicking the title bar) will re-dock the panel in its original position.

Section 6

Playlist Tab

Playlist Panel
Listmode Group
Workspace Group
Compensation Group
Calculation Group

6 Playlist Tab

The Playlist tab of the Ribbon contains controls that allow you to modify the Playlist. You can change FCS files, workspace files and compensation files. See section 5 for details on the Playlist.



6.1 Groups

The controls in the **Groups** section allow you to setup groups of items in the **Playlist**:

Using groups, you only need to create a report for the current group, this **Group** report can then be applied to all samples in the **Playlist**. The report will update automatically when a different group is selected.

If you do not use groups, you can only create a **Playlist** report which will require you to add all the required items from each sample in the **Playlist** that you wish to report.

See section 20.1 for details on **Group** and **Playlist** reports.

6.1.1 Use Groups Checkbox



The **Use Groups** checkbox is un-checked (disabled) by default.

Check the **Use Groups** checkbox to activate grouping and to enable the **Group Size** spin control. You can then setup groups in the **Playlist** and create **Group** reports based on them.

6.1.2 Group Size Spin Control

The **Group Size** spin control is only enabled when the **Use Groups** check box is checked.

You can use the **Group Size** spin control to set the size of the group of playlist items to be used when producing **Group** reports or when creating overlay plots. The group size is saved in the **Playlist**.

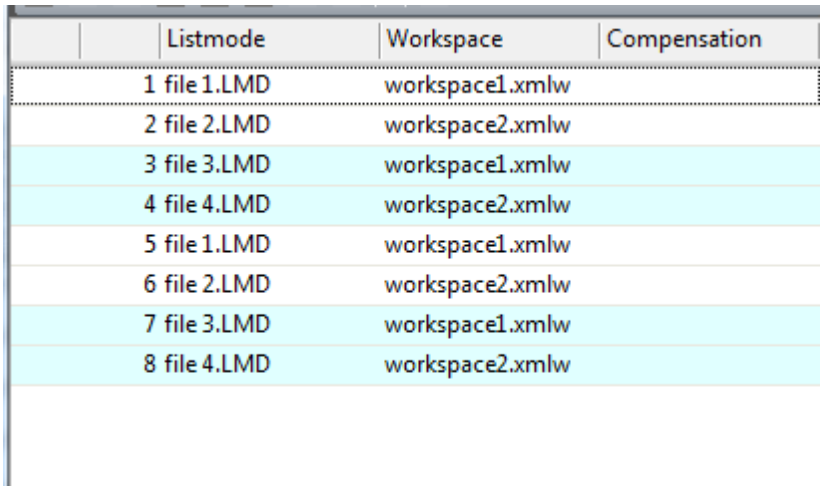
! When a report or an overlay plot has been created then the group size should not be changed. If it is adjusted, then the references within Overlays and Reports may fail indicated by red exclamation marks replacing plots within Overlays and Reports.

You can increase the group size by clicking the up arrow on the spin control and decrease it be clicking the down arrow.

You can also type in a number in the edit field of the control.

The minimum group size is 1; the maximum allowed group size is the same as the number of items in the **Playlist**. The spin control will not accept a number that is not within the allowed range.

The group size is visible in the **Playlist** via alternating white and cyan coloring, as illustrated below for a group size of 2 in a **Playlist** containing 8 items:



	Listmode	Workspace	Compensation
1	file 1.LMD	workspace1.xmlw	
2	file 2.LMD	workspace2.xmlw	
3	file 3.LMD	workspace1.xmlw	
4	file 4.LMD	workspace2.xmlw	
5	file 1.LMD	workspace1.xmlw	
6	file 2.LMD	workspace2.xmlw	
7	file 3.LMD	workspace1.xmlw	
8	file 4.LMD	workspace2.xmlw	

The white and cyan coloring is only displayed when the **Use Groups** checkbox is checked. When the **Use Groups** checkbox is not checked the shading is removed and all items in the **Playlist** will appear white.

6.2 Listmode Group

The controls in the **Listmode** group allow you to modify the FCS files in the **Playlist**.

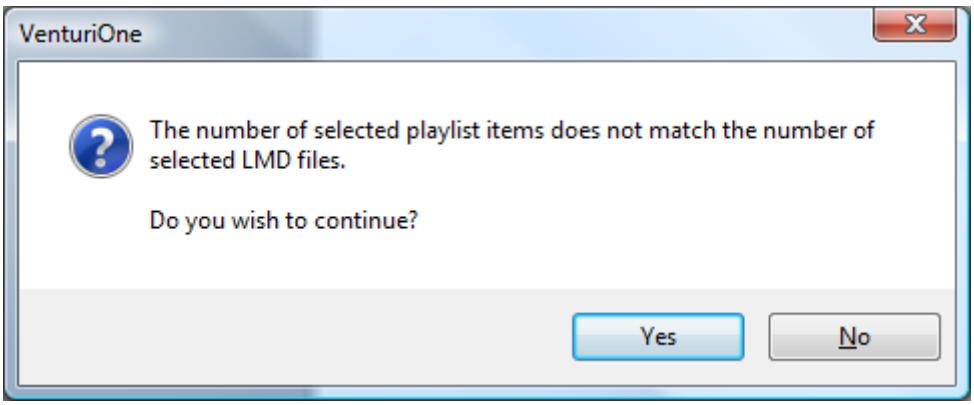


6.2.1 Replace

The **Replace** button is enabled when one or more playlist Items are selected in the **Playlist**.

Click the **Replace** button to display a Windows **File Open** dialog for FCS files. The dialog is described in section 4.2.1.

If the number of selected items in the **Playlist** does not match the number of FCS files selected in the **File Open** dialog, the following message is displayed:



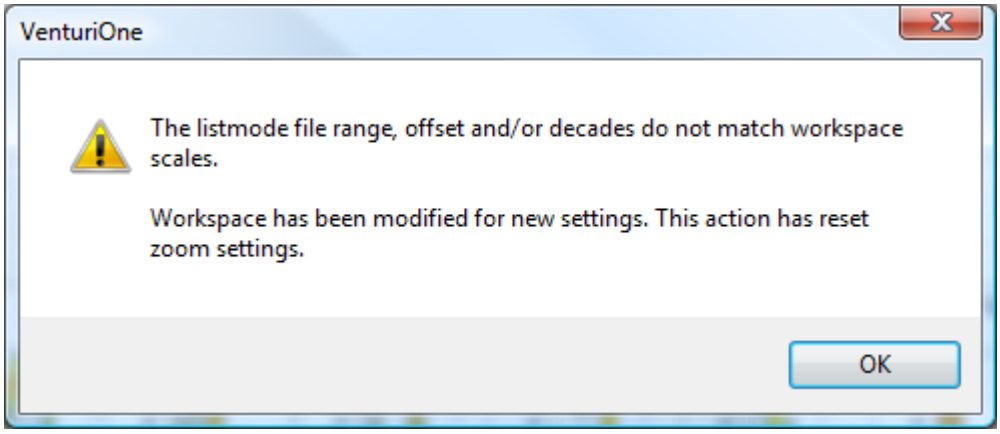
Click the **No** button if you do not want to replace the files.

Click the **Yes** button to replace as many files as possible.

! Check the **Playlist** after replacement to ensure all the selected files have been inserted into the expected positions.

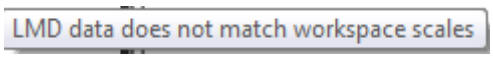
6.2.1.1 Scaling Mismatch

When replacing an FCS file, a mismatch between FCS and workspace scale can occur. If the FCS that is being replaced is open in the **Workspace** and a mismatch in scale occurs, the following error is displayed:



Select **OK** to close the message and replace the FCS file. The Workspace is modified to match the FCS file settings. Any zoom settings that have been applied are reset.

If the FCS file is not open on the **Workspace** and a mismatch in scale occurs, it is replaced, and the playlist item is colored **orange** in the **Playlist** and has the following tooltip:



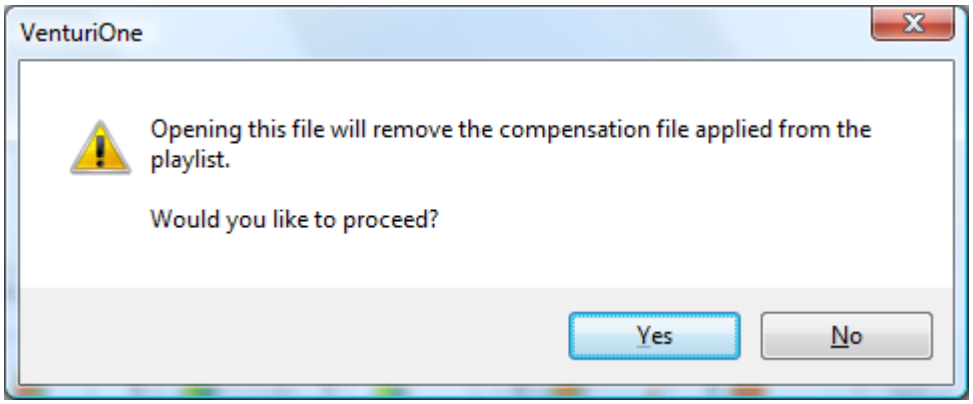
If this item is opened in the **Workspace**, the previous message is displayed, and the error state is cleared in the **Playlist**.

6.2.1.2 Compensation Values When Replacing Listmode

If the playlist item has no associated compensation file, compensation values will be obtained from the new FCS file.

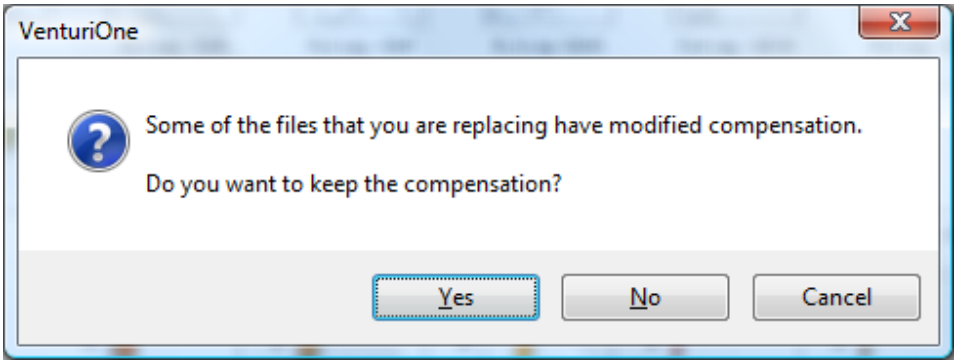
If the playlist item has an associated compensation file, compensation values will be obtained from the compensation file.

If a parameter mismatch occurs the following error is displayed:



Select **Yes** to replace the FCS and remove the compensation file applied. Select **No** if you do not wish to replace the FCS file.

If the playlist item has a modified compensation, the following message will be displayed:



Select **Yes** to keep all modified compensation files in the **Playlist** and apply them to the replaced FCS file.

Select **No** to clear the modified compensation values. The compensation values in the replacement FCS file will be used instead.

Select **Cancel** to cancel the replacement of the FCS file.

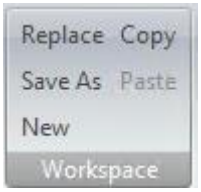
6.2.2 Clear

The **Clear** button is only enabled when one or more playlist items are selected and at least one of them has an associated FCS file.

Selecting **Clear** replaces the FCS files in the selected items with a blank FCS item. If the currently open FCS file is amongst the files selected for clearing, plot data will be removed; the workspace and compensation files set in the **Playlist** are not affected.

6.3 Workspace Group

The **Workspace** group allows you to modify the workspace file associated with playlist Items.



6.3.1 Replace

The **Replace** button is enabled when one or more playlist items are selected in the **Playlist**.

Click the **Replace** button to display a Windows **File Open** dialog as described in section 4.2.2. This allows you to select a replacement workspace.

6.3.2 Save As

The **Save As** button is enabled when a single playlist item is selected in the **Playlist**. If multiple playlist items are selected the **Save As** button is disabled.

Click the **Save As** button to display the **Save As** dialog as described in section 4.3.2.

6.3.3 New

The **New** button is enabled when one or more playlist items are selected in the **Playlist**.

Click the **New** button to replace the workspace files in the selected items with the default workspace; the FCS and compensation files are not affected.

Clearing the workspace file of an open playlist item will clear the **Plots** area only.

6.3.4 Copy

The **Copy** button is enabled when at least one non-blank item is selected. If multiple items are selected and at least one is empty the **Copy** button is disabled.

Selecting **Copy** copies the selected items' workspace files to the clipboard and can only be pasted to other playlist items.

6.3.5 Paste

The **Paste** button becomes enabled when there is a workspace copied to the clipboard.

If a single workspace file is copied to the clipboard then selecting **Paste** will paste the clipboard's workspace file into all selected items in the **Playlist**.

If multiple workspace files are copied to the clipboard then selecting **Paste** will paste the clipboard's workspace files into the selected items in the **Playlist**.

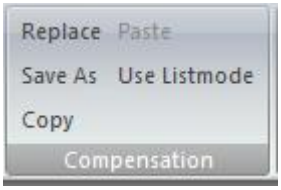
Pasted workspace files will appear in the same order in which they appear in the **Playlist**.

If you attempt to paste more items than are currently selected in the **Playlist**, as many items as possible will be pasted, any excess items will be ignored.

After pasting workspaces make sure that the positions of regions are correct for the individual FCS files.

6.4 Compensation Group

The **Compensation** group allows modifications to be made to compensation files in the **Playlist**.



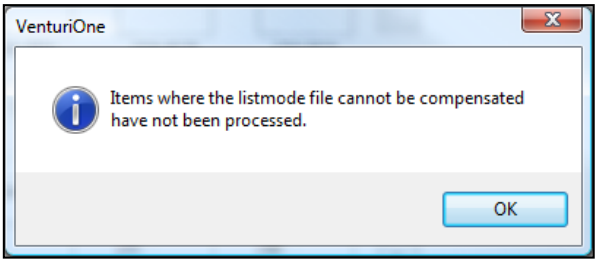
6.4.1 Replace

The **Replace** button is enabled when one or more playlist items are selected in the **Playlist** and at least one of the selected items is able to be compensated.

Click the **Replace** button to display the Windows **File Open** dialog described in section 4.2.4.

6.4.1.1 Compensation Not Supported

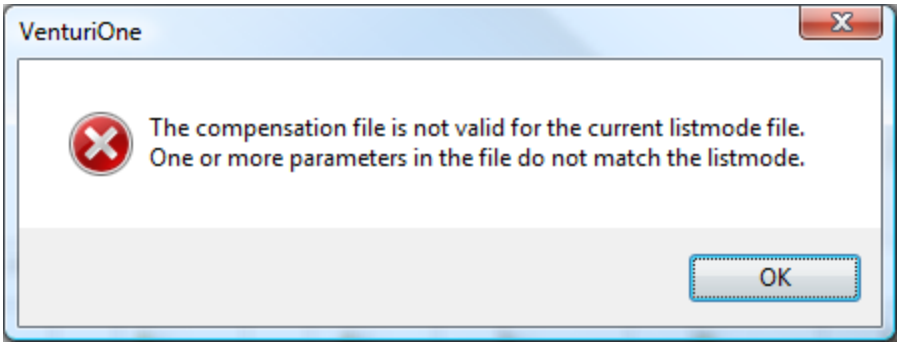
Attempting to open a compensation file for a playlist item which contains a low-resolution FCS file, will display the following message:



Click **OK** to close the message box, the compensation file is not opened for the selected item.

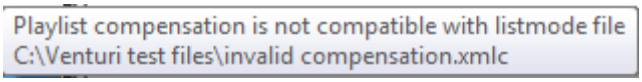
6.4.1.2 Playlist Compensation not Compatible with Listmode File

If the compensation for the current file is replaced with a file that is not compatible with the FCS file (e.g. parameter mismatch) the following message is displayed:

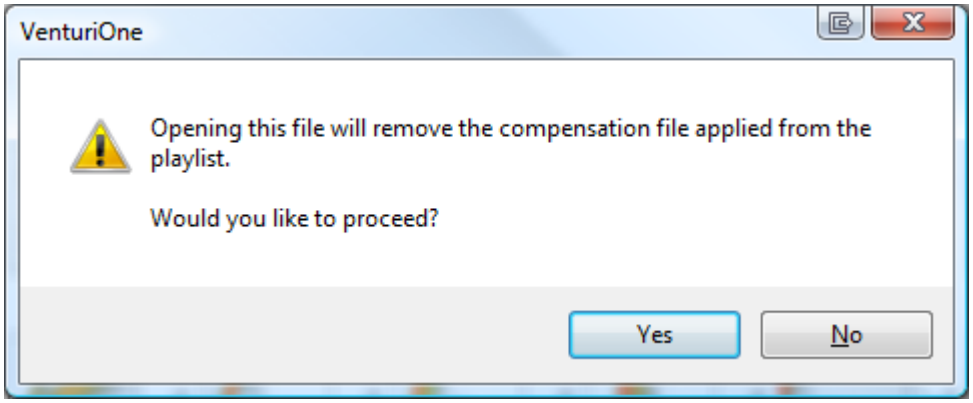


Selecting **OK** closes the message and the compensation file is not opened.

If the compensation for a file not currently open is replaced with a file that is not compatible with the FCS file, the item turns **red** and has the following tooltip



The error state remains in the **Playlist** until the playlist item is opened in the **Workspace**, upon which the following warning message is displayed:

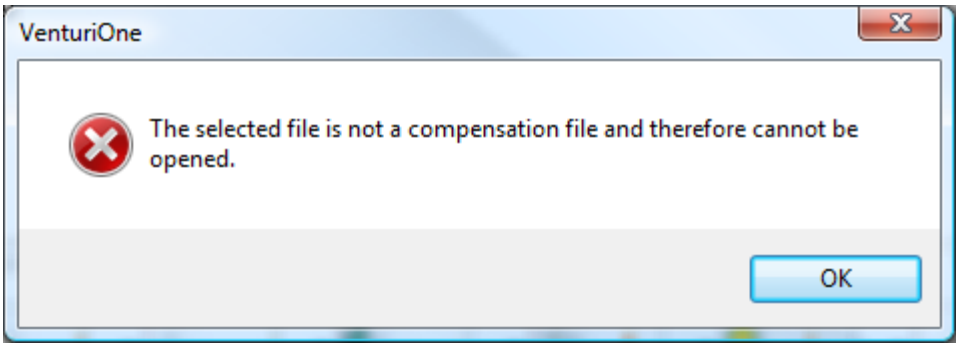


Select **Yes** if you want to load the FCS file and remove the compensation file from the playlist item.

Select **No** if you do not want to load the FCS file.

6.4.1.3 Invalid Compensation File

Attempting to open an invalid replacement compensation file (i.e. not a VenturiOne compensation file or a corrupt compensation file) will results in the following error message:



6.4.2 Save As

The **Save As** button is enabled when a single playlist item with compensation is selected in the playlist. Click the **Save As** option to display the **Save As** described in section 4.3.4.

6.4.3 Copy

The **Copy** button is enabled when at least one of the selected items contains an FCS file which is able to be compensated and / or compensation.

Selecting the **Copy** button copies the compensation files of the selected item(s) to the clipboard; they can then be pasted into the **Playlist**.

6.4.4 Paste

The **Paste** button is disabled by default i.e. when a new instance of the software is started, and the **Playlist** is empty.

The **Paste** button becomes enabled when the user has copied a compensation file from the **Playlist** into the clipboard and at least one of the selected items is an FCS file which is able to be compensated.

If a single compensation file is copied to the clipboard then selecting **Paste** will paste the clipboards' compensation file into all selected items in the **Playlist**.

If multiple compensation files are copied to the clipboard then selecting **Paste** will paste the clipboards' compensation files into the relevant selected items in the **Playlist**.

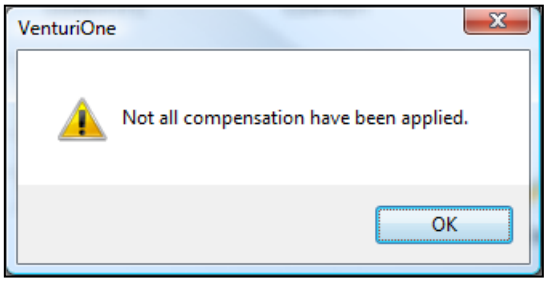
Pasted compensation files will appear in the same order in which they appear in the **Playlist**.

If you attempt to paste more items than are currently selected in the **Playlist**, as many items as possible will be pasted, any excess items will be ignored.

6.4.4.1 Parameter Mismatch

When pasting a single or multiple Compensation files the parameters in the compensation file may not match those in the FCS file.

If the parameters do not match the following warning message will be displayed:



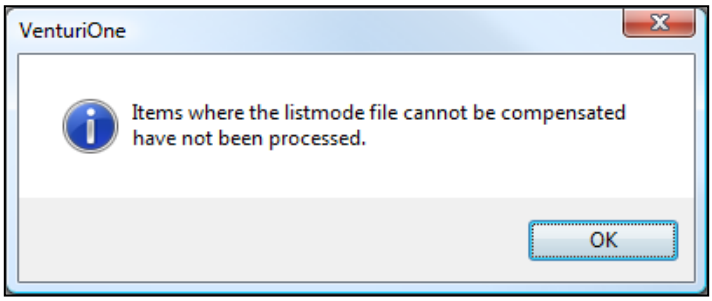
Clicking on the **OK** button will close the dialog and the copied compensation file will be applied to the compatible items in the **Playlist** but not to those incompatible ones.

If the parameters do not match and the item is not currently open, then the warning message shown above will only be displayed when you try to open the item containing the incompatible FCS and compensation files.

6.4.5 Use Listmode

If all the selected items in the **Playlist** contain high resolution data and the **Use Listmode** is clicked, then the software will use the compensation settings stored in the FCS file headers. This will clear any associated compensation files from the **Playlist** for the selected items.

If the selected items contain a mixture of high-resolution data, low resolution data and blank FCS files then only those items with high resolution data will be affected. Items containing low resolution data and no FCS files will not change and the following message box will be displayed:

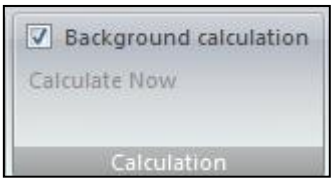


The **Use Listmode** button is disabled by default i.e. when a new instance of the software is started, and the **Playlist** is empty.

The **Use Listmode** button is enabled when an item with an associated FCS file is selected.

6.5 Calculation Group

The **Playlist** tab contains a **Calculation** group, which is illustrated below:



6.5.1 Background Calculation

When the **Background Calculation** checkbox is checked, background calculation is turned on; the **Calculate Now** button is disabled.

When background calculations are turned on all statistics in the **Results** and **Reports** tabs are updated constantly in the background as the **Playlist** is modified.

Un-checking the **Background Calculation** checkbox turns off automatic recalculation and enables the **Calculate Now** button.

You may want to turn off background calculation when you are using a **Playlist** containing very large files which are taking a long while to process.

Uncalculated statistics do not appear on the results tab.

Whilst the software calculates plots, statistics, comp matrix and fields in the **Reports** tab a question mark will be shown. As soon as the new or updated plot, statistic, comp matrix and/or field are calculated it will be displayed on the report.

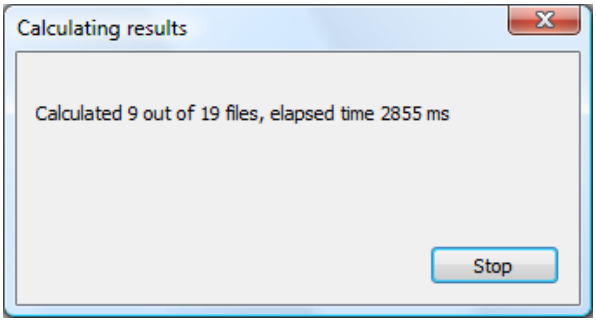
Any printing operations will wait for background calculation to be completed.

6.5.2 Calculate Now

The **Calculate Now** button is only enabled when background calculations are turned off i.e. the **Background Calculation** checkbox is not checked.

Clicking the **Calculate Now** button will calculate all statistics in the **Results** and **Reports** tabs.

Whilst the software is calculating the results the following progress dialog box is shown:



The dialog shows the number of files calculated out of the total number of files in the **Playlist**. It also shows the elapsed time.

Click on the **Stop** button to close the dialog and stop the calculations. If stopped the **Calculation Indicator** will display the 'not calculated' icon.

Clicking on the **Close** button (top right) will close the dialog and stop the calculations. If closed the **Calculation Indicator** will display the 'not calculated' icon.

6.5.2.1 Calculation Indicator

The **Calculation Indicator** is located in the status bar. It indicates if the processing of results has been completed.

When all items are up to date a green icon is displayed: 

During background calculation an orange icon is displayed: 

When background calculation is off, and some items have not been calculated a red icon is displayed:  This icon acts as a button and clicking it is equivalent to clicking the Calculate Now button and will recalculate all results.

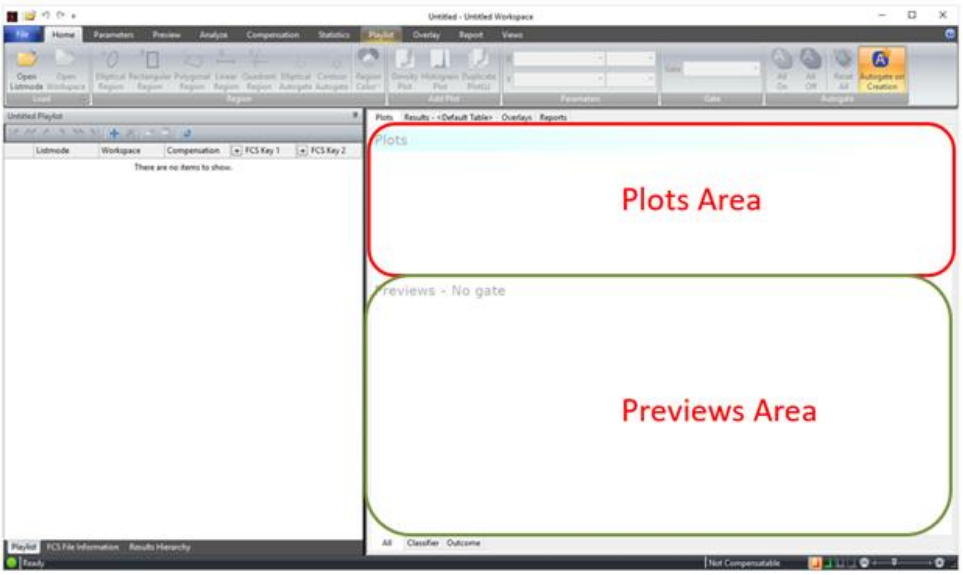
Section 7

Plots

Plots Workspace Tabs
Types of Plots
Preview Plots
Plots Area
Regions
Gallery and Hierarchy View
Scaling
DNA Cell Cycle Plots

7 Plots

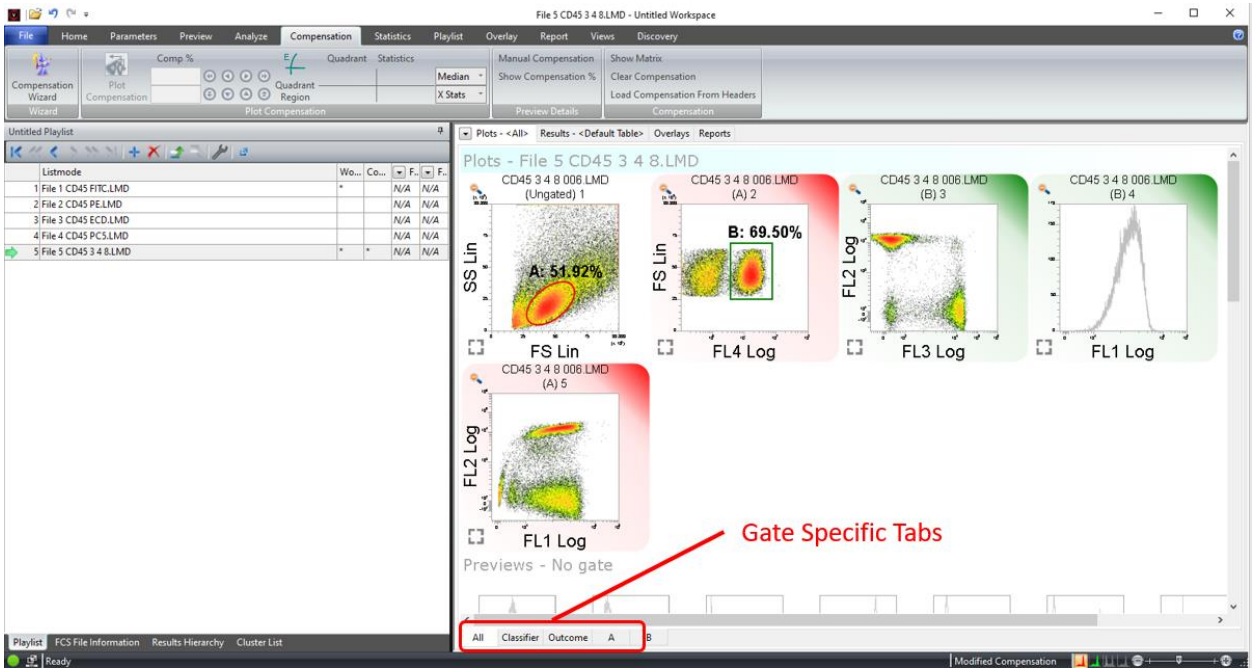
Plots are displayed in the **Plots** tab of the **Workspace**. The **Plots** tab is split in two areas: **Plots** and **Previews**.



Overlay plots can only be created in the Overlay tab and are described in section 17.

7.1 Plots Workspace Tabs

Additional gate specific tabs are present on the Plots workspace.



The tabs display a sub-set of all the plots based on the gate of each plot.

The All tab displays all plots currently available irrespective of gating.
The Classifier tab displays only those plots containing parent gates.
The Outcome tab displays only daughter plots.

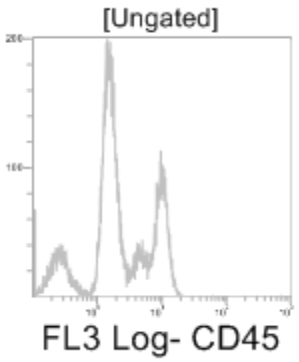
Additional gate specific tabs appear as new gates are created, they display only those plots which are gated on the specific gate listed on the tab name.

7.2 Types of Plots

VenturiOne software can display four plot types: Single Parameter Histogram Plots, Dual Parameter Color Density Plots, Dual Parameter Color Precedence Plots and Dual Parameter Precedence Density Plots.

The **Plot Format** tab of the **Ribbon** (see section 8) allows you to modify properties of individual plots, including changing of the plot type.

7.2.1 Single Parameter Histogram Plots



Single Parameter Histogram Plots display the 1024 bin histogram for a single parameter. The plot may be gated or un-gated.

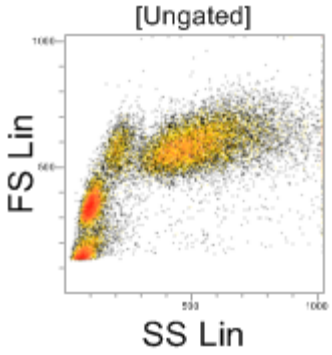
7.2.2 Dual Parameter Color Density Plots

Dual Parameter Color Density plots are two-dimensional 256 x 256 bin histograms which use color to represent the level of events within each bin.

Six levels of color are used for the Density Plots:

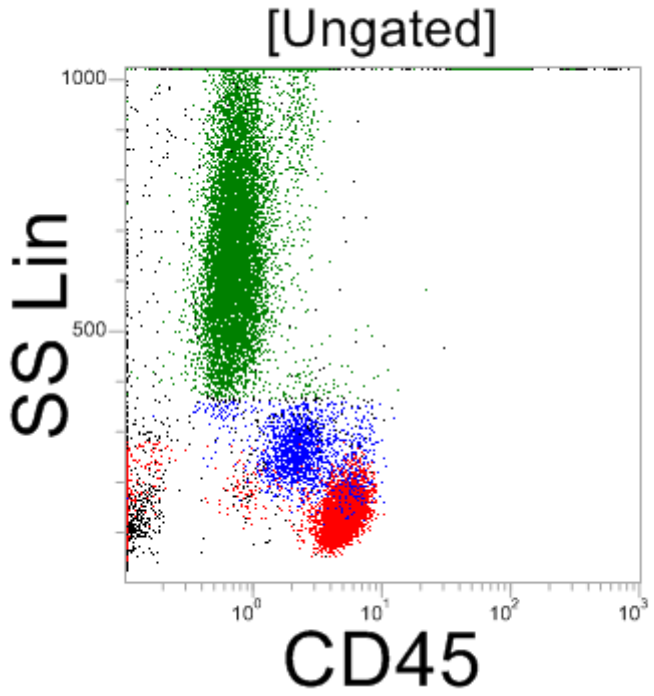
- Black — Outlier Singles
- Vibrant Blue — Lowest Density
- Vibrant Green
- Vibrant Yellow
- Vibrant Orange
- Vibrant Red — Highest Density

An algorithm is used to calculate the levels based on the number of events. The levels have logarithmic intervals.



7.2.3 Dual Parameter Color Precedence Plots

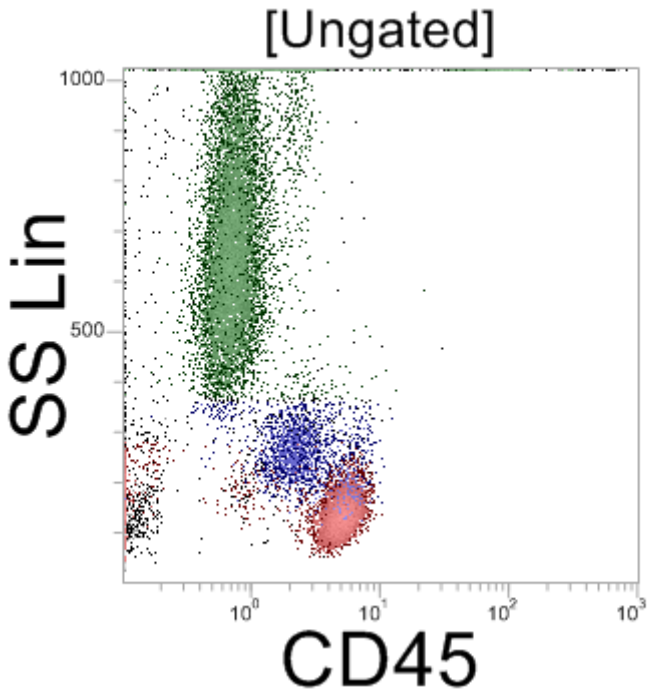
Dual Parameter Color Precedence Plots are two-dimensional 256 x 256 bin dot plots which use color to represent the gating events that fall within specific gates. Where an event may be in multiple gates, the precedence order determines which color is chosen. Where events from multiple gates fall within a single bin, the highest precedence gate color is chosen. Ungated events are displayed black.



Precedence order can be changed via the **Precedence order** dialog described in detail in section 12.3.2.

7.2.4 Dual Parameter Precedence Density Plots

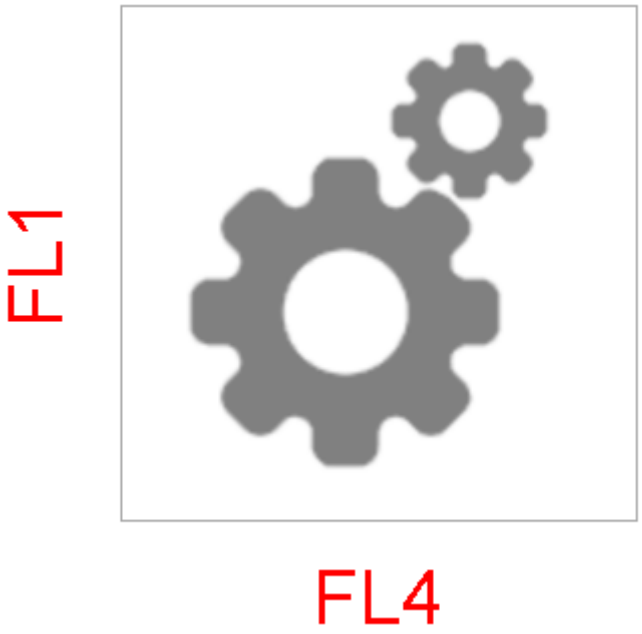
Dual Parameter Precedence Density plots are displayed as color precedence plots but include density information as well as color precedence.



7.2.5 Plots with Missing Parameters

If you load a file into a workspace where the parameters expected by the plots in the workspace do not match those of the loaded FCS file, any plots with a mismatch will display the ‘cogs’ icon and the parameter names will be displayed in red.

In this case you can replace the parameters with the required parameters from the file or delete the unwanted plots. See Section 7.4.7 for details on changing plot parameters.



7.3 Preview Plots

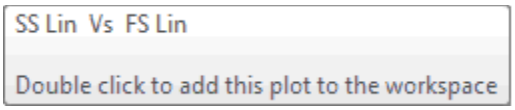
When an FCS file is opened, the **Previews** area of the **Workspace** automatically displays all Single Parameter Histogram Plots and all Dual Parameter Color Density Plots associated with the opened FCS file. The axis displays the stain name ($PxS) taken from the FCS header of the opened FCS file.

The Preview plots can be resized using the Plot Resize Slider; see section 7.4.5 for more details.

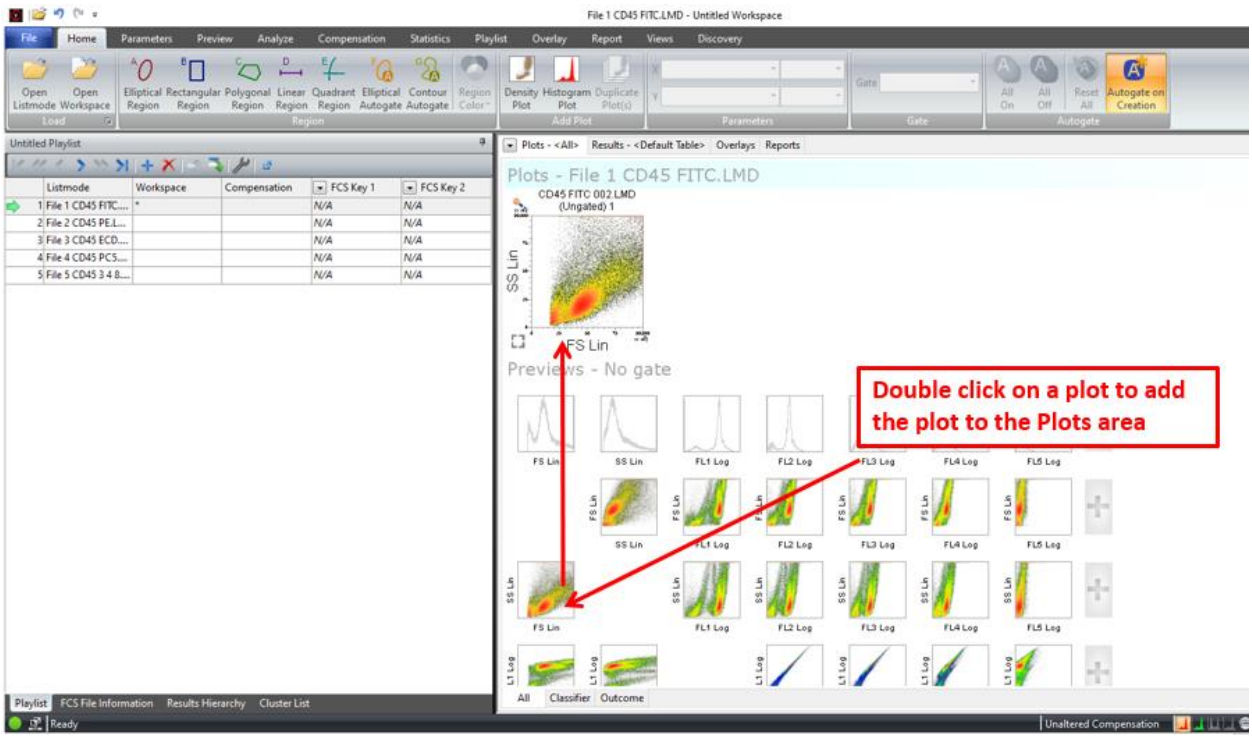
7.3.1 Add Plots to the Plots Area

You can select plots from the **Previews** area to add to the **Plots** area for further analysis. Alternatively use the **Add Plot** options on the **Home** tab to add plots to the **Plots** area.

When the mouse is over a plot in the preview area, the following tooltip is displayed:



If you double click the plot it will be added to the **Plots** area.

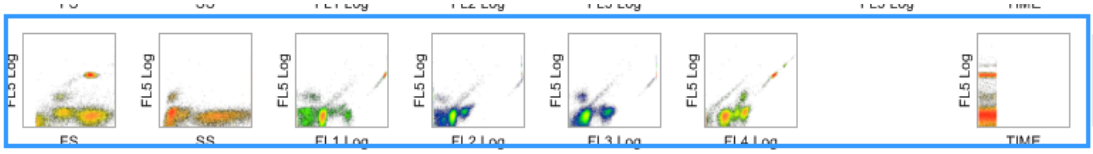


Clicking the **Add** button  at the end of a row will add that entire row of plots to the **Plots** area.

Clicking **the** Add button  at the bottom of a column will add the entire column of plots (excluding histograms) to the **Plots** area.

Positioned at the bottom right corner of the **Preview** area is a split button  which can add either the upper right triangle or lower left triangle of plots to the **Plots** area, depending on whether the top or bottom button is clicked.

When the mouse is hovered over an **Add** button the plots that will be added when the button is clicked become highlighted in a blue outline:



You can also add plots via the **Plots** group on the **Analyze** tab of the **Ribbon**, see section 10 for details.

7.3.2 Selection of Parameters for Display

If the **Previews** area does not display the required parameters, you can select or deselect parameters from those present on the **Parameters** tab. See section 10.4 for details.

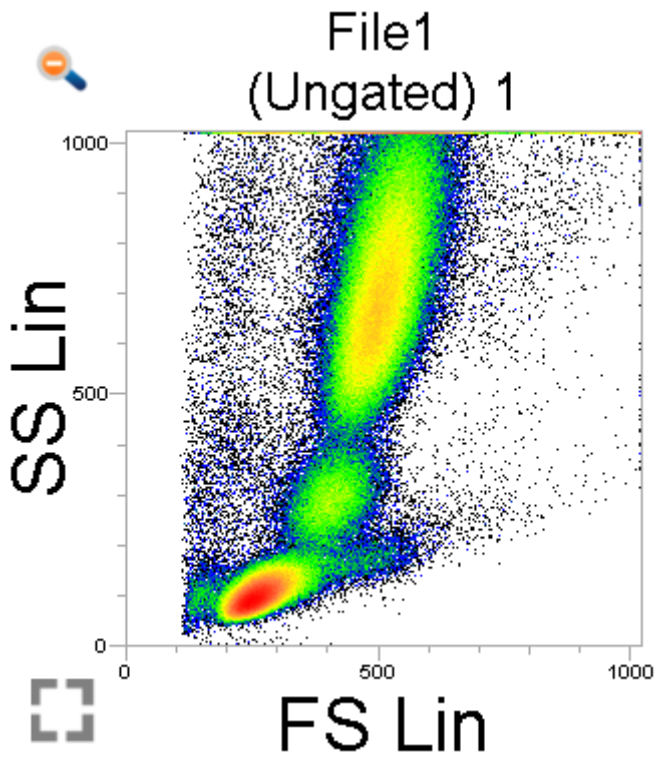
7.4 Plots Area

To analyze and modify the preview plots you must first add them to the **Plots** area. This can be done by using the **Home tab Add Plot** options or by double clicking **Preview** plots.

7.4.1 Display of Plots in the Plots Area

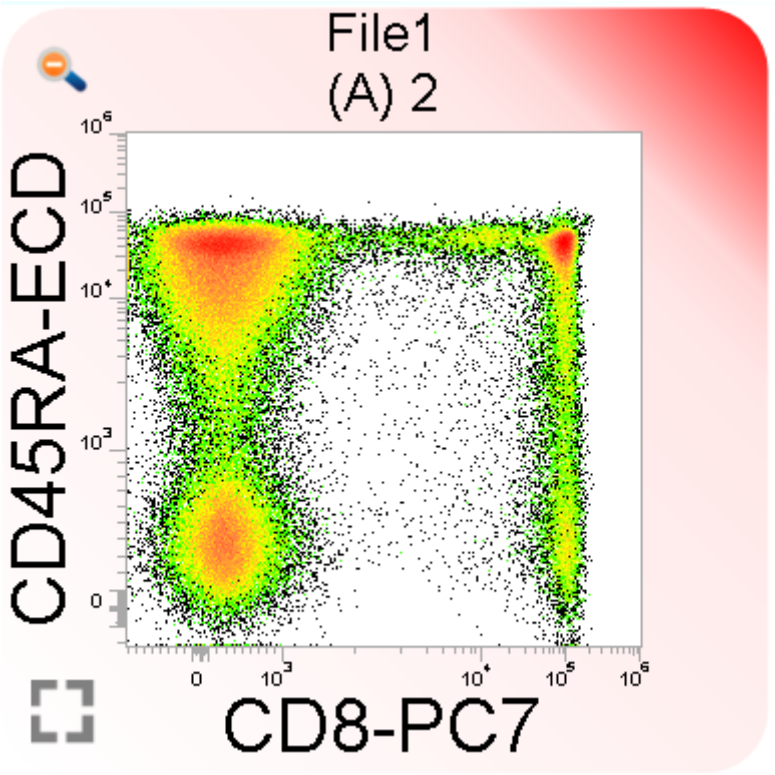
Plots selected from the **Previews** area are added sequentially to the current set of plots displayed in the **Plots** area.

An ungated plot displays no color border and **(Ungated)** as the plot heading along with the file name and plot number:



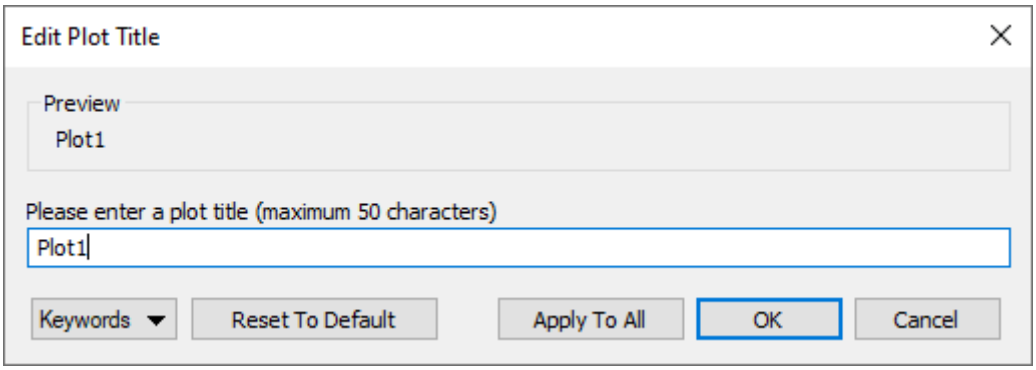
If the **Previews** area has a gate applied, the plots added to the **Plots** area will also have this gate applied. This process will automatically create a gate if required.

A gated plot is surrounded by a colored border which denotes the gate color applied, by default the gate name is displayed in the plot heading:

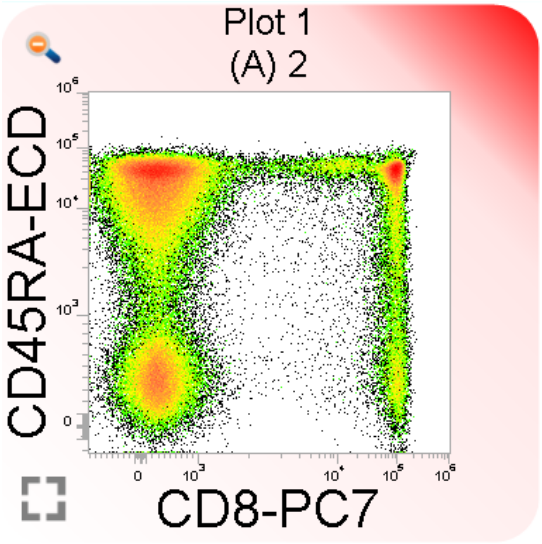


7.4.2 Edit the Plot Title

You can customize the title of a plot by double clicking the top margin of the plot. This launches the **Edit Plot Title** dialog, allowing you to add a custom title to the plot heading:



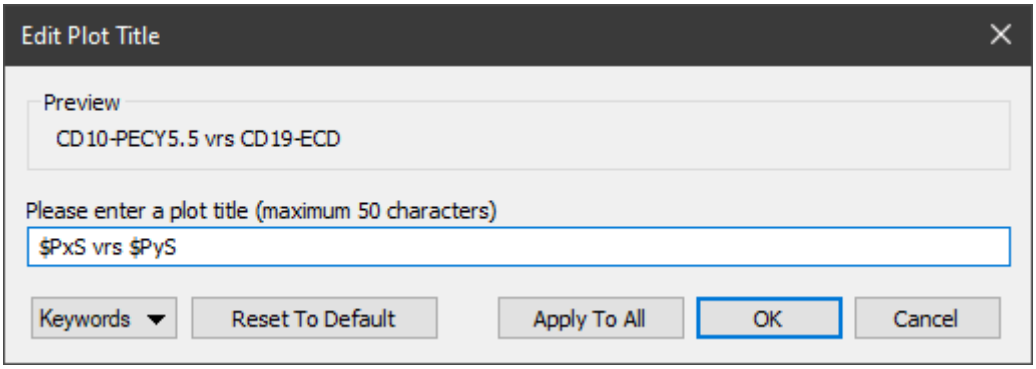
Enter the desired custom title in the edit field and click the **OK** button. The title is added to the heading of the plot:



Enter any text up to 50 characters into the edit field to be used as the plot title.

You can enter an FCS keyword in which case the key value will be read from the file and displayed as the plot title. The default plot title is $FIL (the file name stored in the FCS header of the file).

You enter x or y characters instead of a parameter number to use a keyword that automatically updates based of the parameters of the current plot. For example, $PxN or $PyS



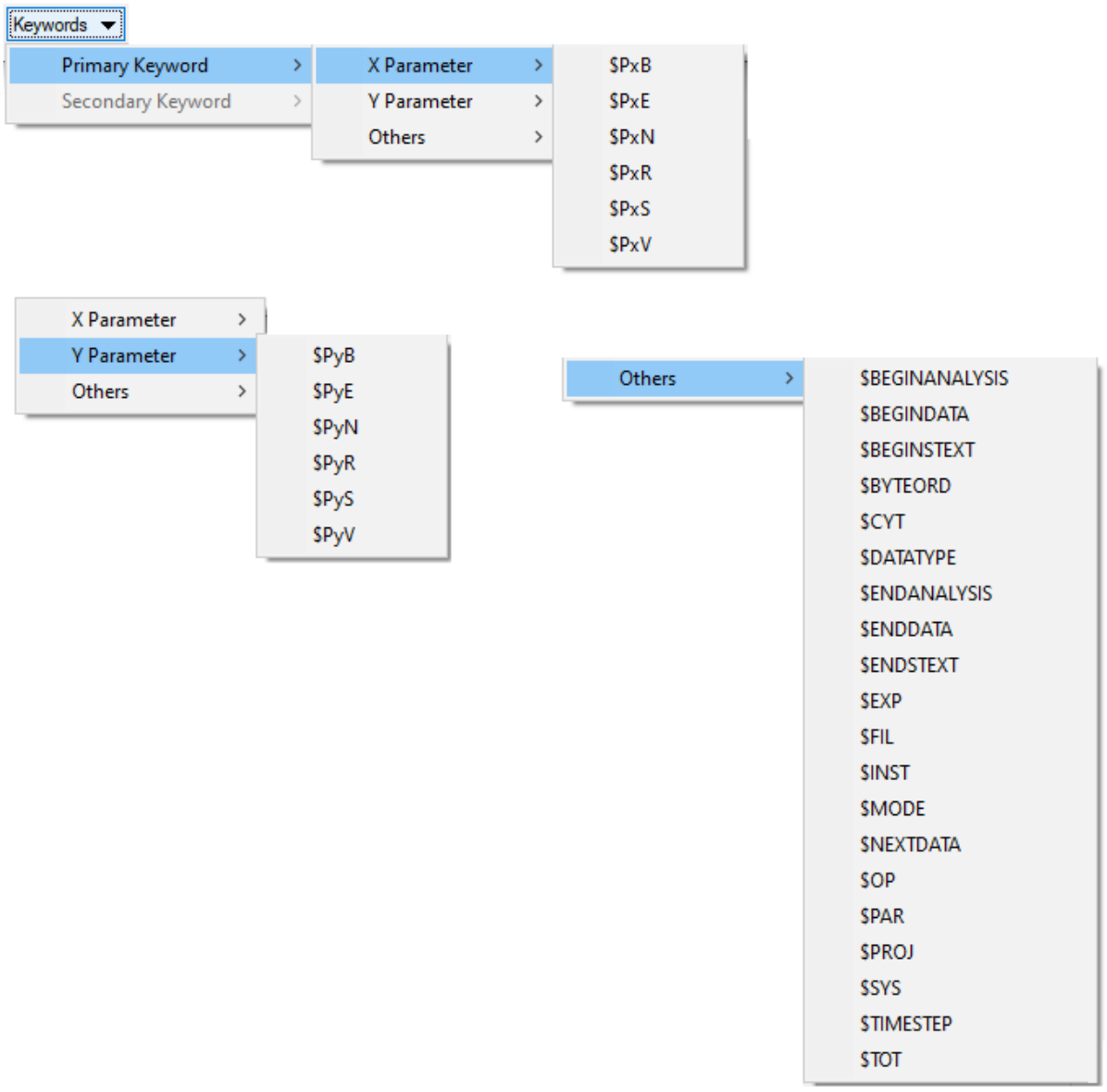
7.4.2.1 Preview

Displays a preview of text entered, if you have entered an FCS keyword for inclusion as part of the title, the key value will be displayed here.

7.4.2.2 Keywords button

Clicking the **Keyword** button allows you to pick from the list of available FCS keywords. You can select keywords from the parameter-based keywords for the x and y-axis parameters or select from other keywords listed.

Multiple keywords can be selected up to the maximum of 50 characters.



7.4.2.3 Reset to Default

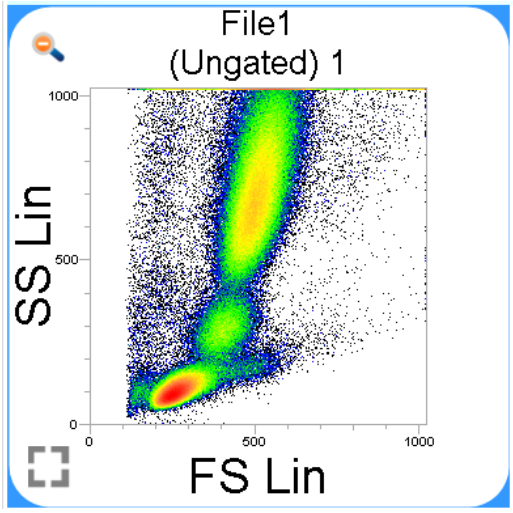
Pressing this button returns the plot title to the default $FIL.

7.4.2.4 Apply To All

Pressing this button will apply the title of the current plot to all plots in the current workspace. If you have selected any parameter specific keywords for display, the plot title will reflect the parameters of the relevant plot.

7.4.3 Select Plots

Plots displayed in the **Plots** area can be selected in various ways in different combinations.
A selected plot is surrounded by a blue selection rectangle:



Plots within the **Plots** area may be selected by clicking on the plot. **Ctrl** clicking on plots allows multiple selections. If a selected plot is **Ctrl** clicked, the plot is de-selected from the selection.

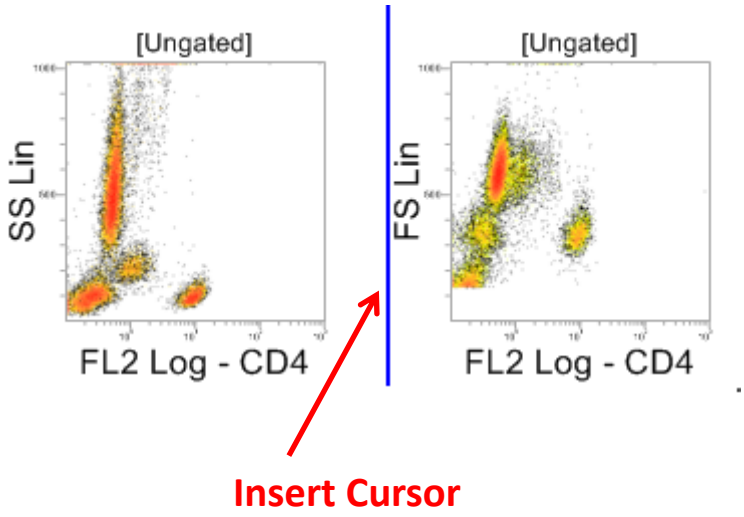
Plots displayed in the **Plots** area may also be selected by dragging out a selection rectangle around the desired plots. Ctrl dragging a selection area around plots will toggle that selection of the plots.

Pressing the Ctrl+A keys will select all the plots.

Plot selection options are also available from the **Edit** group on the **Analyze** tab; see section 12.5.

7.4.4 Move Plots

Plots can be rearranged within the **Plots** area by dragging and dropping. A vertical blue insert cursor highlights the new location of the plots.

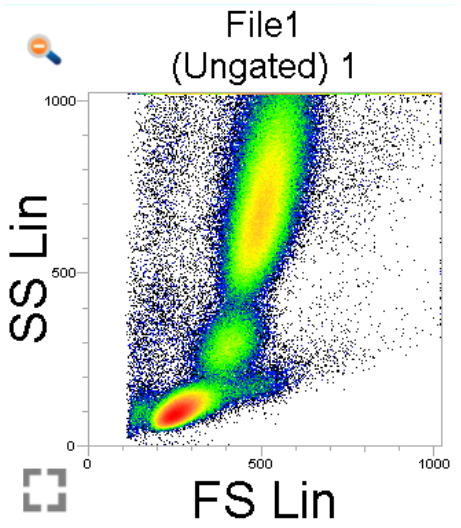


When multiple plots are selected and dragged, they are grouped together and moved as a group. After they are released, they remain together.

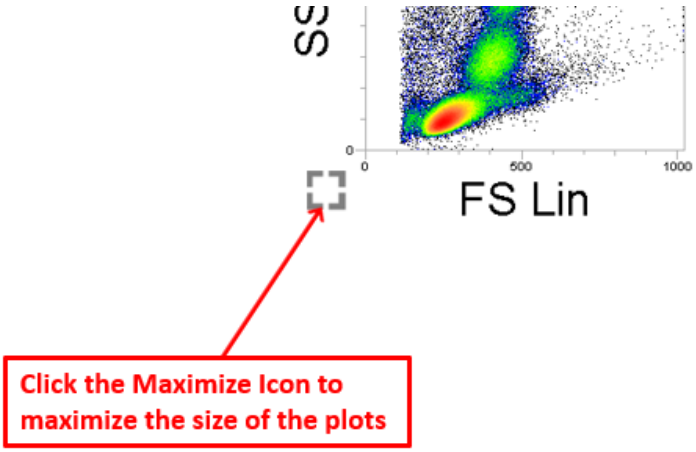
The plots displayed in the **Hierarchy View** cannot be moved.

7.4.5 Resize Plots

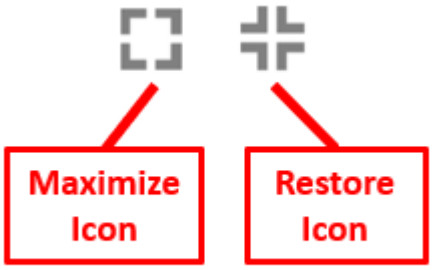
All plots in the workspace have a maximize icon in the lower left corner.



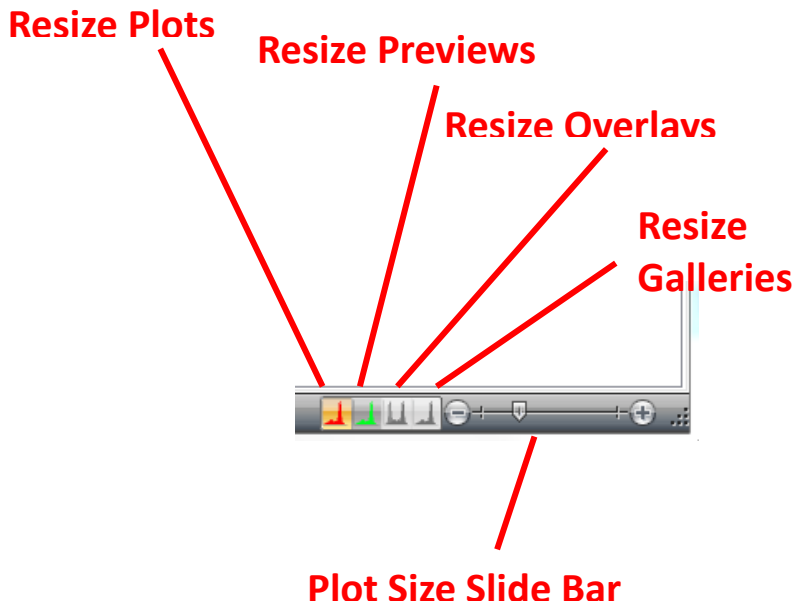
Click the maximize icon to maximize the size of all plots in the workspace.



The icon will then change to the restore icon, click this to return plots in the workspace to their previous size.



All plot types can be resized using the slide bar located at the lower right of the application. Different plot types may be visible at the same time so the required plot type should be selected then the size for that plot type adjusted as required.



If a mouse with a central wheel is used, then pressing the CTRL button while scrolling the mouse wheel (CTRL+Wheel) will adjust the current plot type size.
The buttons will only be enabled when the appropriate view is active. Hence **Resize Plots** and **Resize Previews** buttons will only be available if the **Plots** workspace tab is selected likewise**, Resize Overlays** and **Resize Galleries** buttons will only be available if the **Overlay** workspace tab is selected.

7.4.6 Delete Plots

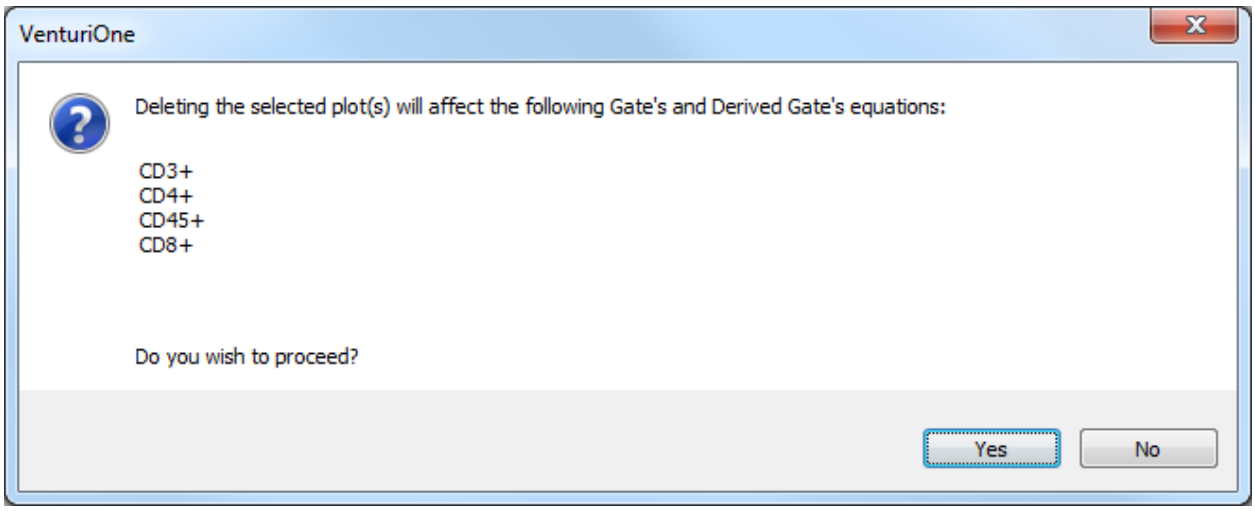
Plots may be removed from the **Plots** area by selecting them and pressing the **Delete** key.

Selected plots can also be deleted using the **Delete** button in the **Edit** group on the **Analyze** tab, see section 12.5.4.

7.4.6.1 Delete a Plot That Has a Region Applied

If the deleted plot has a region applied, deleting the plot also deletes the region and removes the region from any gating logic.

If the removal of a plot affects any derived gates a warning, listing all the gates affected, is displayed:

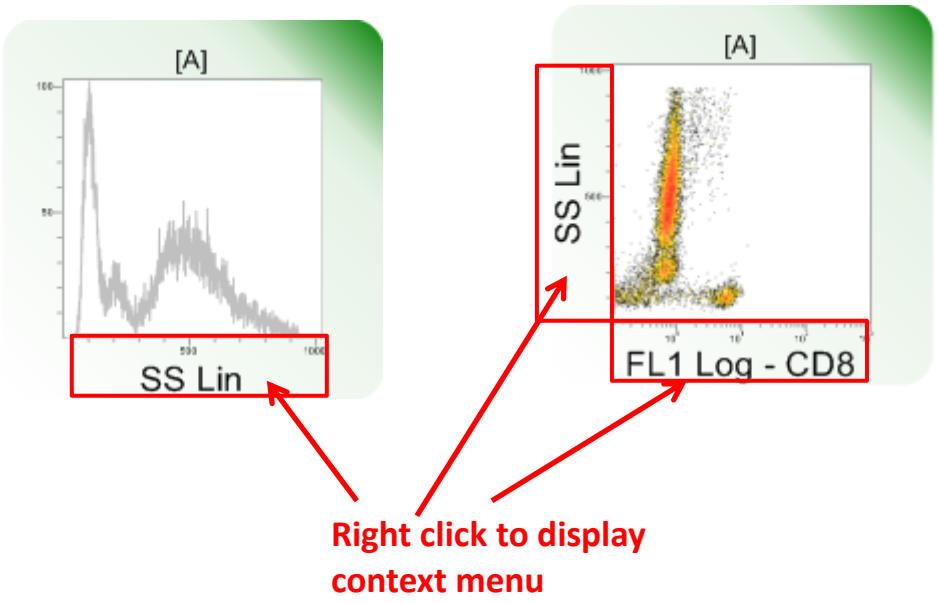


Select **No** to close the message without deleting plots.

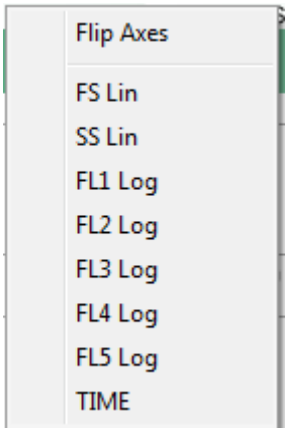
Select **Yes** to close the message and delete plots and remove gates.

7.4.7 Change Plot Parameters

VenturiOne provides functionality for changing the parameters of the plots in the **Plots** area. You can right click anywhere in the area marked by the red rectangles as indicated in the figure below:



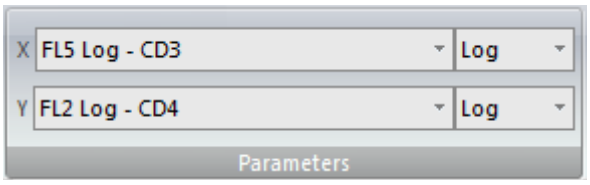
A context menu is displayed allowing you to select a different parameter:



The context menu contains all the parameters currently selected on the **Parameters** tab of the **Ribbon** and the option to 'Flip Axes' (disabled for histogram plots).

Double clicking in the area marked by the red rectangles launches the **Parameter Properties** dialog described in section 10.2.

Alternatively use the **Parameters** options of the **Home** tab to change the parameters of selected plots as described in section 9.4.



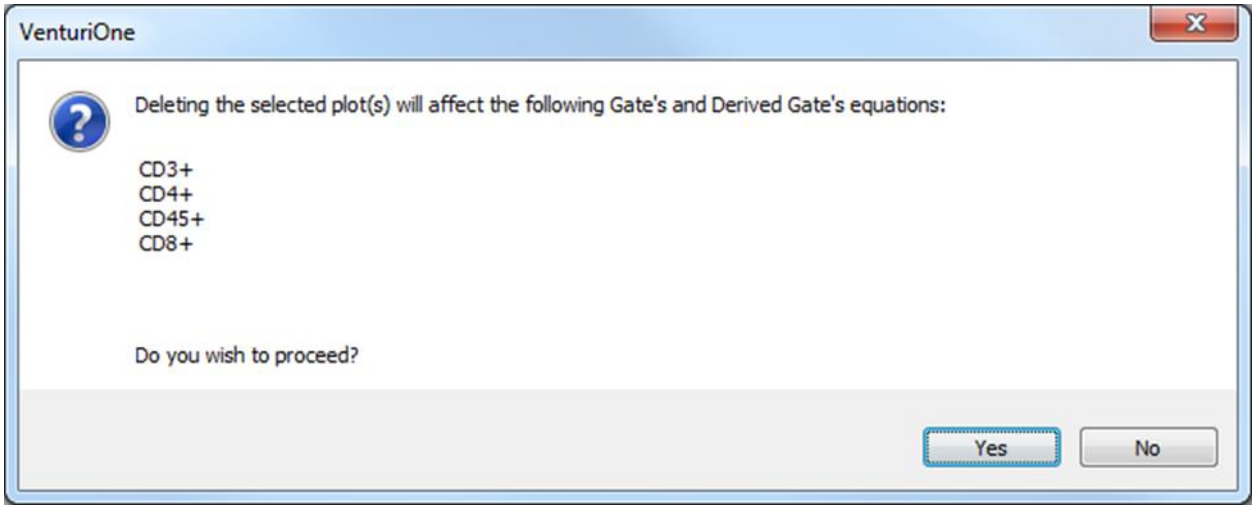
7.4.7.1 Change a Parameter

When a different parameter is selected the plot is updated to use the new parameter. The statistics and report are automatically updated as well.

The following are retained when a parameter is changed:

- Zoom status of the plot
- Smooth settings for histogram plots
- Gating of the plot
- Cell cycle options

If there are regions on the plot they will be deleted if parameters are changed. If the regions are not used in derived gate equations the following message is displayed:



Select **Yes** to delete all regions on the plot and change the parameter.

Select **No** to close this message; the parameter will not change; the region will not be deleted.

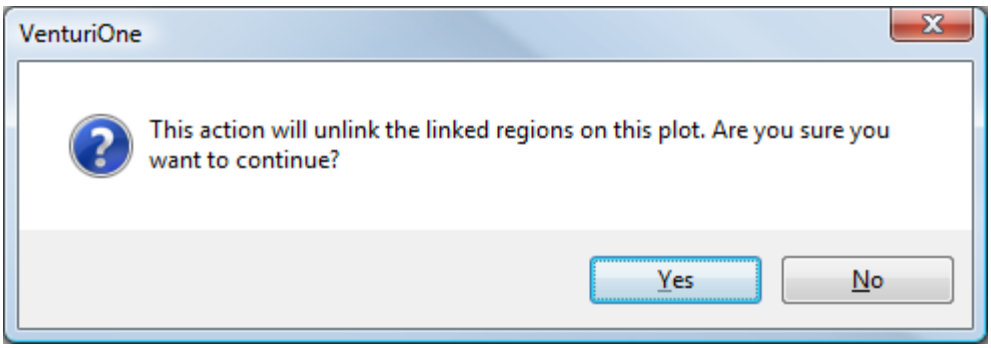
7.4.7.2 Flip Axes

You can select the **Flip Axes** option from the context menu if you wish to flip the axes of the plot. Any regions on the plot will be retained and flipped as well. Statistics and reports will automatically update.

When flipping a plot containing a quadrant region the quadrant dividers are flipped, but the names of the quadrants are persisted.

Any gate equations using these quadrant regions will be updated if required.

Any linking of regions will be removed if you flip plot axis. You will be warned before any changes are made as follows:



Select **Yes** to unlink the regions and flip the axes.
Select **No** to cancel flipping the axes. The linked regions will be retained.

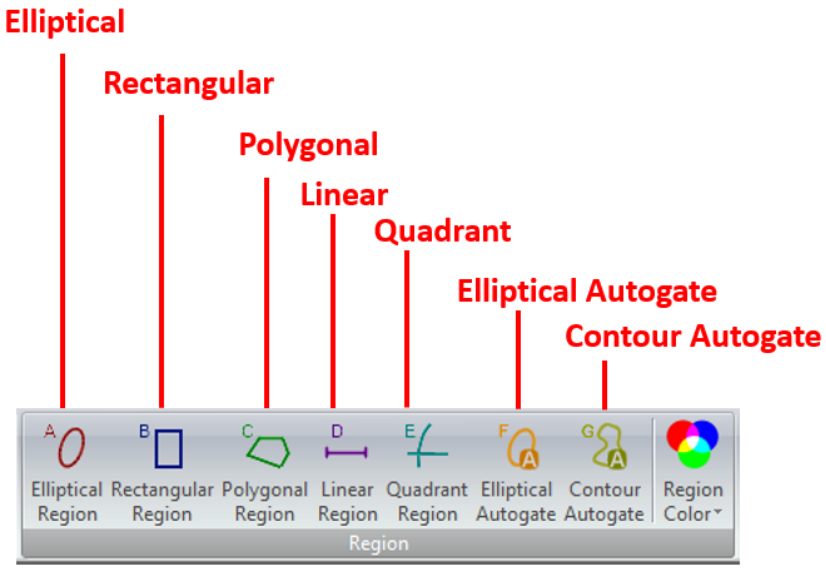
7.5 Regions

Regions can be defined on single or dual parameter plots.

The maximum number of regions that can be created in a workspace is 256. Quadrant regions are not included in this count.

7.5.1 Create Regions

Regions are created using the buttons in the **Region** group on the **Home** or **Analyze** tabs; see section 9.2 or 12.1 respectively. Five region types can be created as illustrated in the figure below:



To create a region on a plot, click the required region type to highlight the button. Then either click on a plot to set the region at the default size or draw out the required region size on the desired plot.

To cancel the creation of a region, press **Esc** before or during the dragging of that region.

Once the maximum number of 256 regions is reached the buttons in the **Region** group become disabled.

Only one region can be drawn per button selection for the Elliptical, Rectangular, Polygonal, Elliptical Autogate and Contour Autogate region types.

Linear regions can be applied to multiple selected single parameter plots by pressing **Ctrl** while clicking to add the region.

Quadrant regions can be applied to multiple selected dual parameter plots by pressing **Ctrl** while clicking to add the region.

7.5.2 Delete Regions

To delete a region, select it and press the **Delete** key or the **Delete** button in the **Edit** group on the **Analyze** tab.

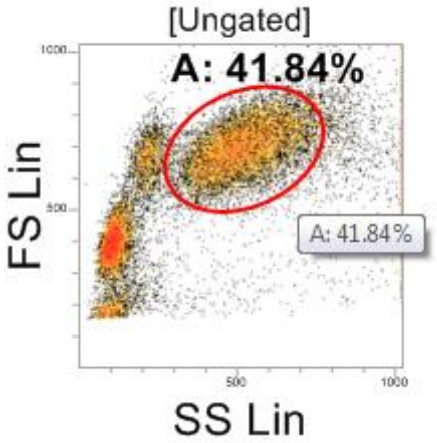
If deleting a region affects gate logic warnings, as described in section 7.4.6.1 will be displayed.

7.5.3 Region Name

Once a region has been created a unique name for the region is automatically generated. The region name and associated statistic are displayed adjacent to the region.

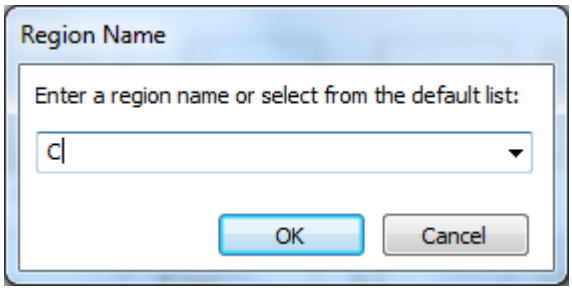
The size of text associated with the regions, displayed on the plots will auto-adjust to optimally display the text. The associated statistic is not displayed if there is not enough space. If the name is too long to fit on the plot it is not displayed.

By hovering the cursor over the region, a tool tip is displayed stating the name and the statistic associated with that region.



If a statistical value cannot be calculated, **ERROR** will be displayed instead of a numerical value.

Change the automatically assigned name by first selecting the region then double click on the region name on the plot, a Region Name edit box will appear as illustrated below;



Select a name from the **Region Name** drop-down or type in a new name in this combo box.

The drop-down list is populated with the names provided in the Default Region Name list in the VenturiOne Options, see section 25.1.3.1.

The **Region Name** can also be changed from the **Appearance** tab of the **Region Format** tab see section 13.1.1 for more information.

The region name can be repositioned but cannot be dragged outside the plot.

7.5.4 Region Color

When a region is created (except for Quadrant region) it is automatically assigned a color.

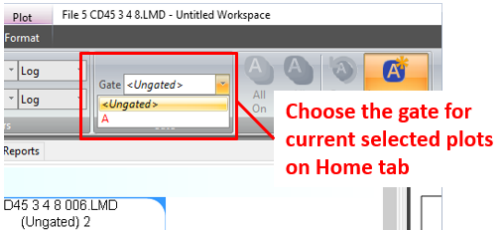
There is a set of ten predefined region colors within the software:

- Red
- Green
- Blue
- Light Orange (custom color)
- Turquoise
- Pink
- Plum (custom color)
- Pale Blue (custom color)
- Lavender (custom color)
- Bright Green (custom color)

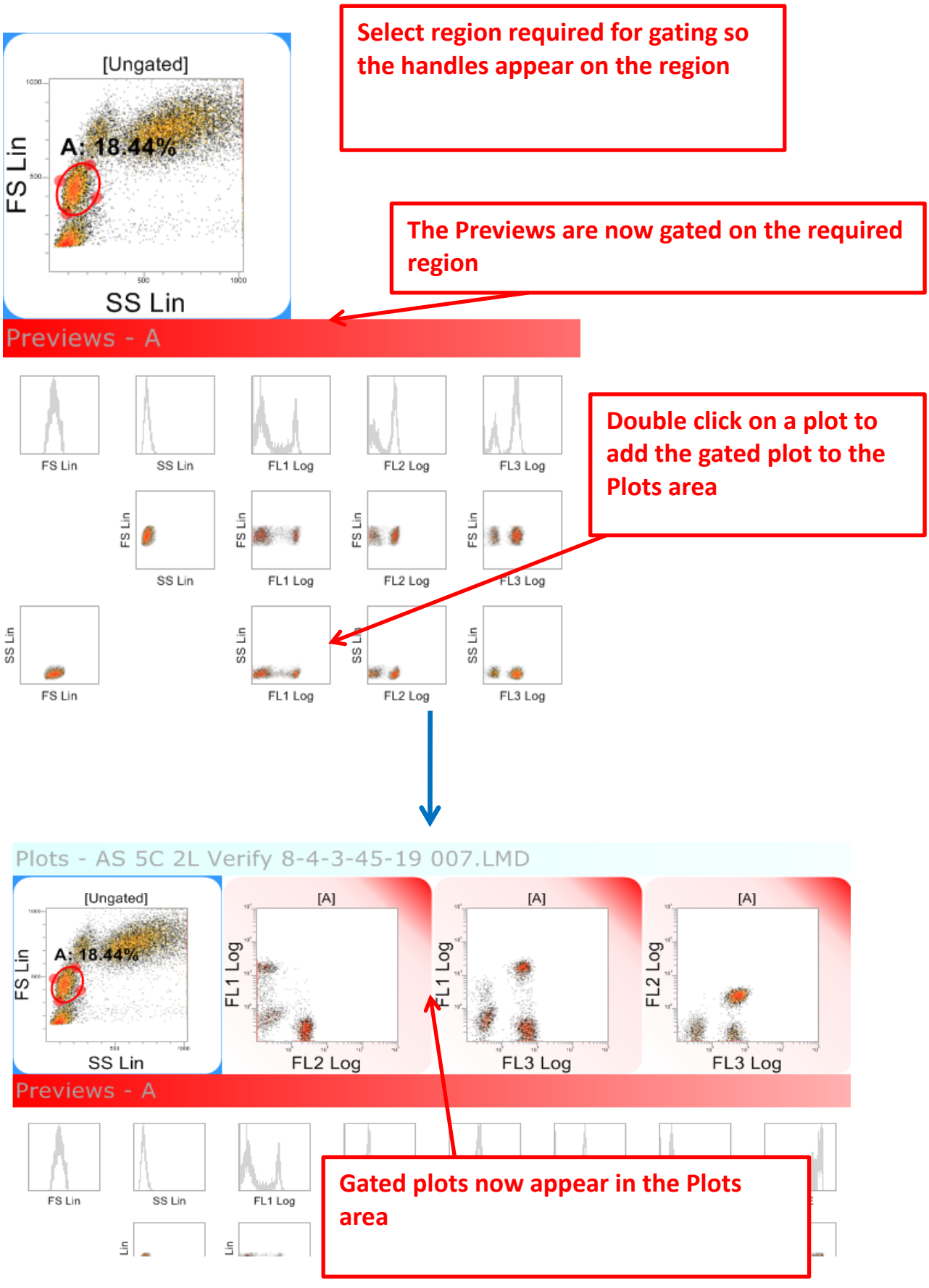
The region color can be changed via the **Region Color** combo box in the **Region** group of the **Home** tabs see section 9.2.8, or from the **Region Format** tab see section 13.1.2.

7.5.5 Regions and Gates

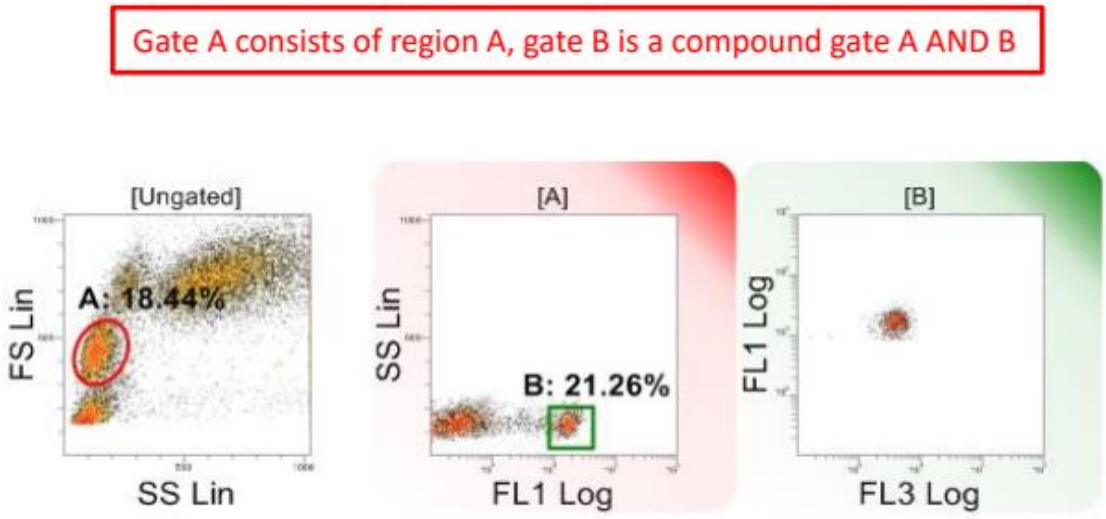
Any existing plot can be gated by selecting the required region or gate from the **Gate** drop-down list on the **Home** tab as described in section 9.5.



When a region is selected, the plots in the **Previews** are gated on the selected region. If a plot gated on a region is added to the plots area a gate associated with this region is automatically created with the same name and color as the region. Region color can be changed in the **Region** group on the **Home** tab see section 9.2.8, change the gate name and color in the **Edit Gates** dialog of the **Analyze** tab described in section 12.3.4.


Select region required for gating so the handles appear on the region
[Ungated]
A: 18.44%
FS Lin
SS Lin
The Previews are now gated on the required region
Previews - A
FS Lin
SS Lin
FL1 Log
FL2 Log
FL3 Log
Double click on a plot to add the gated plot to the Plots area
Plots - AS 5C 2L Verify 8-4-3-45-19 007.LMD
[Ungated]
A: 18.44%
[A]
FL1 Log
FL2 Log
FL3 Log
FL2 Log
Previews - A
Gated plots now appear in the Plots area

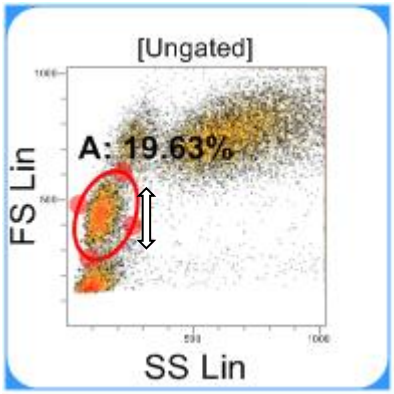
If a region is added to one of the gated plots and then selected, plots in the **Previews** area will become gated on the new region. If you now add a new plot to the **Plots** area it will be gated on a compound gate consisting of both the original gate of the plot (the Parent Gate) and the newly added region.



Note! When using derived gates and then changing gates or adding new regions, please check the gating logic to ensure the updated gate logic is as expected

7.5.6 Edit Region Orientation/Size and Position

Once the regions have been created, their orientation, size and placement can be edited by clicking-on and dragging the handles displayed on the selected region, as indicated by the cursor:



The region can be moved by selecting between the handles, as indicated by the 'Move' cursor, then dragging the region to a new position.

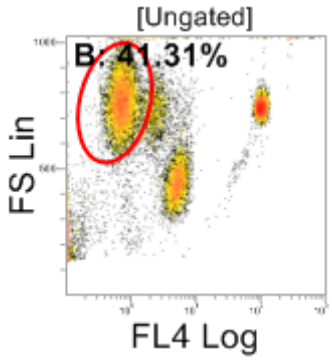
! If you change the region size or position unintentionally, use Undo to restore the previous size or position.

7.5.7 Elliptical Regions

You can use the **Elliptical Region** button on the **Home** tab (see 9.2.1) or **Analyze** tab (see 12.1.1) to draw an elliptical region on the desired plot.

If you select the elliptical region button and click on a dual parameter plot, a default sized elliptical region will be drawn where the plot was clicked.

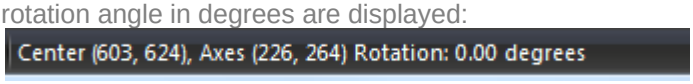
Alternatively click the button, then left click onto a dual parameter plot and drag out an ellipse from this point.



A ‘no entry’ type cursor  indicates that an elliptical region cannot be created in the current position.

Elliptical regions have four control points; these will be displayed when you click on a region to select it. You can use these control points to re-size, rotate and move the elliptical region.

While an elliptical region is being moved or resized the coordinates of the center, the axes length and the rotation angle in degrees are displayed:

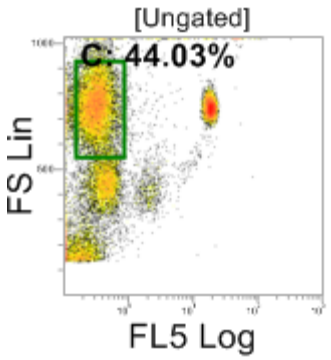


7.5.8 Rectangular Regions

You can use the **Rectangular Region** button on the **Home** tab (see 9.2.2) or **Analyze** tab (see 12.1.2) to draw a rectangular region on the desired plot.

If you select the **Rectangular Region** button and click on a dual parameter plot a default sized rectangular region will be drawn where the plot was clicked.

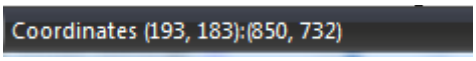
Alternatively, you can click the button, then left click onto a dual parameter plot and then drag out a rectangle from that point.



A ‘no entry’ type cursor  indicates that a rectangular region cannot be created in the current position.

Rectangular regions have eight control points; these will be displayed when you click on a region to select it. You can use these control points to re-size and move the rectangular region.

While a rectangular region is being moved or resized the coordinates of the top left and bottom right corners are displayed:



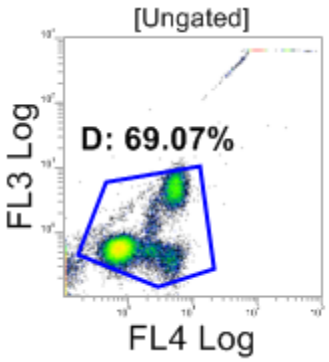
7.5.9 Polygonal Regions

You can use the **Polygonal Region** button on the **Home** tab (see 9.2.3) or **Analyze** tab (see 12.1.3) to draw a polygonal region on the desired plot.

Click the button, and then left click onto a dual parameter plot to determine the first point of the region. Then left click on the plot to add additional points to the polygon. The polygon is then completed by clicking on the start point.

If there are at least three points the polygon is also completed by right clicking (which will complete the polygon by adding a line from the last to first point).

When the polygon is completed, a polygonal region is created on the plot:

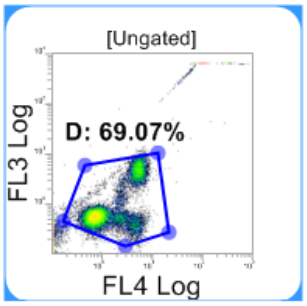


Double clicking on a line inserts a new point which can then be moved to create a modified region.

A ‘no entry’ type cursor  indicates that a polygonal region cannot be created in the current position.

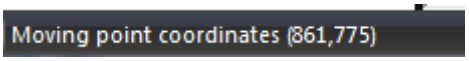
The polygonal region cannot be rotated and cannot be moved outside the plot axes.

Each vertex of the polygon is a control point.



Dragging the vertex will move that vertex only within the polygon. Dragging on a line within the polygon will move the region whilst maintaining the shape of the region. The polygonal region cannot be moved outside the plot axes.

While the vertex of a polygonal region is being moved or resized its coordinates are displayed:

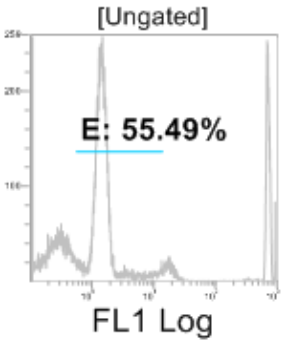


7.5.10 Linear Regions

You can use the **Linear** button on the **Home** tab (see 9.2.4) or **Analyze** tab (see 12.1.4) to draw a linear region on a single parameter plot.

If you click the **Linear** region button and then click on a single parameter plot a default sized linear region will be drawn, centered on the point where the plot was clicked.

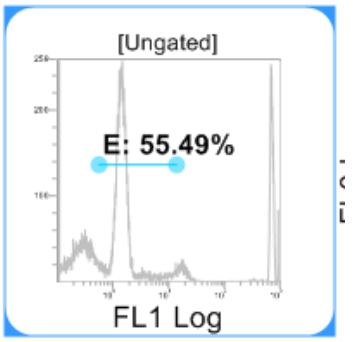
Alternatively click the button, then left click onto a single parameter plot and drag out a line to determine the region size.



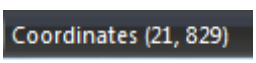
A ‘no entry’ type cursor  indicates that a linear region cannot be created in the current position.

The same linear region can be applied to multiple selected single parameter plots by pressing **Ctrl** while clicking to add the region:

Linear regions have control points situated at each end of the region. You can drag the control points to resize the region. Dragging the line allows you to move the region.



While a linear region is being moved or resized its coordinates are displayed:



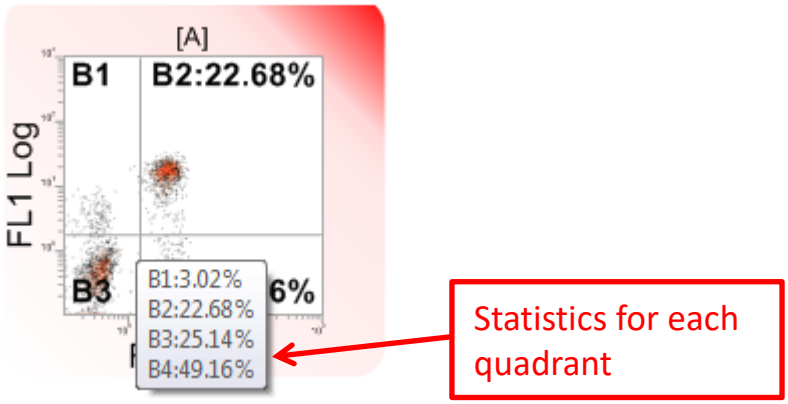
7.5.11 Quadrant Regions

You can use the **Quadrant Region** button on the **Home** tab (see 9.2.5) or **Analyze** tab (see 12.1.5) to insert a quadrant on a dual parameter plot.

Quadrant regions are formed from two divider lines (one vertical, one horizontal). Click the **Quadrant Region** button, and then click onto a dual parameter plot at the point on the plot where you wish the quadrant's intercept to appear.

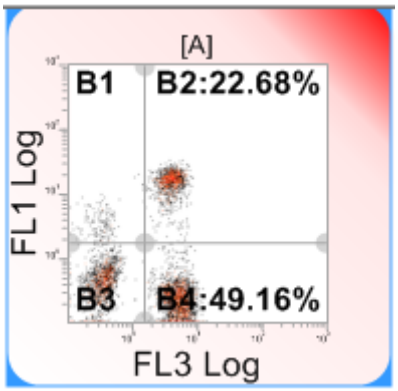
A 'no entry' type cursor  indicates that a quadrant region cannot be created in the current position.

By hovering the cursor over the quadrant intercept, a statistic is displayed for each quadrant:



The same quadrant region can be applied to multiple selected dual parameter plots by pressing **Ctrl** while clicking to add the region.

Quadrant regions have five control points; one situated at the divider intercept point and one situated at each end of the two dividers. Each of the control points can be used to modify the quadrant region. The quadrant region cannot be moved outside the plot axes.



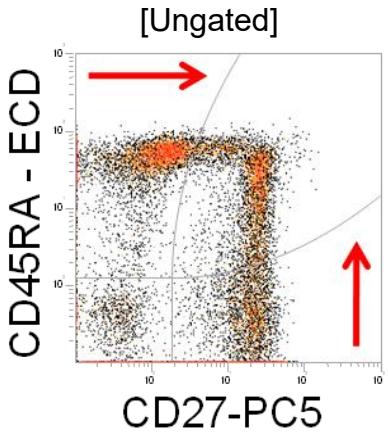
While a control point is moved, the channels of the intercept point are displayed in the status bar:



7.5.11.1 Creation of a Bendy Quad

When a broad distribution of events is observed, you may need to create non-linear quadrant dividers.

The control point on the right and top can be used to move the horizontal and vertical dividers respectively to a higher channel than the intercept point, creating a **'Bendy Quad'** region as illustrated below:



If the 'Bent' divider is moved to a lower value than the intercept point, the divider returns to its straight form.

7.5.12 Elliptical Autogate Regions

You can use the **Elliptical Autogate** button on the **Home** tab (see 9.2.6) or **Analyze** tab (see 12.1.6) to create an elliptical region on the desired plot.

If you select the elliptical autogate region button and click on a dual parameter plot, a default sized search area will be automatically created and the autogate will be created on the peak within this area.

Alternatively select the button, then left click onto a dual parameter plot and drag out a search area which will be used to determine the position of the elliptical autogate.

A 'no entry' type cursor  indicates that a linear region cannot be created in the current position.

When data changes, for example, if a new FCS file is loaded or when the workspace is applied to other files, the position of the elliptical region is automatically updated.

Autogates cannot be manually moved, they must first be turned off or reset as described in sections 9.6 and 13.5.

7.5.13 Polygonal Autogate Regions

You can use the **Polygonal Region** button on the **Home** tab (see 9.2.7) or **Analyze** tab (see 12.1.7) to draw a polygonal region on the desired plot.

If you select the polygonal autogate region button and click on a dual parameter plot, a default sized search area will be automatically created and the autogate will be created on the peak within this area.

Alternatively, select the button, then left click onto a dual parameter plot and drag out a search area which will be used to determine the position of the polygonal autogate.

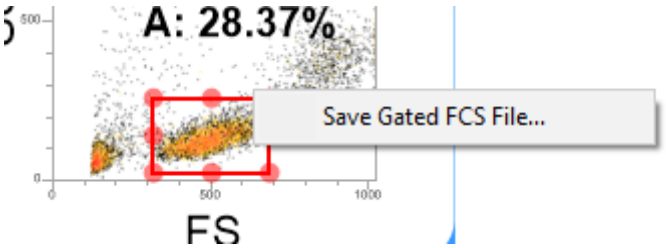
A ‘no entry’ type cursor  indicates that a linear region cannot be created in the current position.

When data changes, for example, if a new FCS file is loaded or when the workspace is applied to other files, the position of the polygonal region is automatically updated.

Autogates cannot be manually moved, they must first be turned off or reset as described in sections 9.6 and 13.5.

7.5.14 Save FCS File Context Menu

Selecting a region then right clicking displays the Save FCS File As… context menu.



Select the Save Gated FCS File… option to display the Save dialog as described in section 4.3.5. The active gate name will be pre-entered as the Gate Event Filter.

7.6 Gallery and Hierarchy View

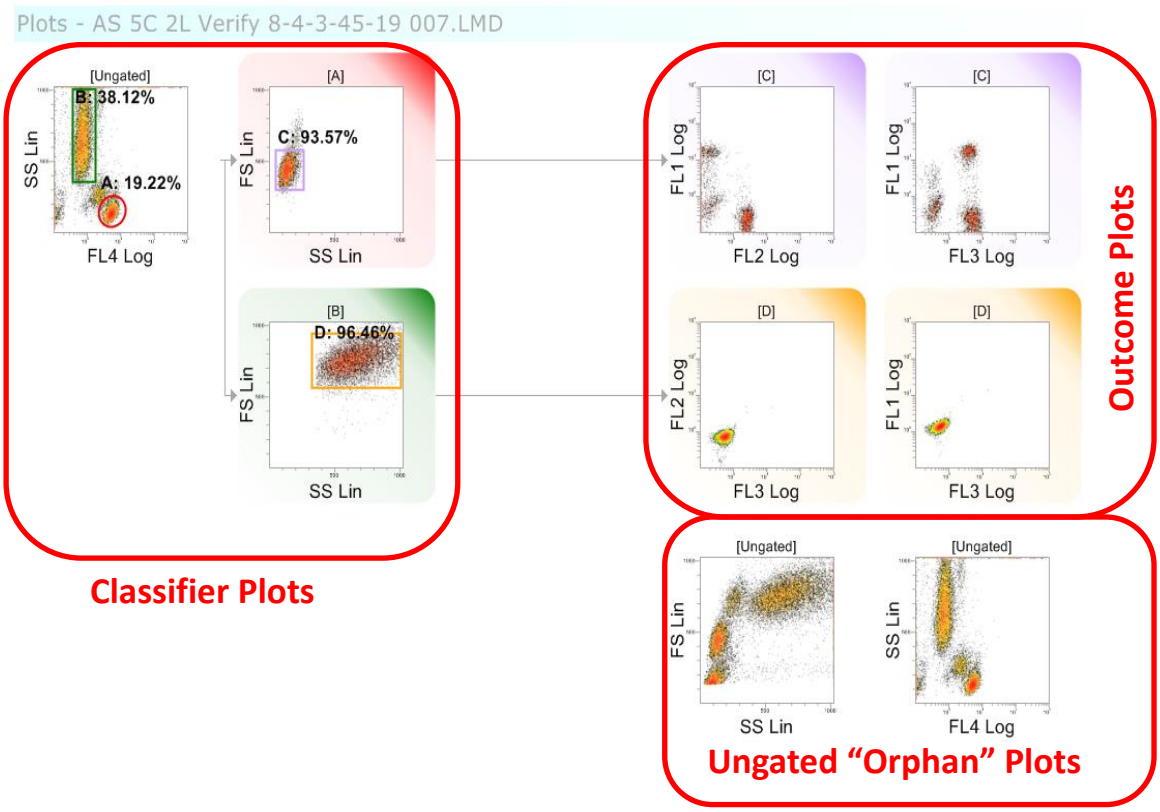
When you add plots to the **Plots** area, they are added next to each other in a **Gallery** plot view.

You can change the display to a family tree style hierarchy format by clicking the **Hierarchy** button in the **View** group of the **Analyze** tab (see 12.4.1). In this format the plots are displayed in a tree-like structure with a separate branch for each gate. Selecting the **Gallery** button will return you to the **Gallery** plot view.

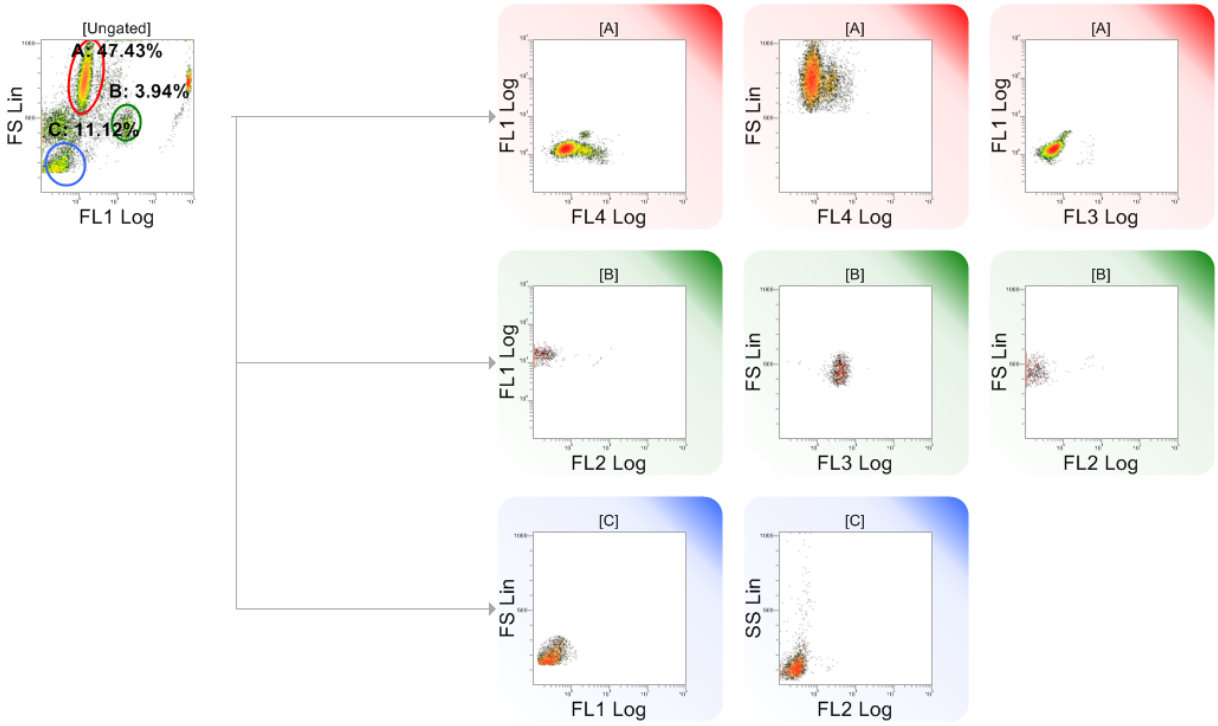
A plot containing a region which is part of a gate equation is called a **Classifier** plot.
A plot that has no gating regions on it is called an **Outcome** plot.

A pathway is drawn between each classifier plot and between other classifier plots and the subsequent gated outcome plots.

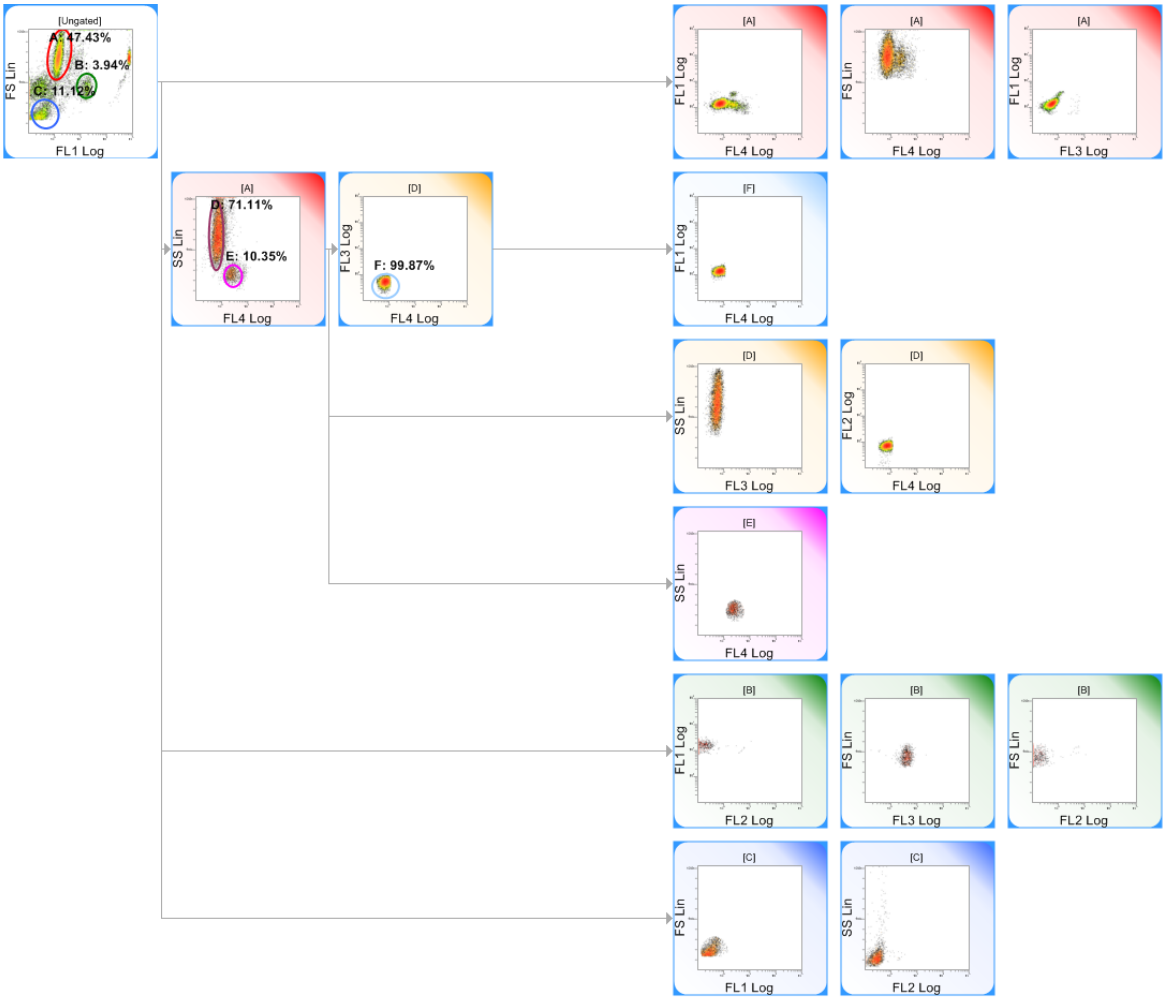
Ungated plots with no gating regions drawn on them appear outside the hierarchy as orphaned plots.



Example of plots on hierarchy format with only one classifier plot:



Example of plots displayed in a branched format:



7.7 Scaling

For high resolution data files, a parameter can be displayed in three different formats Linear, Logarithmic and HyperLog. This is selectable on from the **Home** tab (See 9.4.2) or **Plot Format** tab; see section 8.3.

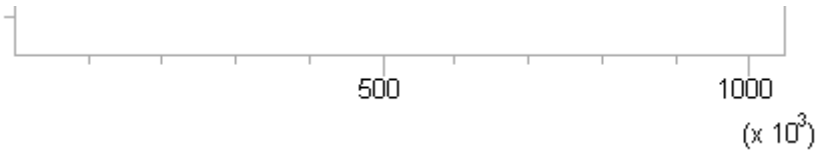
The scaling of parameters can be customized in a number of ways using the **Scaling** and **Zoom** options available in the **Scales** group of the **Parameters** tab; see 10.5.

Plots added to the **Plots** area will display their scales on the X and Y axes.

Fluorescence parameters default to Log scaling. Scatter or Other parameters default to Lin scaling.

7.7.1 Linear Scales

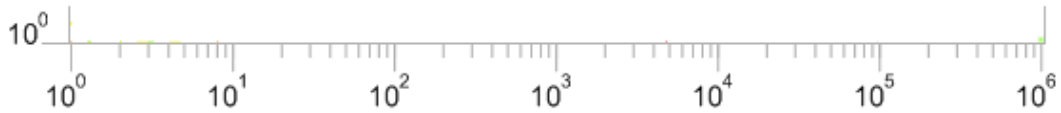
Linear scaled parameters display linear tick marks and numbering as illustrated below:



The default values are determined from information in the FCS file. Linear scaled data always starts at 0. The minimum and maximum values are always displayed at the ends of the scale.

7.7.2 Log Scales

Logarithmic scaled parameters display logarithmic tick marks and numbering as illustrated below:

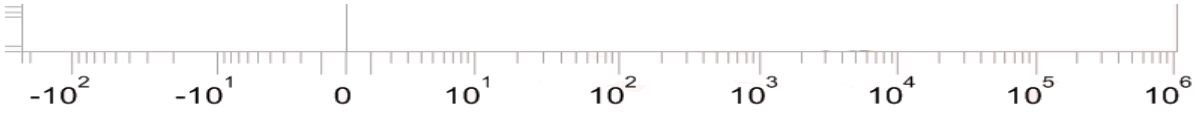


The default values are determined from information in the FCS file.

When no scaling information is available in the opened FCS file nor in the workspace the scaling is determined by the values found in the **Scaling** page of the **VenturiOne Options** dialog; see section 25.1.4 for details.

7.7.3 HyperLog Scales

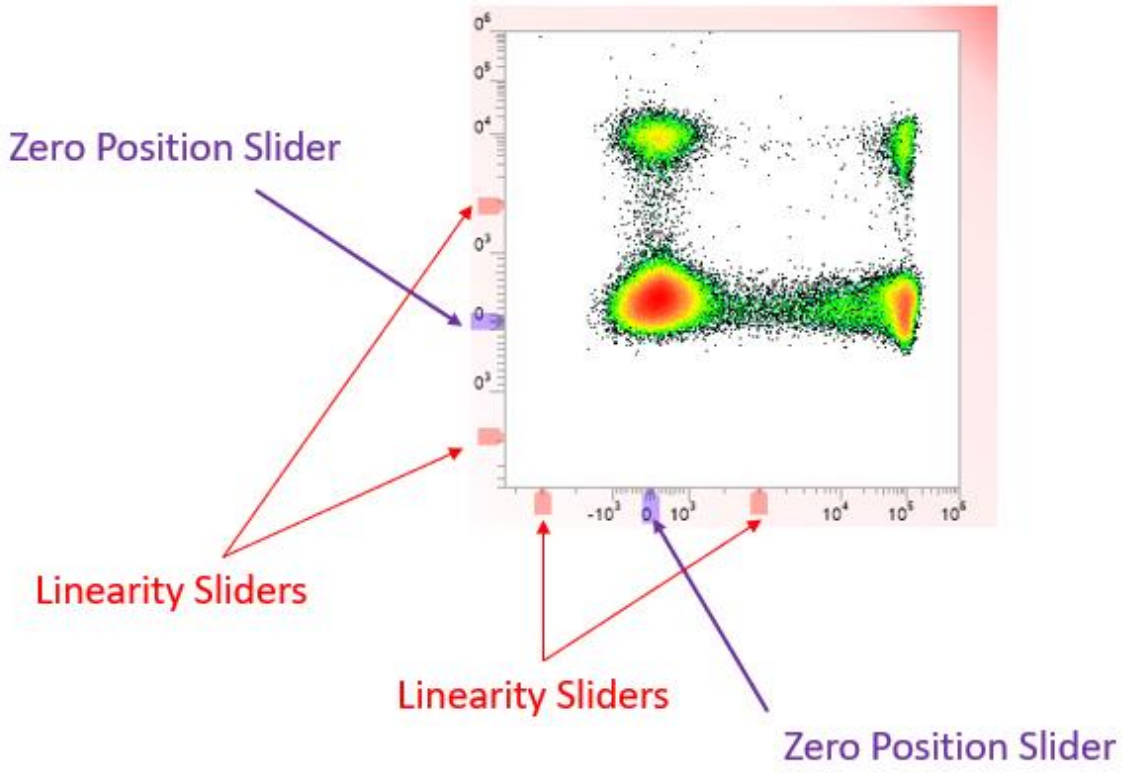
HyperLog scaled parameters display a combination of Linear and Logarithmic sections. Linear tick marks are displayed around the origin and Logarithmic tick marks are displayed towards the end of a scale as illustrated below:



When HyperLog is selected, the full range of data is displayed.

7.7.3.1 HyperLog Sliders

When the currently selected plot has one or more axes set to display HyperLog scaling, sliders appear on the appropriate axis.



7.7.3.1.1 Zero Position Sliders

The zero-position slider adjusts the number of negative decades displayed and hence the position of the zero point on the axis.

Moving the Zero Position Slider to the right (or vertically upwards) increases the Negative Section %.

The Negative Section % can be manually adjusted in the Parameter HyperLog page of the Scales Properties Dialog (section 10.6)

7.7.3.1.2 Linearity Sliders

Linearity sliders are displayed on the positive and negative side of the zero point and represents the % Linearity of the scale. The sliders mirror each other. Depending on parameter zooming and zero position, only one slider may be visible on an axis.

Moving the positive Linearity Slider to the right (or vertically upwards) decreases the Linearity %.

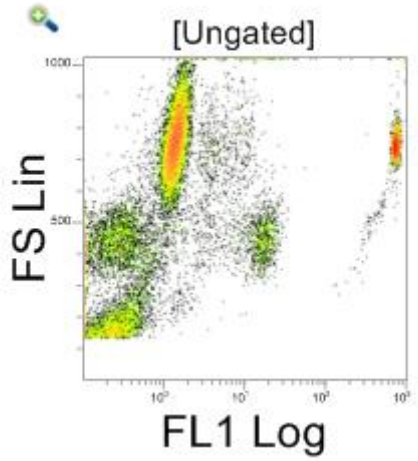
The Linearity % can be manually adjusted in the Parameter HyperLog page of the Scales Properties Dialog (section 10.6)

7.7.4 Plot Zoom Toggle Button

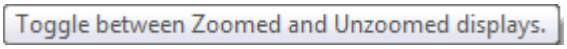
The **Plot Zoom Toggle** button allows you to toggle the current plot between the Default Scaling and the Parameter Zoom scaling. See section 10.5 for details on scaling.

The **Plot Zoom Toggle** button is only visible when one or more of the parameters associated with the plot have non-default zoom settings.

The **Plot Zoom Toggle** button is located on the top left corner of the plot:



If you hover over it a tooltip is displayed as illustrated below:



! If you change the zoom status on a plot with a region then the region position does not change, you may need to reposition any regions set on zoomed parameters.

7.8 DNA Cell Cycle Plots

In VenturiOne you can perform DNA Cell Cycle Analysis of single parameter linear data plots.

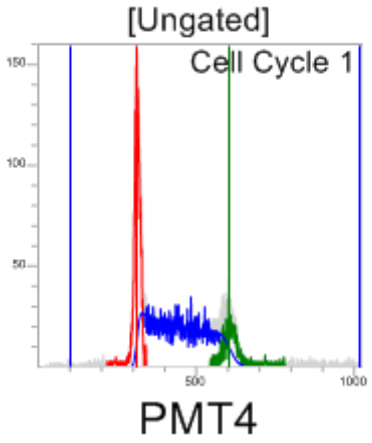
To display DNA Cell Cycle information, first select one or more histograms and then press the **Cell Cycle** button on the **Plot Format** tab of the **Ribbon**; see 8.1.2.

If there are regions on any of the selected histograms **Cell Cycle** cannot be activated and the **Cell Cycle** button is disabled. You have to delete the regions or deselect the plots containing them before **Cell Cycle** can be activated.

The DNA Cell Cycle plots are saved as part of the workspace.

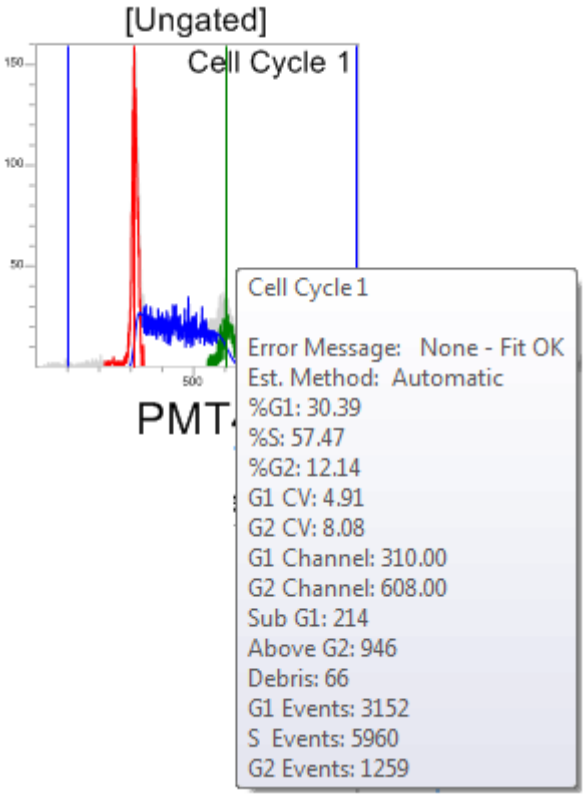
Each Cell Cycle plot is identified numerically with the title **Cell Cycle n,** where **n** is a number.

Below is an example of a single parameter linear plot with the **Cell Cycle** algorithm enabled:



7.8.1 Cell Cycle Plot Tool Tip

When the cursor is hovering over a cell cycle plot, a tool tip is displayed listing the Cell Cycle number, statistics and the **Error Message** associated with the plot:



7.8.2 DNA Cell Cycle Markers and Phases

The three phases of the DNA Cell Cycle are colored on the cell cycle plot as follows:

- **Red:** Denotes the G0/G1 phase
- **Blue:** Denotes the S phase

- **Green:** Denotes the G2/M phase

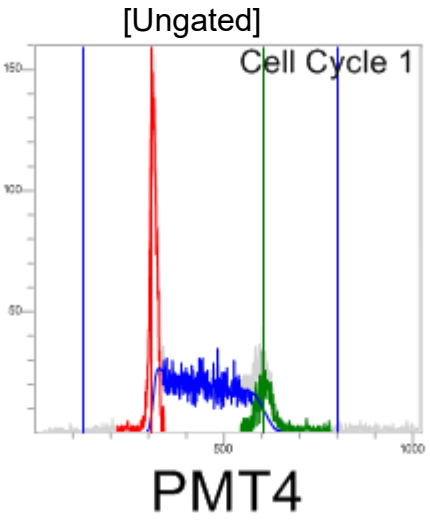
Additional regions cannot be applied to the Cell Cycle Plot.

Markers presented on the Cell Cycle plot denote the estimated central point of the G0/G1 and G2/M phases.

Additional markers are displayed, allowing you to set noise thresholds. Events that occur below or above these noise markers will be presented on the plot, but not analyzed, by the software.

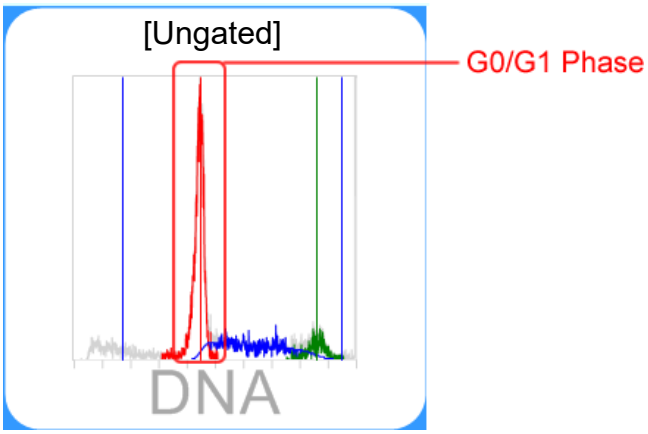
- **Blue Markers:** Debris Markers – Allow the exclusion of cellular debris above or below the respective marker.
- **Red**: Marks the estimated mean channel of the G0/G1 peak.
- **Green**: Marks the estimated mean channel of the G2/M peak.

The four Markers presented on each plot are illustrated in the figure below:

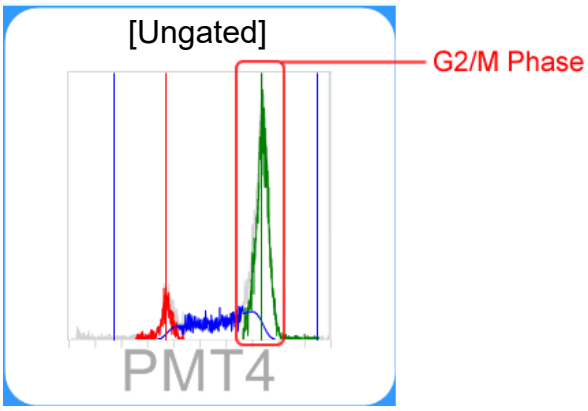


The state of the DNA Cell Cycle can be verified by studying these phases.

The figure illustrated below, indicates that the majority of cells are in the single cell G0/G1 phase. This is denoted by the large G0/G1 (red) peak.



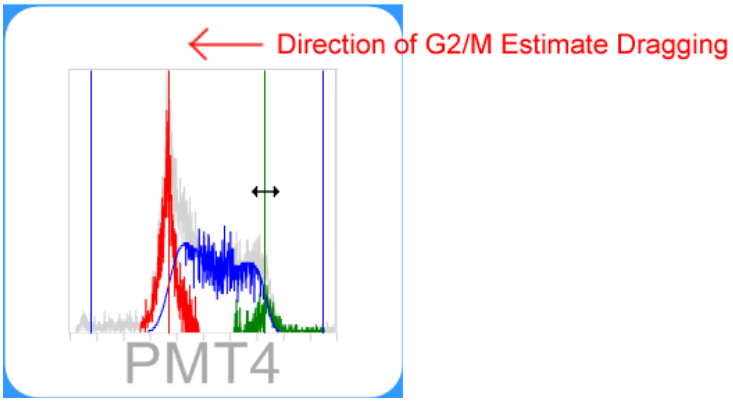
The figure illustrated below, indicates that the majority of cells are in the G2/M phase. This is denoted by the large G2/M (green) peak.



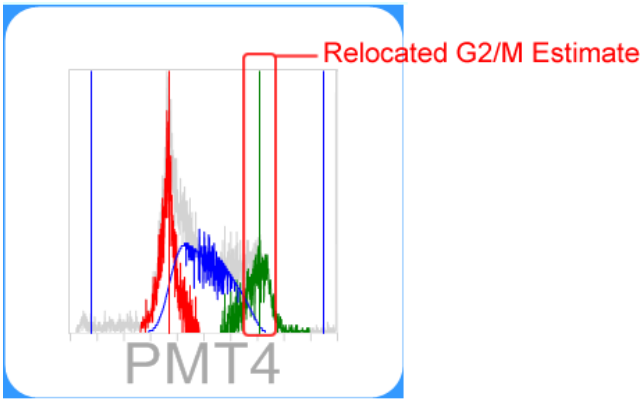
7.8.3 Reposition the Estimates

If the calculated phases are not as expected, the G0/G1 and/or G2/M Estimates can be adjusted by clicking on the marker and dragging/dropping it to the desired position to generate a successful fit for the DNA cycle.

In the example illustrated below, the G2/M peak is smaller than expected, therefore click on the G2/M Estimate and drag it to the left. Drop the G2/M Estimate in the desired position:



The G2/M peak is now positioned in the desired/expected location, as illustrated in the figure below:



The Estimate Markers cannot be crossed over. The Estimate Markers can be moved left or right but will be blocked by the one on its left side or on its right side.

The markers can only be moved to within 10 channels (based on a 1024 channel histogram) from each other.

Noise markers cannot be moved outside the limits of the histogram.

Moving any of the markers triggers recalculation on the DNA Cell Cycle plot. When the noise markers are moved the automatically estimated G1/G0 and G2/M peak values will be used. When the G0/G1 and/or G2/M are moved, the adjusted values of these markers will be used.

7.8.4 Reset to Automatically Calculated Estimates

Following a manual adjustment of the Estimates, you can return the calculated Estimates to their original calculated positions.

Click the **Reset Cell Cycle** button displayed on the **Plot type** group **(Plot Format** Ribbon**)** to reset the Cell Cycle with the automatically calculated G0/G1 and G2/M position Estimates.

Section 8

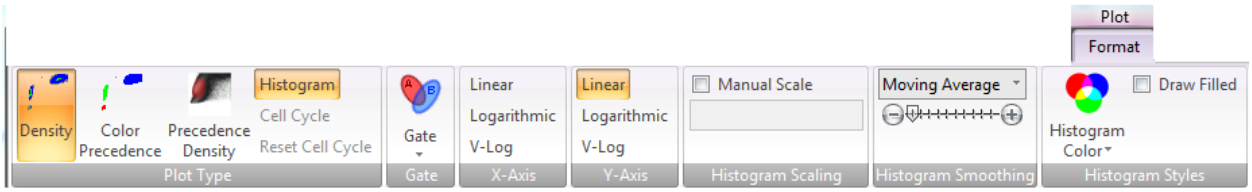
Modify Format of Plots (Plot Format Tab)

Plot Type
Gate Group
X-Axis Group
Y-Axis Group
Histogram Scaling Group
Histogram Smoothing
Histogram Smoothing Group
Histogram Styles Group

8 Modify Format of Plots (Plot Format Tab)

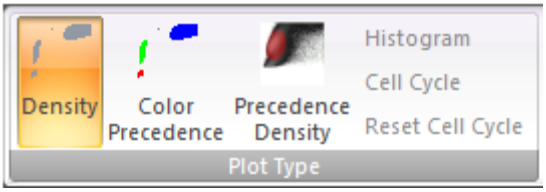
You can use the controls on the **Plot Format** tab to adjust the settings of selected plots in the **Plots** area.

The **Plot Format** tab is only available when at least one plot is selected in the **Plots** area.



8.1 Plot Type

The dual parameter plots in the **Plots** area may be formatted as **Density**, **Color Precedence** or **Precedence Density** plots by using the relevant button in the **Plot Type** group; refer to section 7.2 for details on these plot types. The **Plot Type** group also contains controls for formatting single parameter plots as **Histogram** or **Cell Cycle**.



8.1.1 Dual Parameter Plot Types

By the default the dual parameter plots in the **Plots** area are Density plots. To change the plot type, select one or more dual parameter plots and then click the required option: **Density**, **Color Precedence** or **Precedence Density**.

If different plot types are selected the plot types will not be highlighted but selecting one of the **Plot Type** buttons changes all selected plots to that plot type.

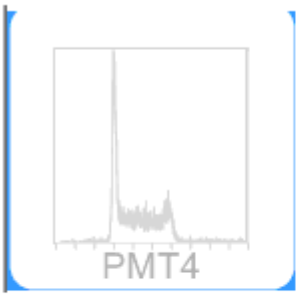
8.1.2 Single Parameter Plot Types

By default, the single parameter plots are standard Histogram plots. Single parameter linear data plots can also be displayed as DNA Cell cycle plots by selecting the required plots and clicking the **Cell Cycle** option.

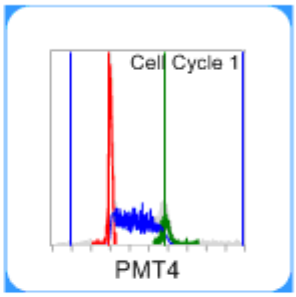
Each Cell Cycle is identified numerically with the title **Cell Cycle #**. See section 7.8 for details on DNA Cell Cycle plots.

If multiple single parameter linear plots are selected clicking the **Cell Cycle** button activates the cell cycle analysis for all of them.

Below is an example of cell cycle analysis for a single plot:



Plot as a standard histogram



Plot after cell cycle is activated

The **Reset Cell Cycle** button is only enabled when a Cell Cycle plot is selected.

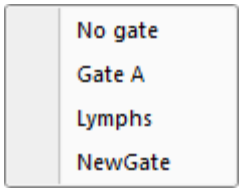
If the G1 and/or G2 markers have been manually adjusted clicking the **Reset Cell Cycle** button returns the markers to their automatically calculated positions. See section 7.8 for details on DNA cell cycle plots.

To change cell cycle plots back to standard histograms select them and click the **Histogram** option.

8.2 Gate Group

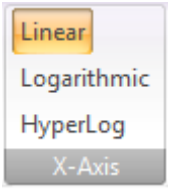


Click the drop-down arrow positioned on the **Gate** group to display a list of all the available gates as illustrated below:



Click the desired gate from this list to apply the gate to selected plots.

8.3 X-Axis Group



Clicking the **Linear**, **Logarithmic** or **HyperLog** buttons, positioned on the **X-Axis** group, allows you to change the X axis of the selected plots to the selected scale type.

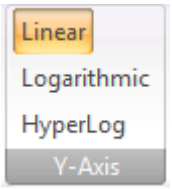
The buttons in this group are disabled for low resolution files and if cell-cycle plots have been selected.

If a low-resolution file is open, the X-Axis parameter is set by the information within the FCS file header and cannot be changed.

The **X-Axis** selection is applied to all the plots that are selected in the **Plots** area. Multiple **X-Axis** buttons will be highlighted if the selected plots have different x-axis types.

See section 7.7 for details of the available plot scaling types.

8.4 Y-Axis Group



Clicking either the **Linear, Logarithmic** or **HyperLog** buttons, positioned on the **Y-Axis** group, changes the Y axis of the selected plots to the selected type.

The buttons in this group are disabled for low resolution files and if single parameter histogram plots have been selected.

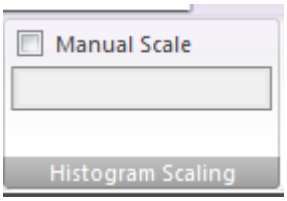
If a low-resolution file is open, the Y-Axis parameter is set by the information within the FCS file header and cannot be changed.

The **Y-axis** selection is applied to all the plots that are selected in the **Plots** area. Multiple **Y-Axis** buttons will be highlighted if the selected plots display different y-axis type.

See section 7.7 for details of the available plot scaling types.

8.5 Histogram Scaling Group

The **Histogram Scaling** group allows the scaling of the selected histograms to be modified for optimal plot visualization.



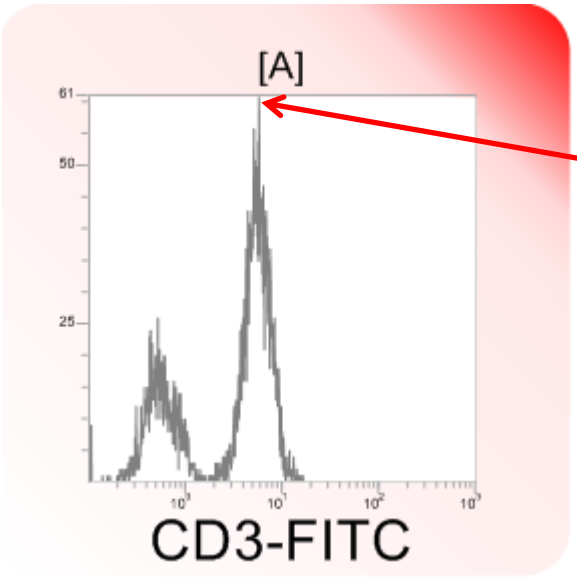
8.5.1 Automatic and Manual Scaling

VenturiOne automatically scales histogram plots to the maximum value on the plot. You can turn off the automatic scaling by selecting the **Manual Scale** check box.

The **Manual Scale** check box is enabled if at least one histogram plot is selected.

VenturiOne automatic scaling ignores events in the first and last sixteen channels unless there are no events in the remaining channels.

In the example below the histogram is auto scaled:



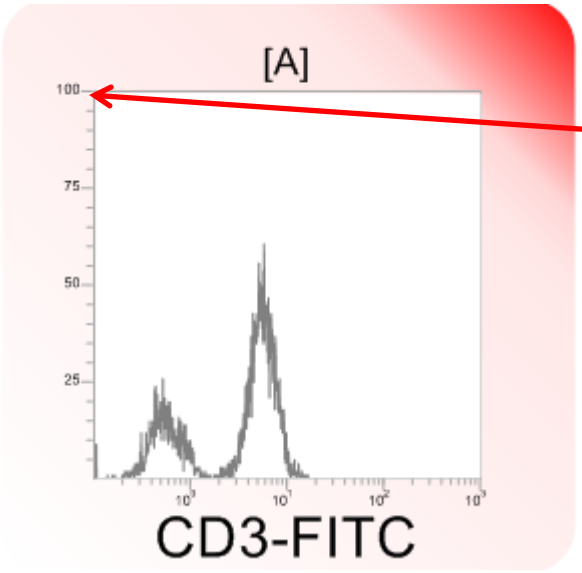
With Automatic scaling enabled histogram is scaled to the highest point on histogram

When you turn off auto scaling by selecting the **Manual Scale** checkbox, the edit field under it becomes enabled and allows you to specify the scaling value.

The default manual scale value is 100. You can change this value as desired. You must press Enter for the new value to be accepted.

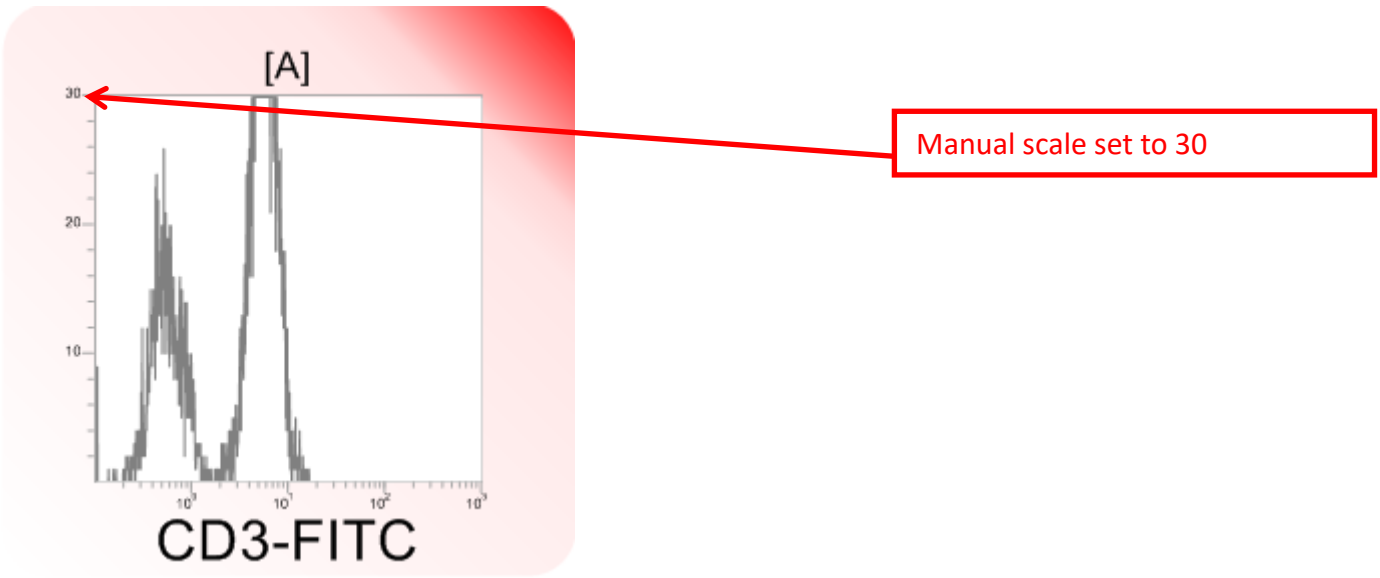
If you enter a value that is not valid an error message will be displayed.

In the example illustrated below, the **Manual Scale** box is selected, and the scale factor set to 100:



Manual scale set to 100

In the example illustrated below, the **Manual Scale** box is selected, and the scale factor set to 30:



8.6 Histogram Smoothing

The purpose of smoothing is to improve the visual display of histograms for presentation purposes. The underlying data and statistics are not altered. In VenturiOne smoothing can only be applied to single parameter histograms.

In VenturiOne two methods of smoothing are available: **Bin Reduction** and **Moving Average**.

In the **Bin Reduction** method of smoothing the values of consecutive bins are averaged to produce a histogram with a reduced number of bins.

VenturiOne implements 4 levels of bin reduction. Each level halves the number of bins displayed on the plot:

Level	Bin Count
1	1024
2	512
3	256
4	128

A value of 1024 is the same as no smoothing.

In the **Moving Average** method of histogram smoothing the average value of several consecutive bins (Window Size) of the raw histogram is used in the first bin in the window. This is repeated for the next bin until the whole histogram has been covered. The process can be repeated several times to produce an increasingly smoothed graph.

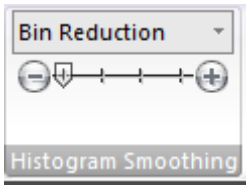
There are ten levels of smoothing available by this method the table below details the transformation values:

Level	Window Size	Iterations
1	-	-
2	3	1
3	3	3
4	3	4
5	3	6
6	5	2
7	5	3
8	7	2
9	7	5
10	9	10

The level 1 setting is the same as no smoothing.

8.7 Histogram Smoothing Group

The **Histogram Smoothing** group contains controls for histogram smoothing:



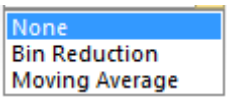
Smoothing is a plot property and is performed on a per plot basis. Only histogram plots in the plots area can have smoothing applied. Plot smoothing is displayed on the reports, print preview and printout.

The smoothing settings are saved as part of the workspace whenever the workspace or the playlist are saved.

8.7.1.1 Histogram Smoothing Method Combo Box

The **Histogram Smoothing Method** combo box is only enabled when at least one histogram or cell cycle plot is selected, and no dual parameter plots are selected.

This combo box allows the smoothing method to be selected. The following options are available in the drop-down list:

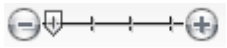


The smoothing method selected is applied to all currently selected single parameter histograms and cell cycle plots. Applying smoothing to plots does not affect statistical results.

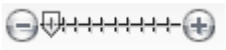
8.7.1.2 Histogram Smoothing Level Selection Slider

The **Histogram Smoothing Level** selection slider is invisible when the **Histogram Smoothing Method** combo box is disabled or when None is selected.

When Bin Reduction is selected, the slider has 4 tick marks representing levels 1 – 4. Level 1 (1024 bins) is no smoothing:



When Moving Average is selected, the slider has 10 tick marks, representing levels 1 – 10. Level 1 is No smoothing, level10 is the greatest level of smoothing:



The currently selected level in the slider is marked by an arrow  .

Clicking the  button or to the left of the arrow on the slider decreases the level by one.

Clicking the  button or to the right of the arrow on the slider increases the level by one.

The level can also be changed by dragging and dropping the arrow with the mouse.

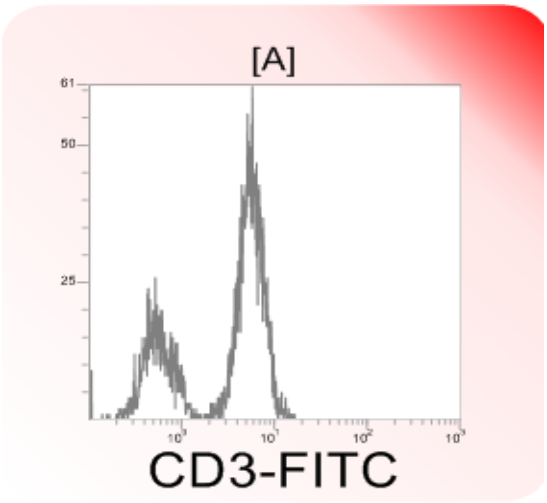
The smoothing level selected is applied to all currently selected single parameter histograms and cell cycle plots.

The default setting is level 1 (No smoothing).

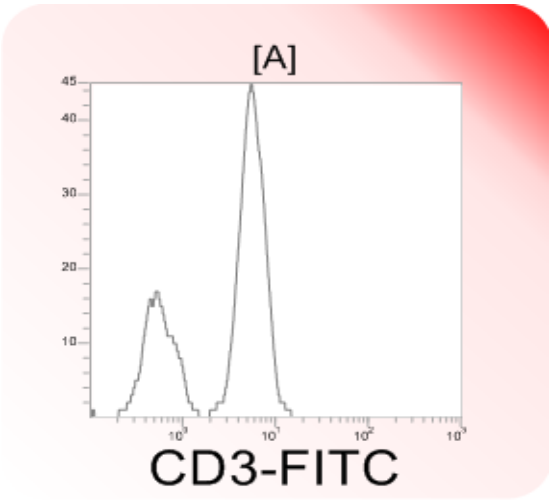
The level setting for each method is persisted for each plot and saved in the workspace.

8.7.1.3 Example of Smoothing

Below is an example of the same histogram before and after smoothing:



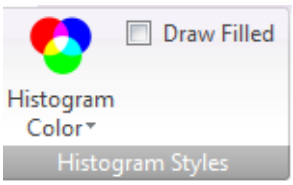
Unsmoothed Histogram



Smoothed Histogram

8.8 Histogram Styles Group

The **Histogram Styles** group provides options to modify the appearance of the selected histograms:



8.8.1.1 Histogram Line/Fill Color 

By default, histograms are displayed using the color specified in the **Default Histogram Color** control in the **VenturiOne Options** dialog (See section 25.1.1.6).

Click the **Histogram Line/Fill Color** button to display a standard Windows color selection control to modify the line and fill color of the selected histogram(s) in the Plots area.

The color settings are saved in the Workspace.

8.8.1.2 Draw Filled

Check in the **Draw Filled** check box to fill the selected histograms of the current file as illustrated below:



The color set in the **Histogram Line/Fill Color** is used as the fill color.

The **Draw Filled** selection is saved in the workspace.

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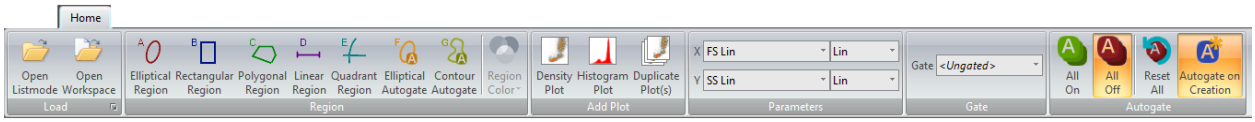
Section 9

Home Tab

Load Group
Region Group
Add Plot Group
Parameters Group
Gate Group
Appearance Group

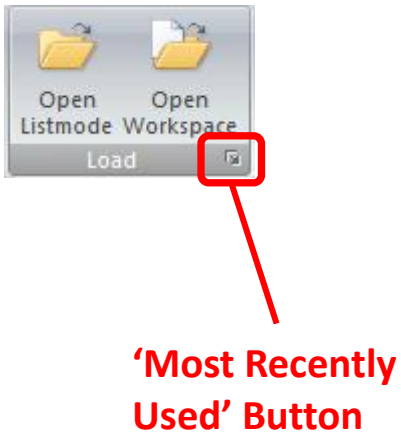
9 Home Tab

The **Home** tab contains all the essential tools to begin data analysis of FCS files, here files can be selected, regions created, and plots created and gated.



9.1 Load Group

The **Load** group contains controls for opening FCS files and opening workspaces, the **Option Button** allows selection of the most recently used files.



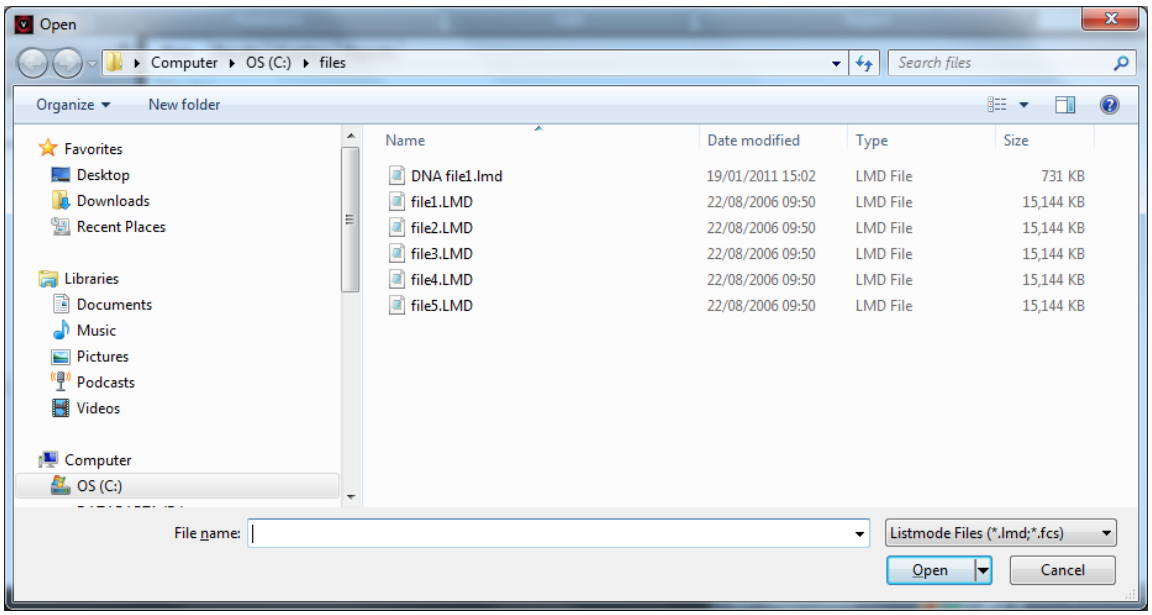
9.1.1 Open Listmode

The Windows **Open** dialog is displayed, listing the files present in the last used folder or **My Documents** if this is the first time you have used the software.

Select the desired FCS files and click the **Open** button to add the selected files to the VenturiOne **Playlist**.

If the current folder is not the one containing your FCS files, you need to browse to the correct folder.

The files of type displays **Listmode Files (*.lmd, *.fcs)** by default, but can be changed to **All Files (*.*)** if your files are not displayed.



The supported file types are described in section 2.1.
If the opened file is not a valid FCS file, an error message is displayed describing the cause of the error.

9.1.2 Open Workspace

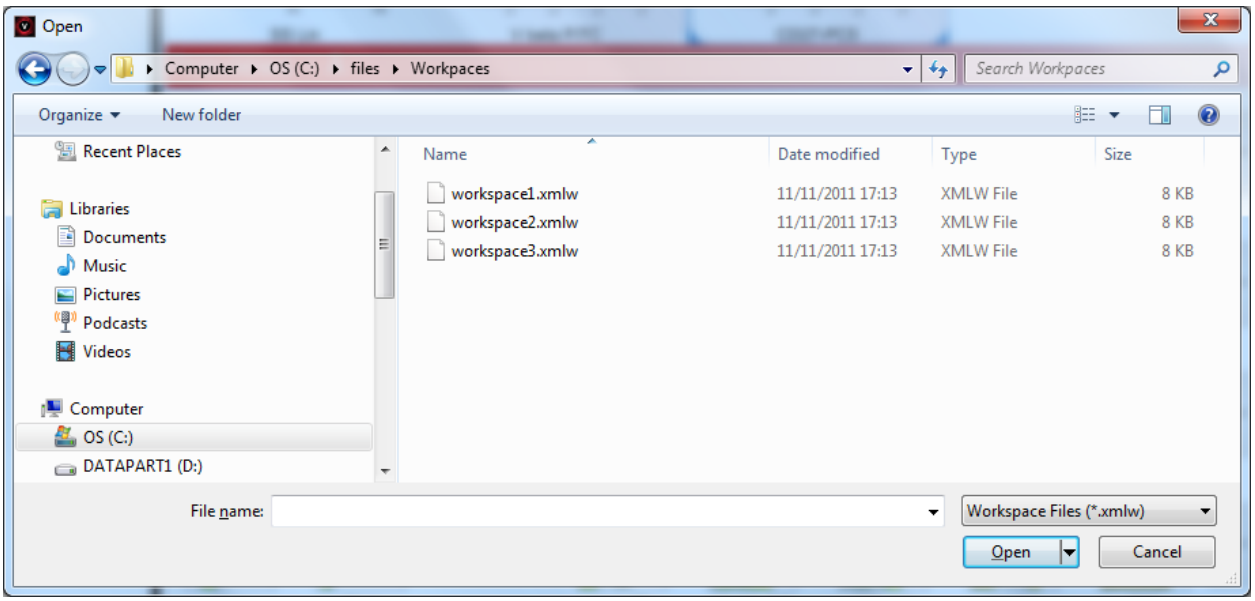
This menu item is only enabled if an FCS file is open in the workspace.

To open an existing Workspace file, click the **Open Workspace…** option (or press the **Ctrl+F** keys).

The Windows **Open** dialog is displayed, listing the files present in the last used folder or **My Documents** if this is the first time you have used the software.

Select the desired workspace file and click the **Open** button to load the workspace file with the currently open FCS file.

If the current folder is not the one containing your workspace files, you need to browse to the correct folder.



The files of type displays **Workspace Files (*.xmlw)** by default, this can be changed to display **All Files (*.*).**

Double clicking on a file in this dialog has the same functionality as selecting it and clicking the **Open** button.

9.1.3 'Most Recently Used' Dialog Button

Click the **Most Recently Used** Button to launch the Most Recently Used (MRU) dialog which lists the 10 most recently used FCS files and workspaces.

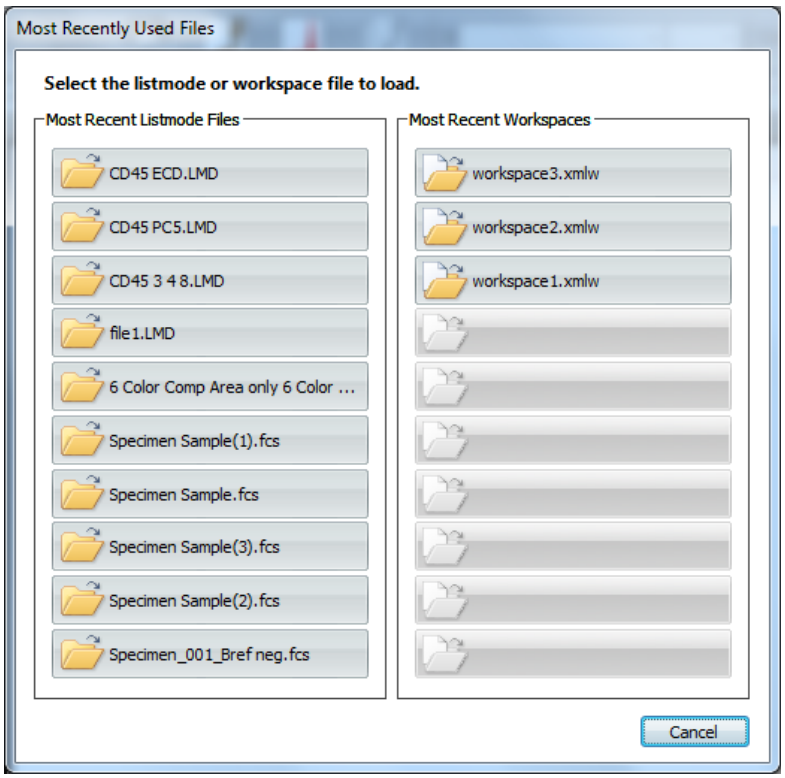
9.1.4 'Most Recently Used' Dialog

The **Most Recently Used (MRU) dialog** lists the 10 most recently used FCS files and workspaces.

Click one file listed under **Most Recently Used Listmode File** to add that file to add that file to the end of the playlist and open that file.

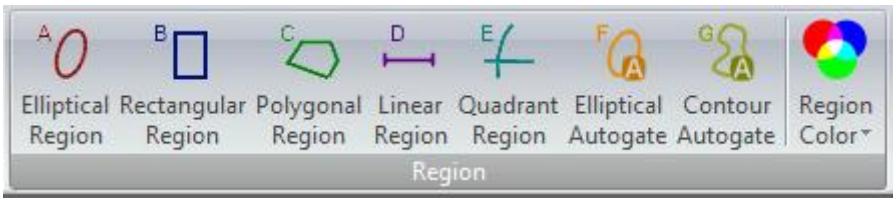
Select a workspace listed under **Most Recently Used Workspaces** to assign that workspace to the currently open file in the playlist. This option is only available when an FCS file is open in VenturiOne.

Press Cancel to close the dialog without making changes.



9.2 Region Group

The **Region** group on the **Home** tab contains controls for creating and editing regions.
You can create a maximum of 256 regions per **Workspace**. Once this number is reached the region creation buttons in the **Region** group become disabled.



9.2.1 Elliptical Region Button

The **Elliptical Region** button is used to draw an elliptical region on the desired plot. See section 7.5.7 for more details on creating and editing elliptical regions.

9.2.2 Rectangular Region Button

The **Rectangular Region** button is used to draw a rectangular region on the desired plot. See section 7.5.8 for more details on creating and editing rectangular regions.

9.2.3 Polygonal Region Button

The **Polygonal Region** button is used to draw a polygonal region on the desired plot. See section 7.5.9 for more details on creating and editing polygonal regions.

9.2.4 Linear Region Button

The **Linear Region** button is used to draw a linear region on a single parameter plot. See section 7.5.10 for more details on creating and editing linear regions.

9.2.5 Quadrant Region Button

The **Quadrant Region** button is used to insert a quadrant on the desired plot. See section 7.5.11 for more details on creating and editing quadrant regions.

9.2.6 Elliptical Autogate Regions

The **Elliptical Autogate Region** button is used to draw an elliptical autogate on a dual parameter plot. See section 7.5.12 for more details on creating and editing elliptical autogates.

9.2.7 Polygonal Autogate Regions

The **Polygonal Autogate Region** button is used to draw a polygonal autogate on a dual parameter plot. See section 7.5.13 for more details on creating and editing polygonal autogates.

9.2.8 Region Color Selection

Once a region is selected the **Region Color** combo box becomes enabled and displays the region's color.

To change the region's color, click the arrow to display the **Color** control illustrated below and select the desired new color.



! Make sure the color you select is not the same as the background color.

9.3 Add Plot Group

The **Add Plot** group contains controls for creating plots in the workspace. These buttons are only available if an FCS file is open in the software.



9.3.1 Density Plot Button

Select the **Density Plot** button to add a dual parameter density plot displaying the first two parameters of the current list mode file. This will normally display a plot showing Forward Scatter against Side scatter.

9.3.2 Histogram Plot Button

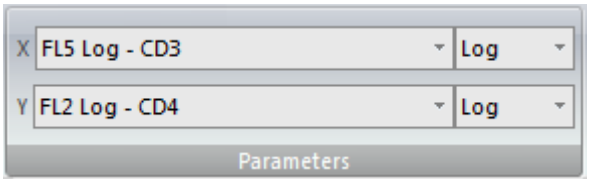
Select the **Histogram Plot** button to add a single parameter histogram plot displaying the first two parameters in the current list mode file. This will normally display Forward Scatter against Side scatter.

9.3.3 Duplicate Plot Button

Select the **Duplicate Plot** button to add another copy of the selected plot to the current workspace.
If the current plot has Cell Cycle mode enabled, the duplicate plot will display only the raw histogram with Cell Cycle disabled.

9.4 Parameters Group

The controls in the **Parameters** group are used to change the X and Y parameters of the currently selected workspace plots. The scaling of parameters can be changed.



9.4.1 X and Y Parameter Selection Combo Box

The X and Y parameter for the currently selected plots can be set using this combo box. All parameters enabled in the current file will be listed for selection. This option is only available when an FCS file is loaded into the current workspace.

If all the selected plots have the same parameter settings, then the combo boxes will be populated with the current parameter name. If all the selected plots do not have the same parameter, then the combo boxes will be empty.

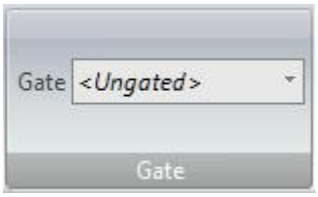
9.4.2 Parameter Scale Selection Combo Box

This option allows changing the scaling of the chosen parameters for all selected plots. Lin, Log and HyperLog options are available for selection. This option is only available when an FCS file is loaded into the current workspace; this option will not be available if the file is a low-resolution data file.

If all the selected plots have the same parameter scale setting, then the combo boxes will be populated with the current parameter scale name. If all the selected plots do not have the same parameter scaling, then the combo boxes will be empty.

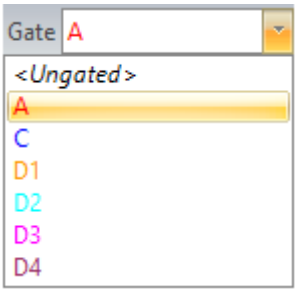
9.5 Gate Group

The **Gate** group options allow the selection of gating for the currently selected plots. Existing gates and regions, including quadrant regions, can be selected.



9.5.1 Gate Combo Box

The **Gate** combo box contains a list of all existing gates and regions available for selection. Check the **Show Quadrants** option to include quadrant regions in the list.



Existing gates will be listed. Select the '*<Ungated>*' option to set selected plots to be ungated.

Select from the list the required gate for the currently selected plot(s).

Gate properties can be changed from the **Edit Gates** dialog of the **Analyze** tab described in section 12.3.4.

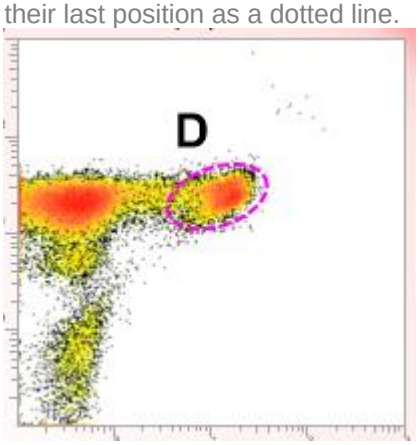
9.6 Autogate Group

The options in the **Autogate** group allow global control of all autogates.

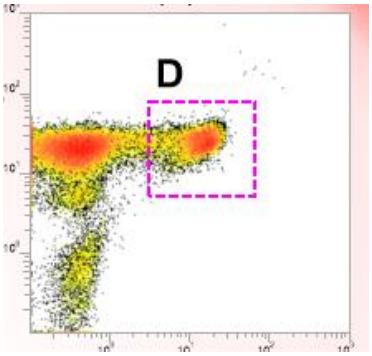


When the All On option is highlighted all autogates are enabled and will automatically re-gate if required. In this state all autogates are displayed as a solid line.

When the All Off option is highlighted all autogates are disabled and will not automatically adjust. In this state all autogates are displayed in their last position as a dotted line.



When the Reset All option is selected all autogates are disabled and display the search area as a dotted line.



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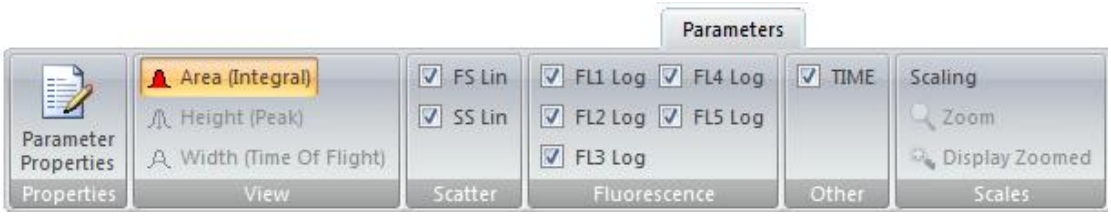
Section 10

Plots Tab

Parameter Properties Dialog
View Group
Parameters
Scales Group
Scales Properties Dialog

10 Parameters Tab

The options on the **Parameters** tab allow you to customize the display of parameters in the VenturiOne software.



Some files contain a large number of parameters each parameter may be present with multiple signal types. To simplify parameter selection, VenturiOne provides options to select parameters by signal type (Area, height and Width) and further classifies parameters into ‘Scatter’, ‘Fluorescence’ and ‘Other’ groups based on the signal source.

VenturiOne will automatically assign parameters to these groups; if the classification is incorrect you can manually reclassify parameters in the **Classification** tab of the **Parameter Properties** dialog; see section 10.2.2.

10.1 Properties Group

The **Properties** group contains the **Parameter Properties** button:



Select the **Parameter Properties** button to display the **Parameter Properties** dialog.

10.2 Parameters Properties Dialog

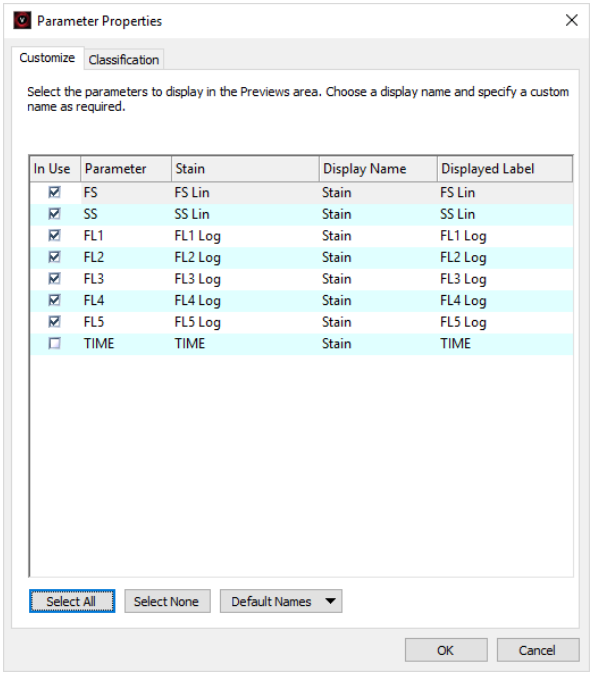
The **Parameter Properties** dialog provides the custom naming and parameter classification functionality of the VenturiOne software.

To launch the dialog, click the **Parameter Properties** button in the **Properties** group.

The dialog can also be launched by double clicking the parameter name areas of the plot; see section 7.4.7.

10.2.1 Customize tab

When the **Parameter Properties** dialog is launched the **Customize** tab is displayed by default. On the **Customize** tab you can select which parameters are displayed in the **Previews** area. You can also choose what is used as the display name for each parameter, as well as assign custom names to individual parameters.



10.2.1.1 Parameter List Control

The **Parameters List** control displays all parameters available in the currently loaded FCS file.

Check the check box if you wish the parameter to be displayed in the **Previews** area or un-check it to hide the parameter.

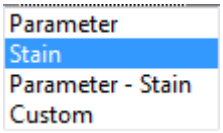
Selecting and deselecting parameters here does not affect plots already present in the **Plots** area.

The **Parameter** column displays the Parameter name for each parameter.

The **Stain** column displays the Stain name for each parameter.

The **Display Name** column allows you to select whether Parameter name, Stain name, Parameter - Stain name combination or Custom name is used as the display label for the parameter.

Double clicking in the cell or pressing F2 opens a drop-down list with options as follows:



Select the desired display name. Once the dialog closes the display label is used throughout the system.

When a new FCS file is loaded the custom display label will be used only if both the parameter name and stain name for the new file match those in the Workspace. If they don't match the Stain name from the new file is used as the display label.

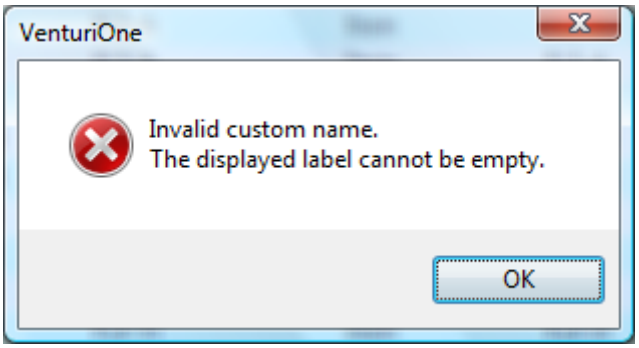
The **Displayed Label** column displays the name as selected in the **Display Name** column.

In the **Displayed Label** column, you can also enter a custom label for the parameter.

The default used for the custom name is the Stain name ($PnS).

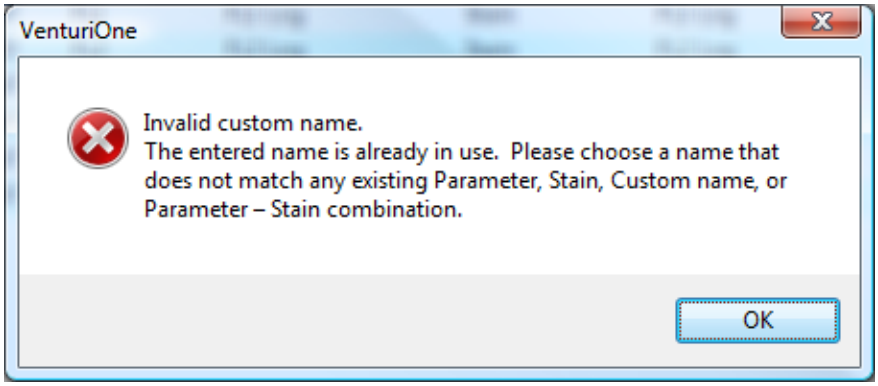
The custom name cannot start with a space and therefore the software will not allow you to enter space as the first character.

The custom name has to be a minimum of 1 character. The following error is displayed if it is left empty:



The custom name can be a maximum of 50 characters and the software will not allow you to type in more than 50 characters in the field.

The custom name has to be unique. If you type in a name that already exists, the following message is displayed:



10.2.1.2 Select All, Select None and Default Names Buttons

Click the **Select All** button to selects all parameters.

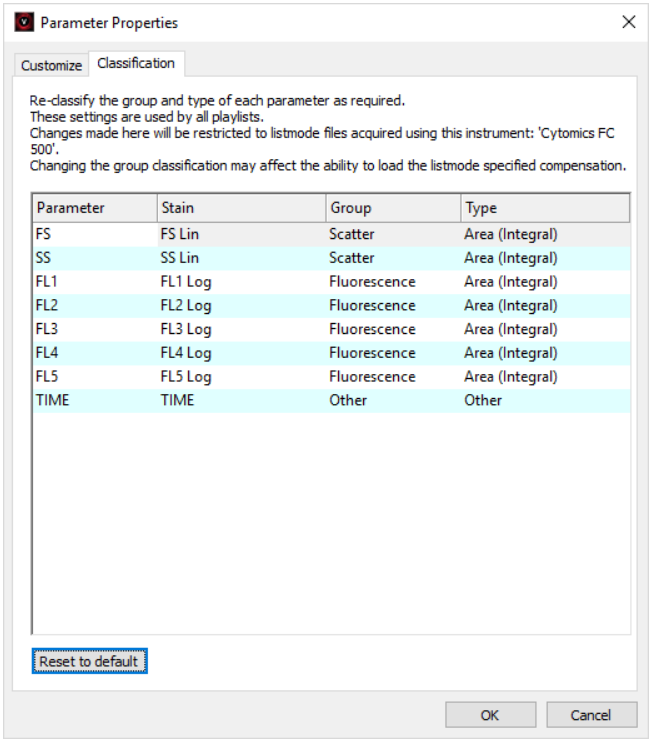
Click the **Select None** button to de-select all parameters.

Select the **Default Names** button to reset the display names for all parameters to Stain.

10.2.2 Classification tab

On the **Classification** tab of the **Parameter Properties** dialog you can re-classify the Group and Type of a parameter.

This classification is based on cytometer type; modifications made here will be stored for future use of files from that cytometer type.



10.2.2.1 Parameter List control

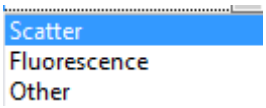
The **Parameters List** control displays all parameters available in the currently loaded FCS file.

The **Parameter** column displays the Parameter name for each parameter.

The **Stain** column displays the Stain name for each parameter.

The **Group** column allows you to select whether the parameter belongs in the Scatter, Fluorescence or Other group.

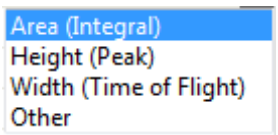
Double clicking in the cell or pressing F2 opens a drop-down list with options as follows:



Select the desired group for the parameter.

The **Type** column allows you to select whether the parameter belongs in the Height (Peak), Width (Time of Flight), Area (Integral) or Other type.

Double clicking in the cell or pressing F2 opens a combo box allowing the user to change the Type. The options in the combo box are as follows:



Select the desired type for the parameter.

Select the **Reset to default** button will reset all parameters for the currently loaded file to their default values.

10.3 View Group

The buttons in the **View** group are used to select all parameters of a specific signal type for display in the **Previews** area.



10.3.1 Area (Integral)

The **Area (Integral)** button toggles the selection of all Area / Integral parameters, i.e. parameters that represent the area under the curve from a pulse.

10.3.2 Height (Peak)

The **Height (Peak)** button toggles the selection of all Height / Peak parameters, i.e. parameters that represent the peak height of a pulse. If the file does not contain this type of signal or if the software is unable to determine the signal type, this button will be disabled.

10.3.3 Width (Time Of Flight)

The **Width (Time Of Flight)** button toggles the selection of all Width /Time Of Flight parameters, i.e. parameters that represent the width of a pulse. If the file does not contain this type of signal or if the software is unable to determine the signal type, this button will be disabled.

10.4 Parameters

Individual parameters are classified into three groups Scatter**,** Fluorescence and Other**.**

A parameter that is selected (i.e. checked) will appear within the plots displayed in the **Previews** area. A parameter that is deselected (i.e. unchecked) will not appear within the plots displayed in the **Previews** area.

! Parameter and stain names must be unique. If this is not the case the software will automatically append either the stain or parameter name to ensure uniqueness.

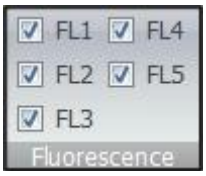
Plots already displayed in the **Plots** area are not affected by selections made here.

! Parameters deselected here are hidden from other parts of the software; you should be careful when hiding parameters which have compensation values applied as these values will not be visible in the compensation matrix.

The **Scatter** group lists all scatter parameters, forward (FS) and side (SS). Scatter is determined by matching parameter names against known values.



The **Fluorescence** group lists all fluorescence parameters. The determination of a fluorescence parameter is made by matching parameter names against known values and eliminating the parameter from the other groups.



If a file has a large number of fluorescence parameters, they will not all fit on the **Ribbon**. In this case a Fluorescence drop-down arrow is displayed, as illustrated below:



Click this drop-down arrow to display a window listing all the available fluorescence parameters:



Some cytometers, such as the Beckman Coulter CyAn™ generate specialized parameters (e.g. HWComp). These specialized parameters are not used routinely therefore these parameters are unchecked by default.

The **Other** group lists parameters that are not scatter or fluorescence parameters. Examples of parameters that would lie within this group are TIME and RATIO.



The displayed parameter names are the parameter name, stain name or custom as selected in the **Customize** tab of the **Parameter Properties** dialog; see section 10.2.1.

If you hover the cursor over an individual check box a tool tip containing the display name followed underneath by the stain name (if available) for the parameter:



10.5 Scales Group

The **Scales** group contains options for adjusting the scaling and zooming of parameters.



If no FCS file is open in the current Workspace, the **Scales** group is disabled.

10.5.1 Scaling Button

Click the **Scaling** button to launch the **Scales Properties** dialog described in section 10.6.

10.5.2 Zoom Tool

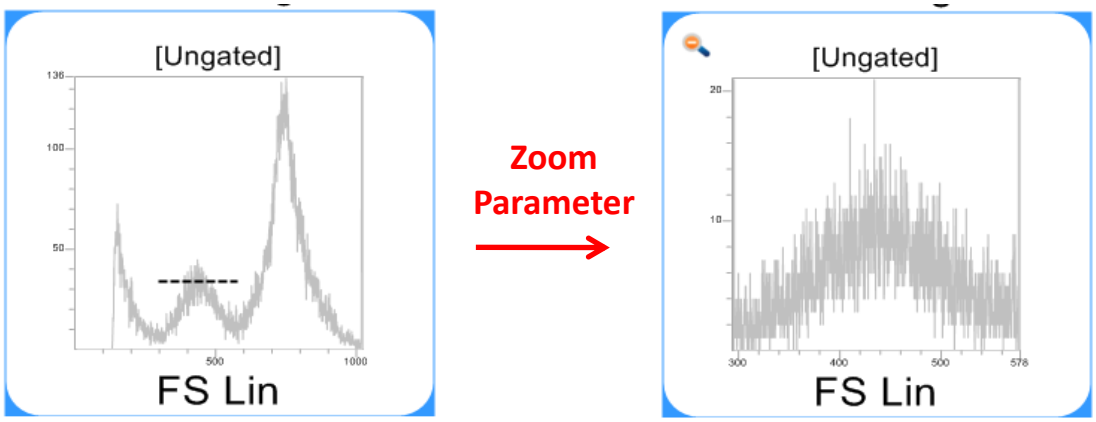
The **Zoom** tool is not available when a low-resolution FCS file is currently opened in the **Workspace**.

The **Zoom** tool is only enabled when an FCS file is loaded, and the Plots tab of the Workspace is selected and at least one plot is added to the **Plots** area.

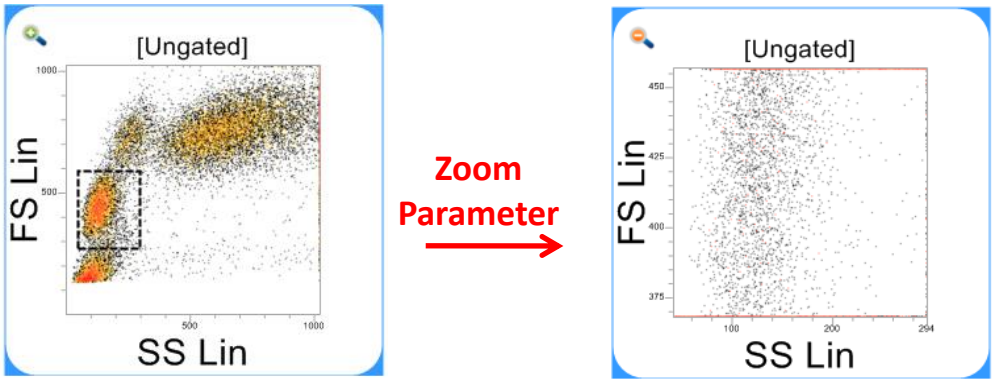
The **Zoom** tool allows you to modify the parameter zoom level for a plot.

To set or change a zoom level for parameters of the selected plot select the tool and then use it to define a zoom region.

On a single parameter plot the tools draws a linear zoom region.



On a dual parameter plot the tools draws a rectangular zoom region.



Any change in scale via the **Zoom** tool will update the settings in the **Parameter Zoom** tab of the **Scales Properties** dialog.

Any plots in the **Plots** and **Previews** areas that are already zoomed will update accordingly.

! If you change the zoom status on a plot with a region then the region position does not change, you may need to reposition any regions set on zoomed parameters.

10.5.3 Display Zoomed Button

This button changes the zoom status of the currently selected plots. The status can also be change by clicking on the zoom icon present on any plots that may be zoomed or un-zoomed.

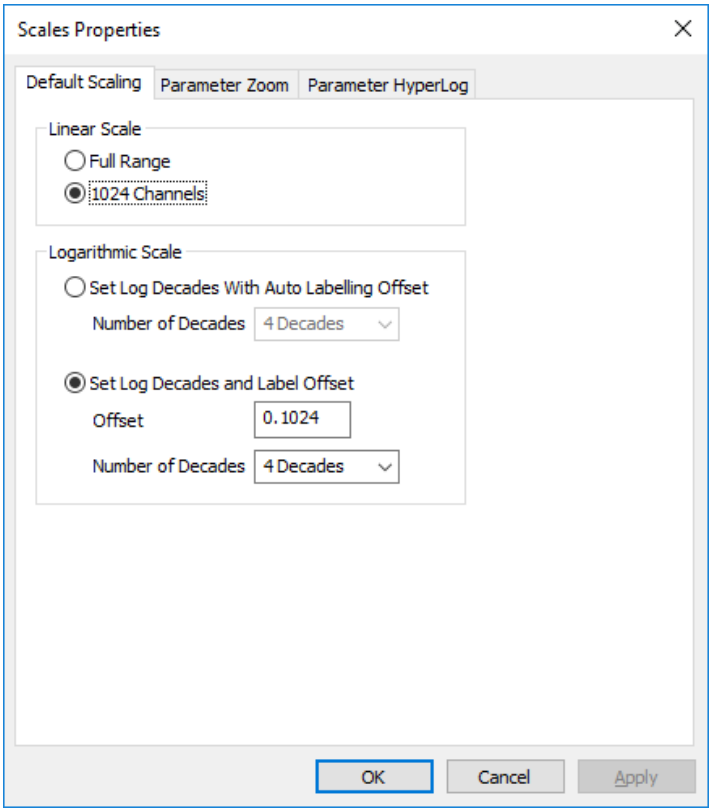
10.6 Scales Properties Dialog

The **Scales Properties** dialog is launched from the **Scaling** button on the **Parameters** tab see 10.5.1.

The **Default Scaling** tab is displayed when the dialog is launched.

10.6.1 Default Scaling Tab

The options in this tab allow you to modify the Linear and Logarithmic scaling options for parameters in the current **Workspace**.


Scales Properties
Default Scaling
Parameter Zoom
Parameter HyperLog
Linear Scale
Full Range
1024 Channels
Logarithmic Scale
Set Log Decades With Auto Labelling Offset
Number of Decades
4 Decades
Set Log Decades and Label Offset
Offset
0.1024
Number of Decades
4 Decades
OK
Cancel
Apply

10.6.1.1 Linear Scale

The **Linear Scale** group contains 2 radio buttons: **Full Range** and **1024 Channels**.

For FC500 format files the default is 1024. For all other file types, the default selection is determined by the $PnR Keyword in the FCS file.

When you change the Linear scale, all associated statistics and results will be updated so they are calculated on the selected range of the linear scale.

Select the **Full Range** radio button if you wish all linear parameters in the workspace and reports to be scaled to the full range of data.

Select the **1024 Channels** radio button if you wish all linear parameters in the workspace and reports to be scaled to 1024 channels, regardless of their full range.

10.6.1.2 Logarithmic Scale

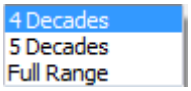
The **Logarithmic Scale** group contains 2 radio buttons: **Set Log Decades with Auto Labeling Offset** and **Set Log Decades and Label Offset**.

When **Set Log Decades with Auto Labeling Offset** is selected the software will scale all Logarithmic parameters in the workspace and reports to a scale based on the number of decades set and the resolution of data within the file.

When the **Set Log Decades and Label Offset** radio button is selected the software will scale all Log parameters in the workspace and reports to a scale based on the offset and number of decades specified.

In both cases the **Number of Decades** drop-down list is disabled for low resolution data (less than 12-bits). For low resolution files the log parameter scaling is set according to the $PnE keyword.

The options in the drop-down list are:



When **4 Decades** is selected the data for all Logarithmic scaled parameters in the workspace and reports will scale to display 4 decades down from the highest value in the FCS file. Statistics and results will update accordingly.

When **5 Decades** is selected the data for all Logarithmic scaled parameters in the workspace and reports will scale to display 5 decades down from the highest value in the FCS file. Statistics and results will update accordingly.

When **Full Range** is selected the data for all Logarithmic scaled parameters in the workspace and reports will scale to the full range of the data in the FCS file. Statistics and results will update accordingly.

You can also enter a numerical value into the **Number of Decades** field.

The value entered in the **Offset** field determines the offset of the data.

The number entered into the **Offset** field are converted to a Log scale when displayed on the plots e.g. 0.1 in dialog = 10^{-1} on Log scale; 10 in dialog = 10^{1} on Log scale; 100 in dialog = 10^{2} on Log scale.

10.6.2 Parameter Zoom Tab

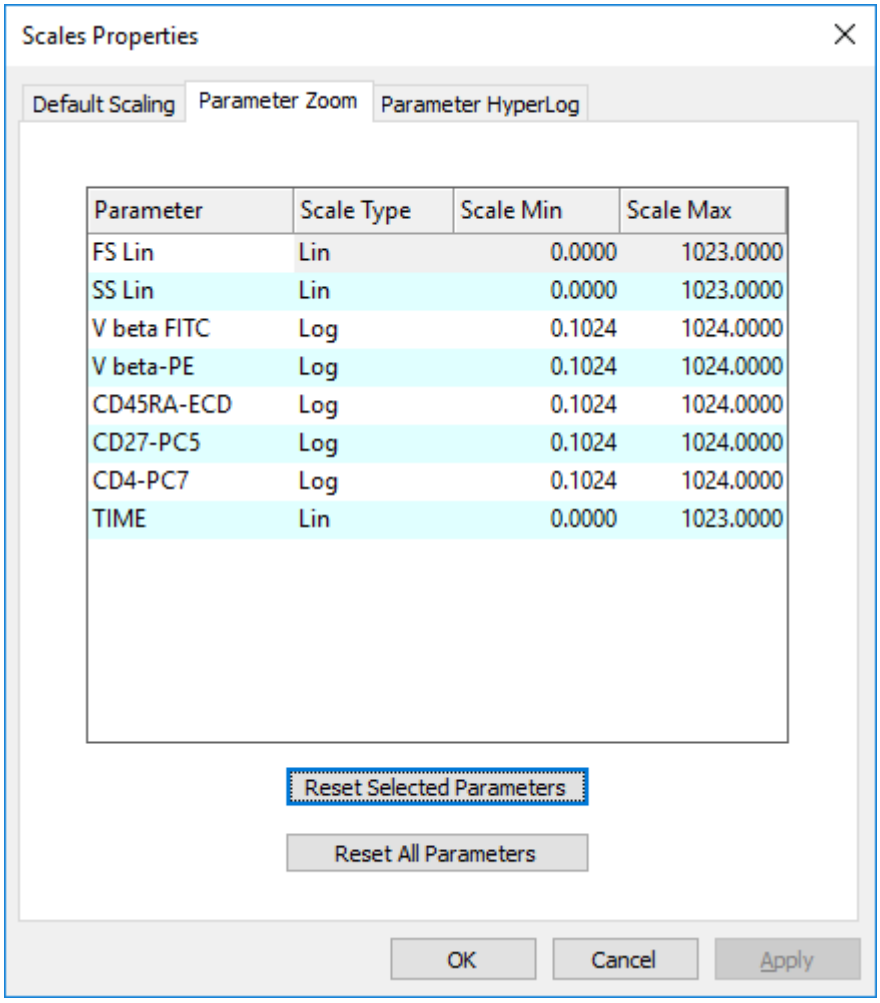
The **Parameter Zoom** tool is not available when a low-resolution FCS file is currently opened in the **Workspace**.

The **Parameter Zoom** tab lists all the parameters in the current file and allows you to edit the displayed scale values for each parameter in order to optimize the way in which your data is displayed.

The selected range is only applied to the selected scale type (Lin, Log or HyperLog).

The selected zoom values are only applied to plots that have been selected to display zoomed parameters. See section 7.7.4 for details on how to set a plot to display zoomed parameters.

! If you change the zoom status on a plot with a region then the region position does not change, you may need to reposition any regions set on zoomed parameters.



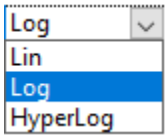
10.6.2.1 Parameters List Control

The **Parameter** column contains the Display name for each parameter in the FCS file.

This column has a tooltip detailing the acceptable range for the Scale Min and Scale Max with respect to the Scale Type Selected. For example:



The **Scale Type** column contains a combo box that allows the selection of the scale type (Lin, Log or HyperLog) to which the range will be applied. The options in the drop-down list are:

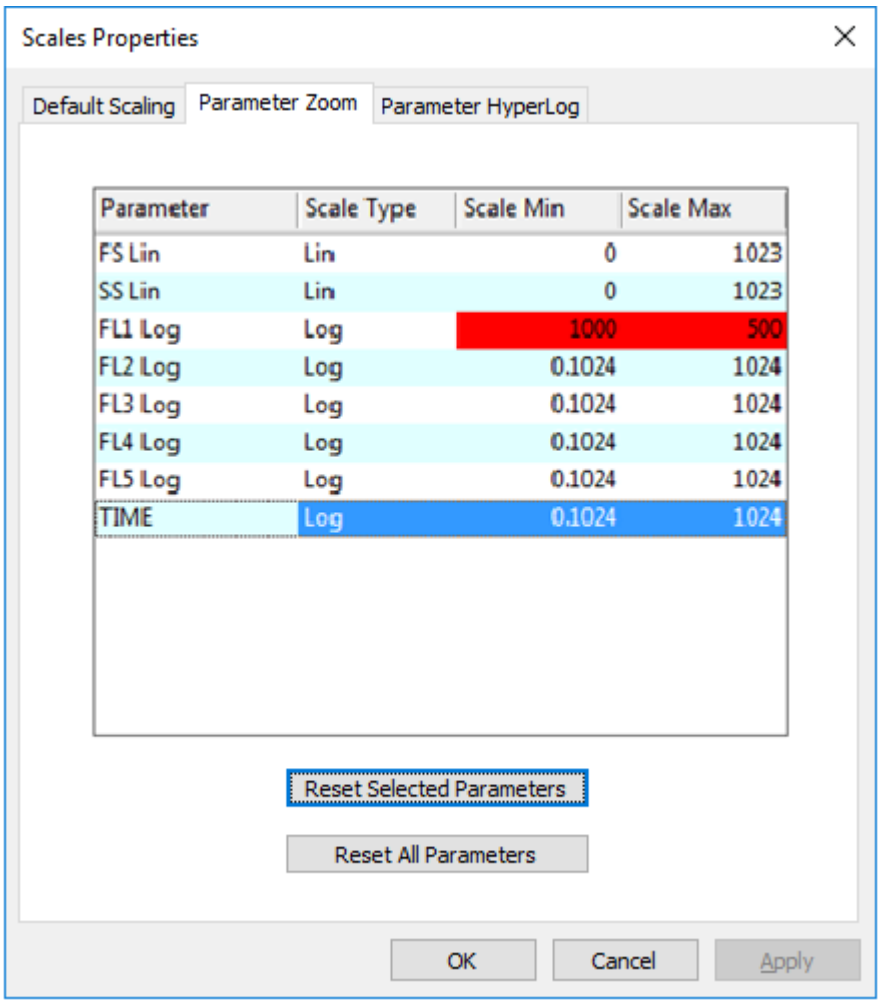


The default scale type is set from the current **Workspace**.

For low resolution FCS files only the scale type specified in the FCS file header is available. It is displayed in the scale type column and the combo box is read only.

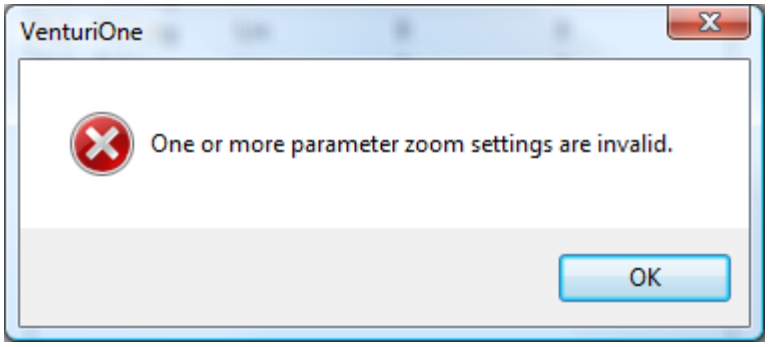
The **Scale Min** and **Scale Max** columns display the current minimum and maximum values for the scaling of a parameter, you can manually change these values. The values allowed for **Scale Min** and **Scale Max** are limited to the range indicated by the settings in the **Default Scaling** tab.

When editing the **Scale Min** and **Scale Max** fields if an error occurs, an indication of this will be given in red as illustrated below:



If you hover over any of the error values a tool tip indicating the reason for error will be displayed.

If the range you have entered is invalid and you press the **OK** button an error message will be displayed:



10.6.2.2 Unzoom Selected Parameters and Unzoom All Parameters Buttons

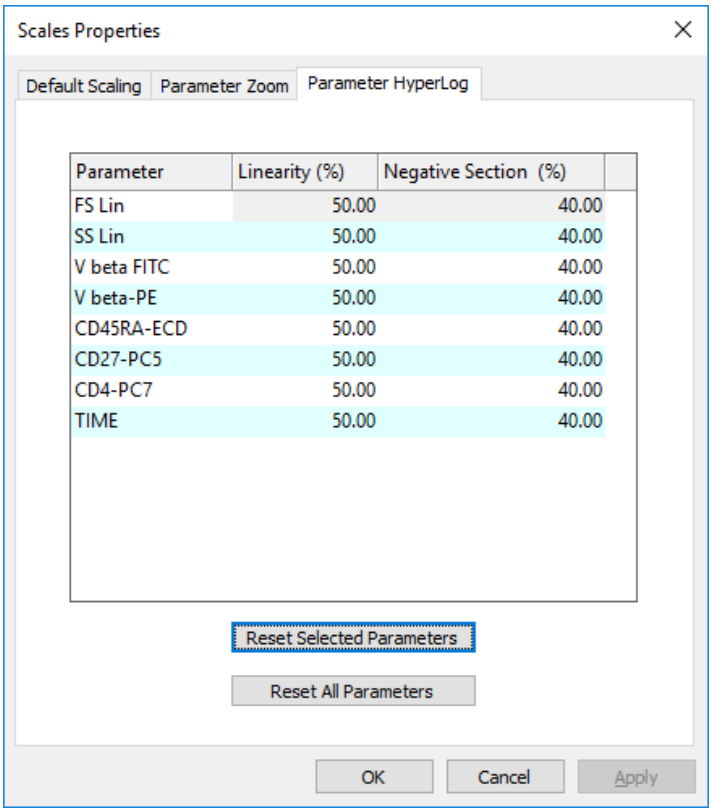
Select the **Unzoom Selected Parameters** button to reset the values for the currently selected parameters to their defaults.

Select the **Unzoom All Parameters** button to reset the values for all parameters to their defaults.

! If you change the zoom status on a plot with a region then the region position does not change, you may need to reposition any regions set on zoomed parameters.

10.6.3 Parameter HyperLog Tab

The **Parameter HyperLog** tab lists all the parameters in the current file and allows you to edit the displayed **Linearity** and **Negative** S**ection** values for each parameter in order to optimize the way in which your data is displayed.



10.6.3.1 HyperLog Scale

The **HyperLog Scale** group contains 2 input fields: **Linearity (%)** and **Negative Section (%).**

The **Linearity (%)** spin control is used to enter a value for the Linearity of the scale as a percent. The default value is read from the **Scaling** in **VenturiOne Options** (see 25.1.4.2).

When the Linearity is set at 0% the HyperLog scale has a minimal linear part around 0, as illustrated below:



When the **Linearity** is set at 50% half of the HyperLog scale is Linear, as illustrated below:

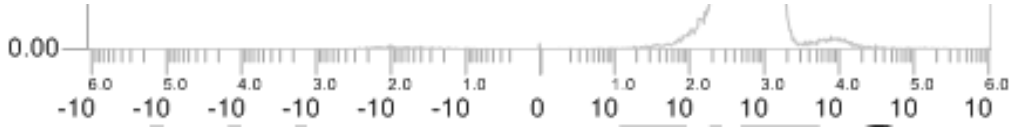


You can use the up and down arrows of the spin control to increase or decrease the value in the field. You can also enter a custom numerical value.

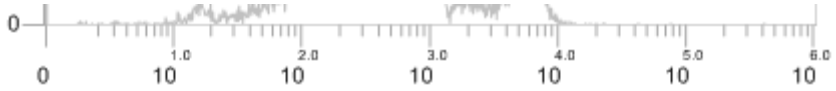
The value entered in the **Linearity** control changes the number of data channels which appear within the linear section of the HyperLog scale.

The **Negative Section (%)** spin control is used to enter a value which determines the range of data displayed in the negative section of the scale. By default, the value is read in from the **VenturiOne Options** (see 25.1.4.2).

When set at 100% the number of decades displayed on the negative section of the scale will be the same as the number of decades displayed on the positive side of the scale as illustrated below:



When set at 0% the number of decades displayed on the negative section of the scale will be 0 as illustrated below:



You can use the up and down arrows of the spin control to increase or decrease the value in the field. You can also enter a custom numerical value.

Once you are happy with your changes select the **OK** button to apply the changes made in the dialog to the Workspace and close the dialog.

Select the **Apply** button if you wish to apply the changes made without closing the dialog.
Select the **Cancel** button to close the dialog and cancel all changes. Note that only changes made after the Apply button was clicked will be cancelled.

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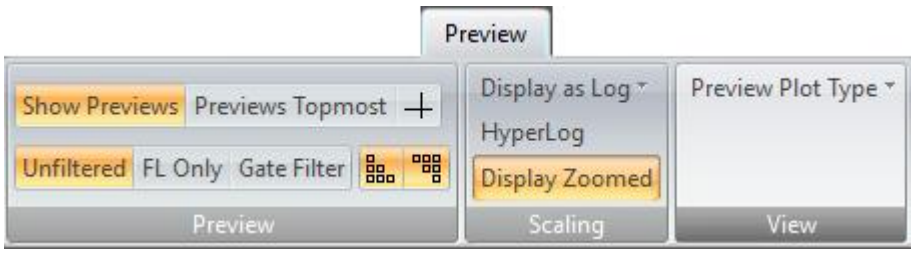
Section 11

Preview Tab

Preview Group
Scaling Group
View Group

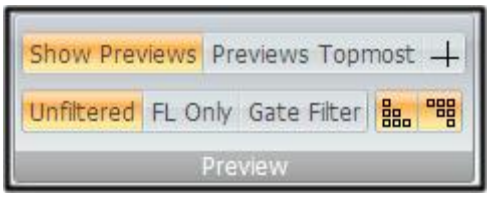
11 Preview Tab

The controls on the **Preview** tab of the **Ribbon** allow you to modify the plots in the **Previews** area**.**



11.1 Preview Group

The **Preview** group contains viewing options for the **Previews** area as illustrated below:



All the buttons in this group are disabled when no FCS file is loaded.

11.1.1 Show Previews

By default, previews of all parameters are displayed below the Plots area. This option allows you to hide all of the previews. You may need to do this when analyzing extremely large FCS files.

The preview plots can be hidden by deselecting the **Show Previews** button.

The setting of this button will be persisted between sessions.

11.1.2 Previews Topmost

By default, in the **Workspace** the **Plots** area is positioned above the **Previews** area, however this order can be switched by clicking the **Previews Topmost** button. The **Previews** area will now be displayed above the **Plots** area rather than below. The order can be reverted by re-clicking the **Previews Topmost** button.

11.1.3 Quadrants on  Previews

To display a quadrant region on all the dual parameter preview plots, click the **Quadrants on Previews** button. Quadrants will be displayed on all dual parameter preview plots.

Only one quadrant can be displayed on each plot. Each quadrant can be adjusted as described in section 7.5.11.

Re-click the **Quadrants on Previews** button to hide the Quadrants.

11.1.4 Preview Plot Filters

Filters affect which parameters, and therefore plots, are displayed in the **Previews** area.

The filters are used to selectively reduce the number of plots displayed in the **Previews** area. Several filter options are available.

11.1.4.1 Unfiltered

Click the **Unfiltered** button to show preview plots for all currently selected parameters. The **Previews** area is unfiltered by default.

11.1.4.2 FL Only

Click the **FL Only** button to only show preview plots of fluorescence parameters. Scatter and Other parameters will not be displayed.

Click the **Unfiltered** button to re-show all preview plots.

11.1.4.3 Gate Filter

When this filter is applied, any preview plots containing parameters that are being used as a part of the gate equation for the selected plot or region are excluded from the preview.

This can be used to reduce the number of preview plots.

Click the **Unfiltered** button to re-show all preview plots.

11.1.5 Show Lower  Triangle

Click the **Show Lower Triangle** button to show or hide the plots displayed on the lower left triangle of the **Previews** area. Click the button once to hide the plots – to re-display the plots, click the button again.

11.1.6 Show Upper  Triangle

Click the **Show Upper Triangle** button to show or hide the plots displayed on the upper right triangle of the **Previews** area. Click the button once to hide the plots – to re-display the plots, click the button again.

11.2 Scaling Group

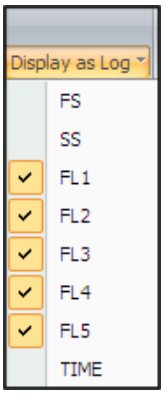
The controls in the **Scaling** group are used to specify the scaling for parameters in the **Previews** area.



When no FCS file is open, or if a low-resolution file is open, the controls in the **Scaling** group are disabled.

11.2.1 Display as Log

VenturiOne allows you to select whether parameters displayed in the **Previews** area are shown with Linear or Logarithmic scaling. Click the **Display as Log** drop-down menu to display a list of parameters present in the file and select the parameters you wish to display with logarithmic scaling:



Click on the individual parameters to either select (checked) or deselect (un-checked) to display it as logarithmic.

When scaling changes are made, the plots displayed in the **Previews** area are updated accordingly.

A parameter cannot be displayed with both linear and logarithmic scaling simultaneously within the **Previews** area.

11.2.2 HyperLog™ Scaling

HyperLog is an axis transformation that is similar to Logarithmic for the upper decades, but has a linear section around the zero point and allows compensated events that have a 'negative' fluorescence value to be better visualized.

The HyperLog scaling properties can be changed from the **Scales** group on the **Parameters** tab of the **Ribbon**; see section 10.5.

Click the **HyperLog** button to change all the logarithmic parameters of the preview plots to HyperLog scaling.

11.2.3 Display Zoomed Button

If zoom levels are set for individual parameters, you can use the **Display Zoomed** button to display zoomed plots in the **Previews** area. See section 10.6.2 for details on setting parameter zoom values.

The default is to display parameters in the **Previews** area zoomed.

11.3 View Group

The **View** group contains controls for changing the preview plot type.

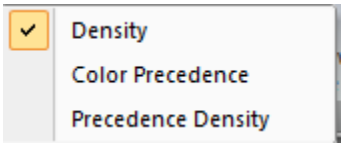


11.3.1 Preview Plot Type

The dual parameter preview plots can be displayed in a choice of three formats:

- Density Plots
- Color Precedence Plots
- Precedence Density Plots

Click the **Preview Plot Type** drop-down button to display the three available preview formats as illustrated below:



The current preview plot type is checked. You can change the plot type by checking a different type. The three choices are mutually exclusive.

See section 7.2 for description of Density, Color Precedence and Precedence Density plots.

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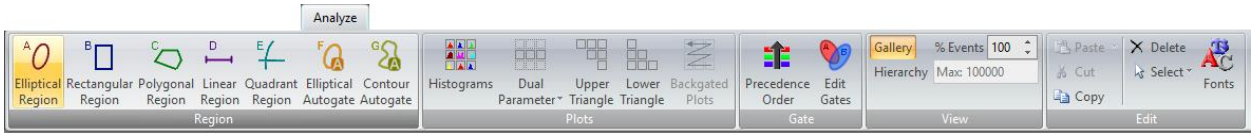
Section 12

Preview Tab

Preview Group
Scaling Group
Gate Group
View Group
Edit Group

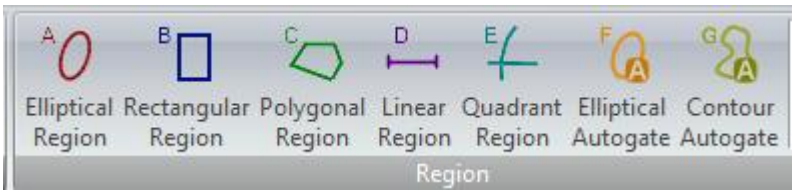
12 Analyze Tab

The **Analyze** tab of the **Ribbon** contains controls that allow you to analyze and modify the plots in the **Plots** area.



12.1 Region Group

The **Region** group on the **Analyze** tab contains controls for creating and editing regions.
You can create a maximum of 256 regions per **Workspace**. Once this number is reached the region creation buttons in the **Region** group become disabled.



12.1.1 Elliptical Region Button

The **Elliptical Region** button is used to draw an elliptical region on the desired plot. See section 7.5.7 for more details on creating and editing elliptical regions.

12.1.2 Rectangular Region Button

The **Rectangular Region** button is used to draw a rectangular region on the desired plot. See section 7.5.8 for more details on creating and editing rectangular regions.

12.1.3 Polygonal Region Button

The **Polygonal Region** button is used to draw a polygonal region on the desired plot. See section 7.5.9 for more details on creating and editing polygonal regions.

12.1.4 Linear Region Button

The **Linear Region** button is used to draw a linear region on a single parameter plot. See section 7.5.10 for more details on creating and editing linear regions.

12.1.5 Quadrant Region Button

The Quadrant Region button is used to insert a quadrant on the desired plot. See section 7.5.11 for more details on creating and editing quadrant regions.

12.1.6 Elliptical Autogate Region Button

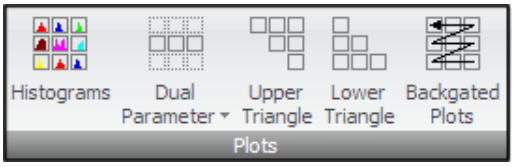
The **Elliptical Autogate Region** button is used to draw an elliptical autogate on a dual parameter plot. See section 7.5.12 for more details on creating and editing elliptical autogates.

12.1.7 Polygonal Autogate Region Button

The **Polygonal Autogate Region** button is used to draw a polygonal autogate on a dual parameter plot. See section 7.5.13 for more details on creating and editing polygonal autogates.

12.2 Plots Group

The **Plots** group contains tools for adding a specific selection of plots to the **Plots** area.

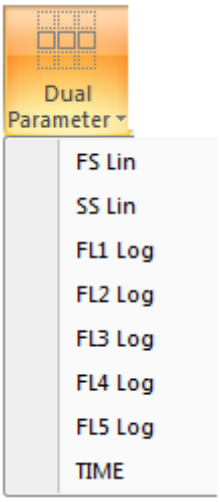


12.2.1 Histograms Button

Click the **Histograms** button to add all the single parameter histogram plots displayed in the **Previews** area. The plots are gated with the same gate as the preview plots. All the added plots are color-coded to illustrate the gating applied to the **Previews** area.

12.2.2 Dual Parameter Button

Click the **Dual Parameter** button to display a drop-down list of available parameters, as illustrated in the below:



Select a parameter from the drop-down list to add all the dual parameter combinations against this parameter to the Plots area. The selected parameter is fixed as the y-axis. The plots are gated with the

same gate as the preview plots. All the added dual parameter plots are color-coded to illustrate the gating applied to the **Previews** area.

12.2.3 Upper Triangle Button

Click the **Upper Triangle** button to add all the dual parameter plots, displayed within the upper right triangle of the **Previews** area. All the added dual parameter plots are color-coded to illustrate the gating applied to the **Previews** area.

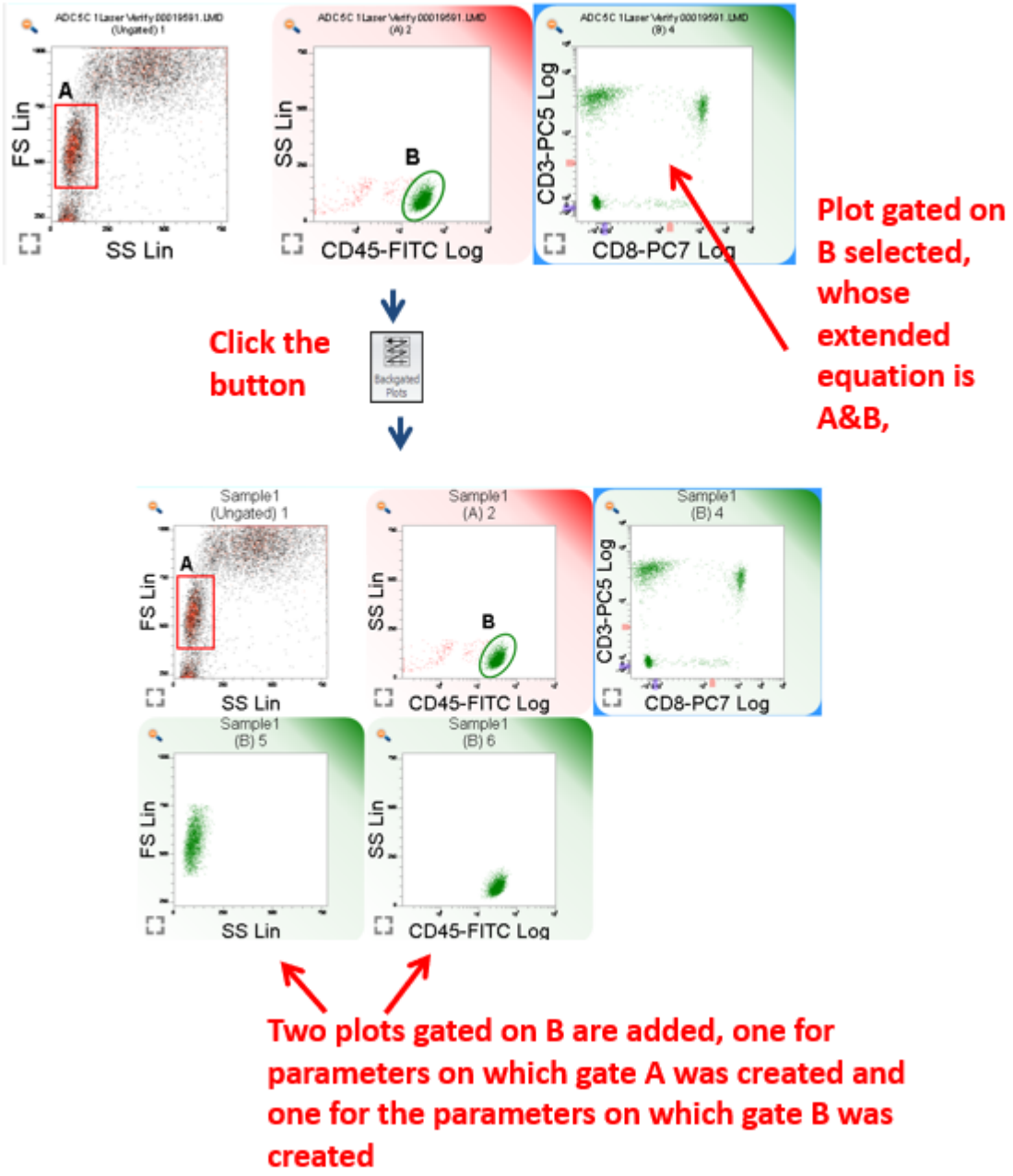
12.2.4 Lower Triangle Button

Click the **Lower Triangle** button to add all the dual parameter plots, displayed within the lower left triangle of the **Previews** area. All the added dual parameter plots are color-coded to illustrate the gating applied to the **Previews** area.

12.2.5 Backgated Plots

When you select the **Backgated Plots** button the software will assess the gate equation of the currently selected plot and identify the regions and parameters involved. The software then creates new plots with the parameters used by the regions within the gate equation and gates these plots on the gate equation of the currently selected plot.

In the example below plot B is selected and its expanded gate equation is A AND B.
Clicking the **Backgated Plots** button creates two plots gated on B, one plot displays the parameters on which gate A was created and the other plot displays the parameters on which gate B was created:



12.3 Gate Group

The **Gate** group contains controls for creating and managing the gates in the current workspace.

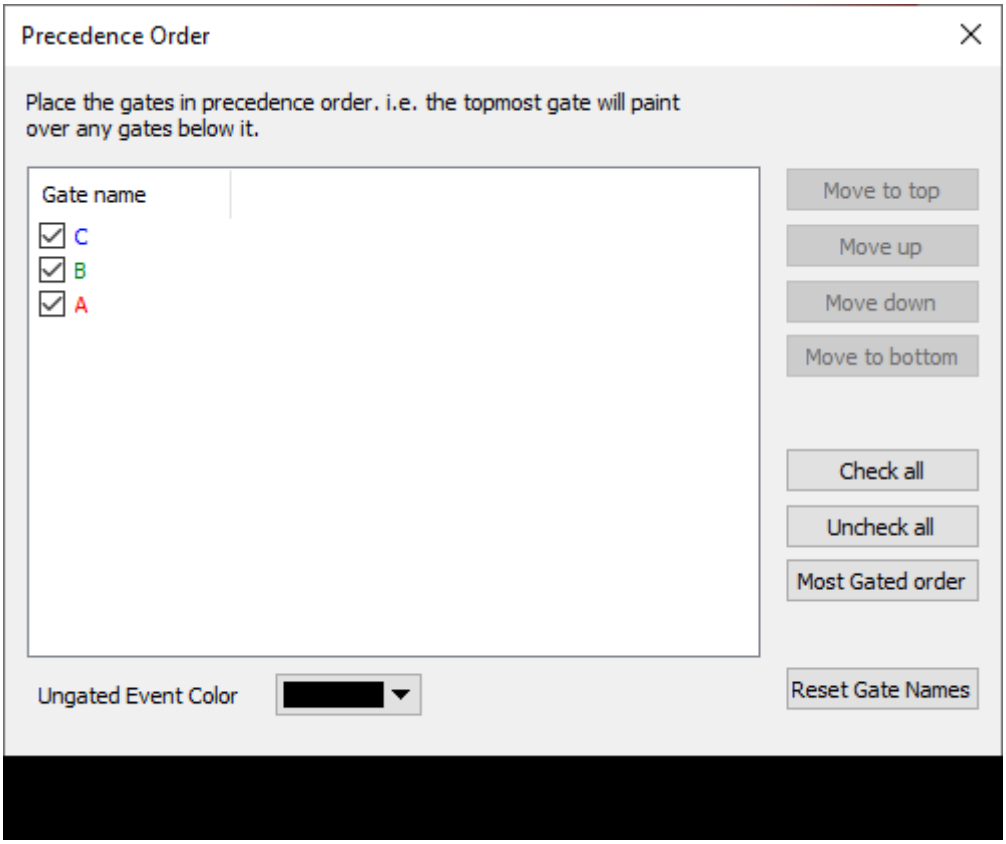


12.3.1 Precedence Order Button

Click the **Precedence Order** button to display the **Precedence Order** dialog.

12.3.2 Precedence Order Dialog

In the **Precedence Order** dialog, you can edit the color precedence order used when events are displayed on plots; you can also choose which gates are active within the precedence system, you can reset the gate names to default values based on the precedence order.



Click the **OK** button to confirm any modifications made in the **Precedence Order** dialog. The **Workspace** will update to reflect the changes made.

Click the **Cancel** button to abort all modifications made in the **Precedence Order** dialog.

12.3.2.1 Gates List

The **Gates List** displays all gates in the current **Workspace.** The text color corresponds to their gate color.

Adjacent to each gate name is a check box; a check in the check box indicates that the gate is included in the color precedence.

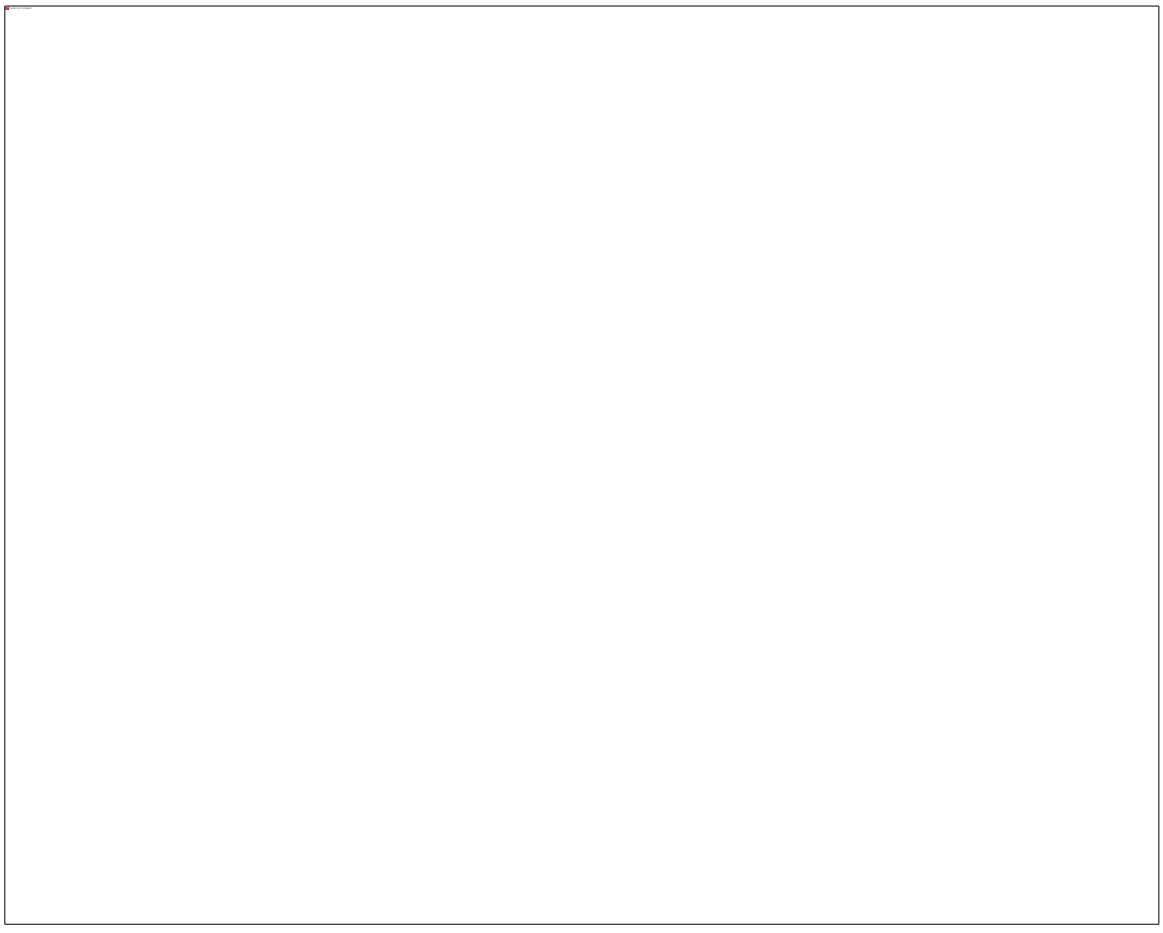
If a gate color is turned off, the corresponding population will be colored black when displayed on the plot.

Gates positioned at the top of the list have higher precedence than the gates positioned at the bottom of the list.

! Always ensure that the colors assigned to the populations in the precedence system can be clearly distinguished from each other, you should avoid using system colors as they can be changed outside of the VenturiOne software.

12.3.2.2 Change Gate Order

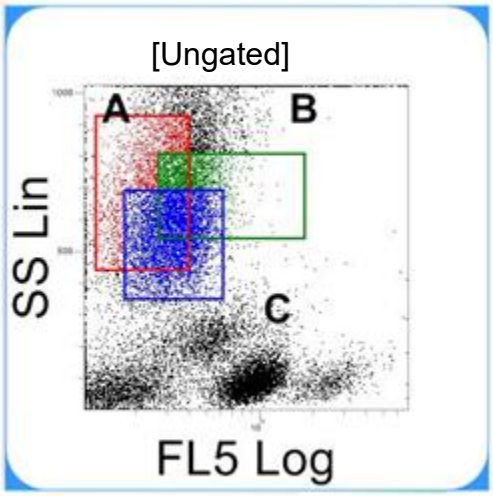
You can use the **Move to top**, **Move Up**, **Move down**, **Move to bottom** and Most Gated buttons to move the selected gates within the gate list.



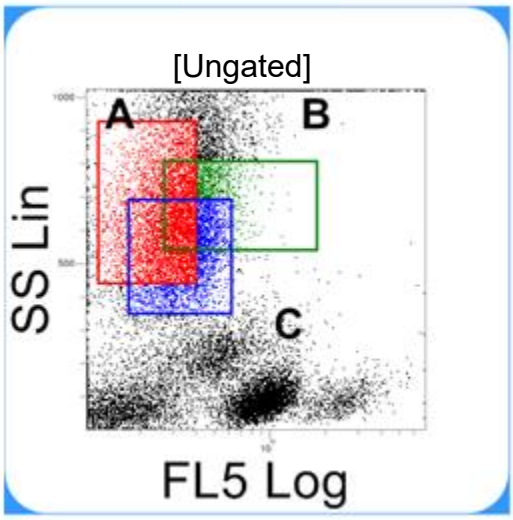
! When the gate order is modified always check the selected precedence order works as intended and no populations are masked by a color of lower priority.

12.3.2.3 Precedence Order Examples

By default, as a new gate is created it will be added to the top of the precedence list and events associated with it will be painted on top of events in any other gates. In the example below Gate C is highest in the list so any events in it will be colored Blue and appear on top of any events in gate B. Events in gate C or gate B will both appear over those in gate A.



If the gate precedence order is changed so that gate A is at the top of the precedence list, events in gate A will be colored red and will appear on top of events in all other gates, as illustrated below:



12.3.2.4 Select and Deselect Gates

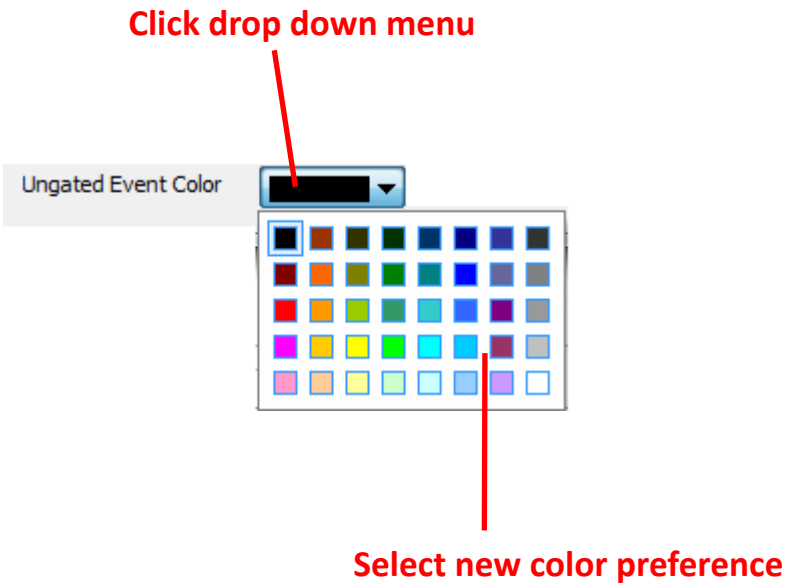
Click the **Check all** button to select all gates.

Click the **Uncheck all** button to unselect all gates.

Click the **Most Gated order** button to place the selected gates in the precedence order ranked by the number of unique regions in each gate, using the expanded gate equations.

12.3.2.5 Ungated Event Color

Change the current color for ungated events on precedence plots using this option. A new color can be selected from the color menu, as illustrated below:



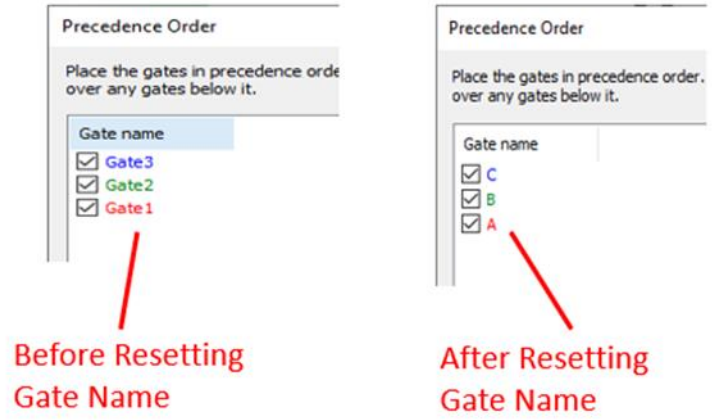
12.3.2.1 Reset Gate Names

Click the **Reset Gate Names** button to display the Reset ALL gate names to default naming.

The **Reset Gate Names button** will rename ALL gates based on the gate precedence order.

WARNING: This option will reset all gate names!

All Gates will be renamed to a default letter, in ascending order as the precedence increases, as shown below:

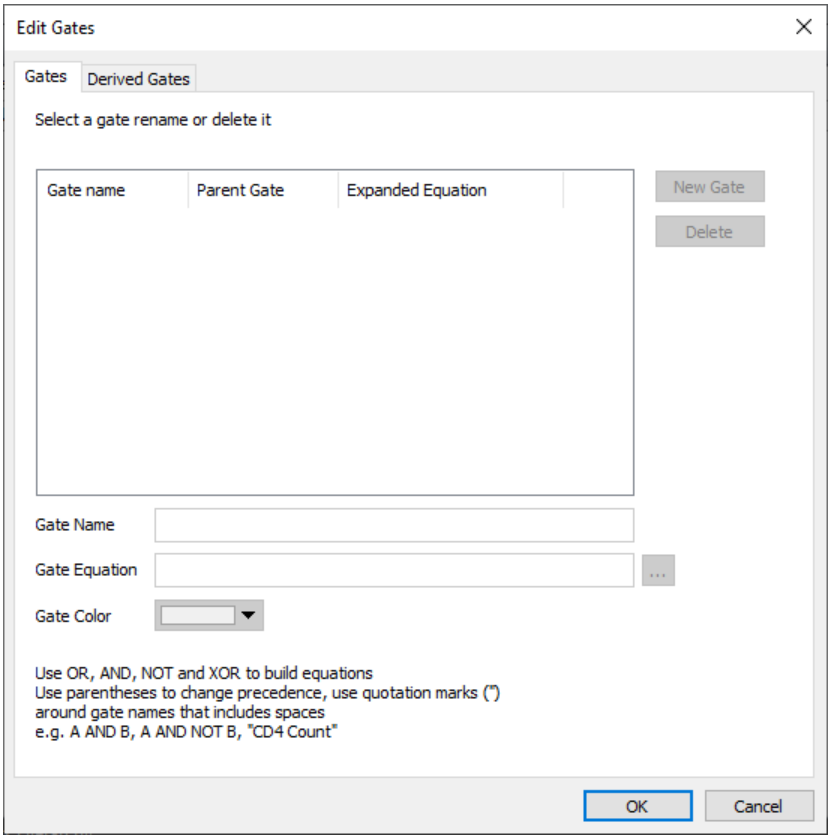


12.3.3 Edit Gates button

Click the **Edit Gates** button to display the **Edit Gates** dialog.

12.3.4 Edit Gates Dialog

The **Edit Gates** dialog allows you to display gates that have been automatically created as regions are created, create new gates derived from existing regions, edit and delete gates. In addition, you can view the **Parent Gate** and **Expanded Equation** information.



Click the **OK** button to confirm any modifications made within the **Edit Gates** dialog.

Click the **Cancel** button to abort any operations made within the **Edit Gates** dialog.

12.3.4.1 Gates Tab

The gates tab displays only those gates automatically created when a region is created. These gates are automatically updated if changes are made to the gating of the plot on which the region was created on.

Deleting a Gate also removes the associated region and automatically removes the region from any gate equations or derived gate equations.

12.3.4.2 Derived Gates Tab

The derived gates tab displays manually created gates.

New derived gates can be manually created, or existing derived gates can be modified in this tab modified in this tab.

Note! When using derived gates and then changing gates or adding new regions, please check the gating logic to ensure the updated gate logic is as expected

12.3.4.3 Gates List

The dialog displays the currently existing gates or derived gates as appropriate.

The **Gate name** column displays the name of the gate. The color of the font is the color of the gate.

The **Parent Gate** column displays the parent gate for the gate. If the gate has no parent gate, this field displays 'Ungated'.

The **Equation** column displays the equation for the gate. The contents of this field are added to the parent gate equation to create the expanded equation.

The **Expanded Equation** column displays the full expanded equation for the gate. The parent gate equation is shown in full.

12.3.4.4 Add a New Gate

If you want to add a new gate select the Derived Gates tab, click the **New Gate** button. A gate with a default name is added to the bottom of the **Gate List.**

12.3.4.5 Edit a Derived Gate

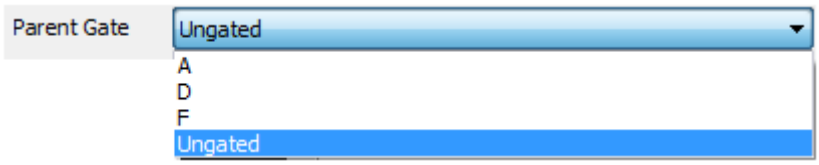
You can edit derived gates existing in the workspace as well as newly created derived gates. To edit a gate, you must select it in the Derived Gates list; the **Gate Name, Parent Gate, Gate Equation** controls become populated with the contents from the **Gate name**, **Parent Gate** and **Equation** columns in the list. The **Gate Color** control reflects the color of the gate from the list.

To change the gate name, type in the new name in the **Gate Name** field. The gate name has to be a minimum of one and a maximum of fifty characters and duplicate names are not permitted. The gate name cannot start with a number, contain consecutive spaces or any of the following characters: / * ^ ! & | ( ) " and Tab. The name cannot be any of the following reserved words: AND OR NOT XOR UNGATED.

If the name you enter violates these rules it will not be accepted by the software and an appropriate warning will be displayed.

! You should use gate names that are significantly different.

The **Parent Gate** drop-down list is populated with the names of all available gates. To change the parent gate of the currently selected gate click the arrow to expand the drop-down list and select a new parent gate from it:



When creating a new gate, the parent gate field can be used to simplify gate equation creation. The field contains a list of all current gate names and you can select one of these gate names rather than having to specify the complete gate equation.

In the above example Gate F can be selected as the parent for a new gate rather than having to specify the full equation of A and (D and F). If you wish to enter a full equation without using a parent gate you should select “Ungated” as the parent and then enter the full equation into the Gate Equation field.

You can edit the gate equation in the **Gate Equation** field.

You can also press the ... button to display a larger **Gate Equation** dialog.

The following operators can be used to help define a gate equation:

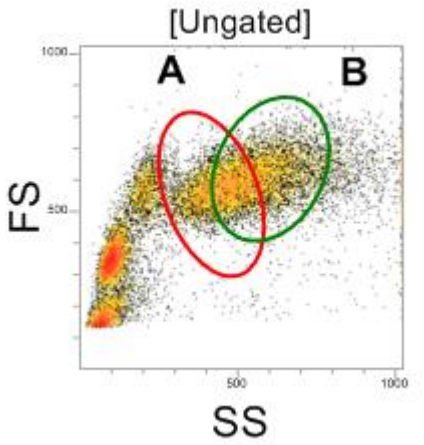
OR
AND
NOT
XOR

You can also use the following shortcut symbols for the operators:

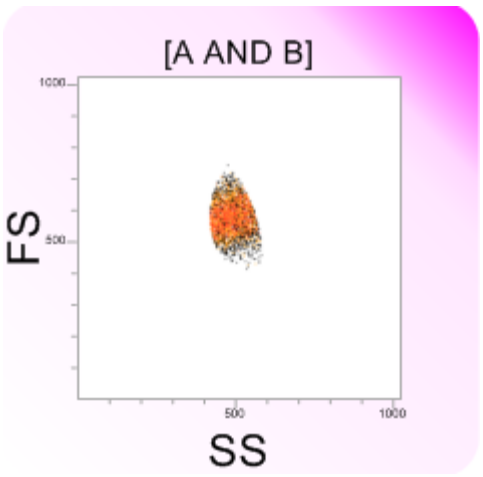
I = OR
& = AND
! = NOT
^ = XOR

The order of processing of these operators is NOT, AND, XOR, OR. Parentheses () may be used to change the order of processing.

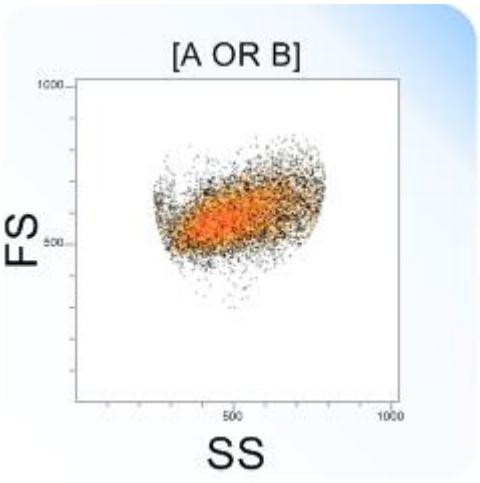
Region names and these operators are used to define a gate. The following are some examples of simple gate equations. The following examples all use the same regions A and B as displayed below:



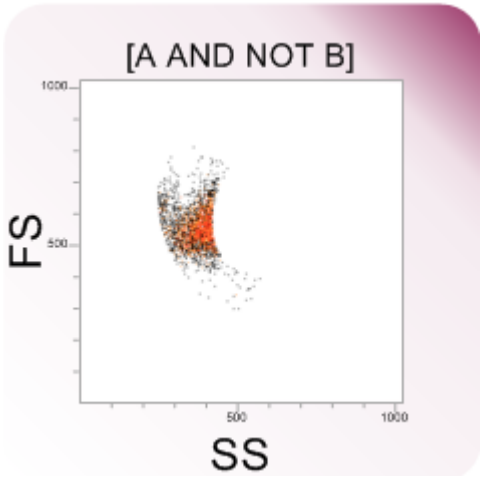
A AND B – Displays events simultaneously in both region A and region B:



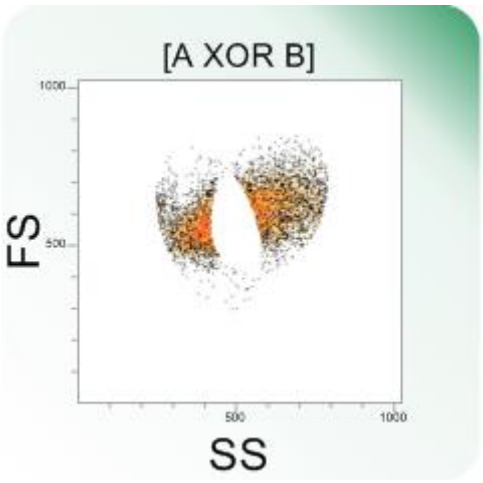
A OR B – Displays events that are in either region A or region B:



A AND NOT B – Displays events that are in region A but not in region B:



A XOR B – Displays events that are in either region A or region B but not in both:

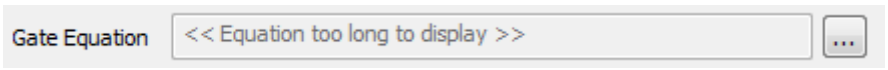


The order of processing of these operators is NOT, AND, XOR, OR. Parentheses may be used to change the order of processing.

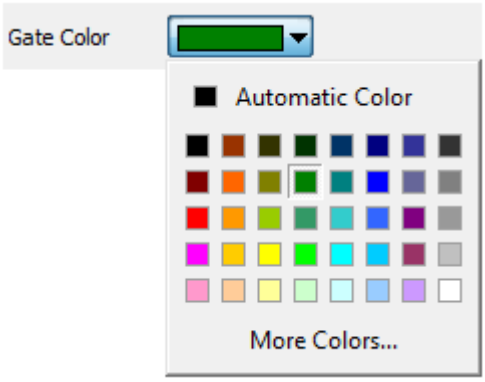
Double quotation marks (“”) must be used around region names that include spaces, e.g. “CD4 Count” and around region names that use any of the shortcut symbols or words that are listed above, e.g. “A XOR B” and “A!B”.

If a region with a name used in the equation does not exist, the gating logic is not valid, or the gate equation includes more than 28 regions, the software will not accept the equation and an appropriate error message will be displayed.

If the text of the Gate Equation exceeds 6,000 characters, then the field will display the text << Equation too long to display >> and the field will be read-only.



To change the gate color, click the arrow on the **Gate Color** control to display the Color control illustrated below and select the desired new color.



! Always ensure that the colors assigned to the gates can be clearly distinguished from each other, you should avoid using system colors as they can be changed outside of the VenturiOne software.

Note! When using derived gates and then changing gates or adding new regions, please check the gating logic to ensure the updated gate logic is as expected

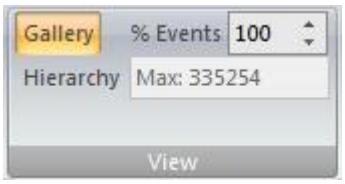
12.3.4.6 Delete a Gate

To delete a gate, select the required gate in the **Gates list** and click the **Delete** button. The deletion of the gate will be aborted if you press the **Cancel** button on the dialog.

Note! When using derived gates and then changing gates or adding new regions, please check the gating logic to ensure the updated gate logic is as expected

12.4 View Group

You can use the controls in the **View** group to modify the way in which plots are displayed in the **Plots** area.



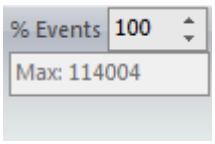
12.4.1 Gallery and Hierarchy Buttons

The **Gallery** or **Hierarchy** buttons are used to switch the view of Plots in the Plots area between Gallery and Hierarchy plot views. The button for the current view is highlighted.

You can find details about these plot views in section 7.6.

12.4.2 % Events

To reduce the numbers of events displayed on screen adjust the **% Events**. You can enter a number into the field or use the arrows to change the percentage displayed. The actual number of events displayed is shown in the Max: field below. Adjusting this value does not affect statistical calculations which are always performed on all events within a file.



12.5 Edit Group

The **Edit** group contains controls for copying images of the currently selected plots and statistics for pasting into other applications, such as Microsoft Word. They are also used for copying, cutting and pasting items within reports. The items in this group are disabled when no FCS file is loaded. Delete and select plots in the **Plots** area and edit the fonts of text items in the current **Workspace**:



12.5.1 Paste

The **Paste** button is only enabled on the reports tab, after a report item has been copied or cut.

Select this button to paste previously copied or cut report items back into the report.

12.5.2 Cut

The **Cut** button is only enabled on the **Reports** tab, after a report item has been selected.

Select this button to cut the selected report item and place it on the clipboard for pasting into the report; they cannot be pasted into other applications.

12.5.3 Copy

The **Copy** button is disabled when there are no plots selected in the plots area.

Click the **Copy** option to copy an image of the currently selected plot(s) or statistics onto the Clipboard. You can then paste them into other applications (Microsoft Word, Power Point etc.).

When on the **Report** tab of the **Workspace** click the **Copy** option to copy the selected report objects for pasting into the report; they cannot be pasted into other applications.

If you want to maintain the hierarchy view when copying and pasting plots displayed in the **Hierarchy** format you must select all plots in the hierarchy and then click **Copy.** If all plots in the hierarchy are not selected, when pasted, plots will be pasted in the standard **Gallery** format.

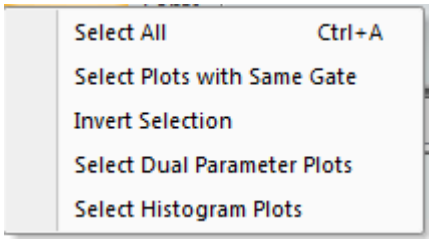
12.5.4 Delete Button

Click the **Delete** button to delete the currently selected plots or region.

If the deleted plot has a region applied, deleting the plot also deletes the region and removes the region from any gating logic. See section 7.4.6.1 for details.

12.5.5 Select Button

If you click the **Select** button the following menu is displayed:



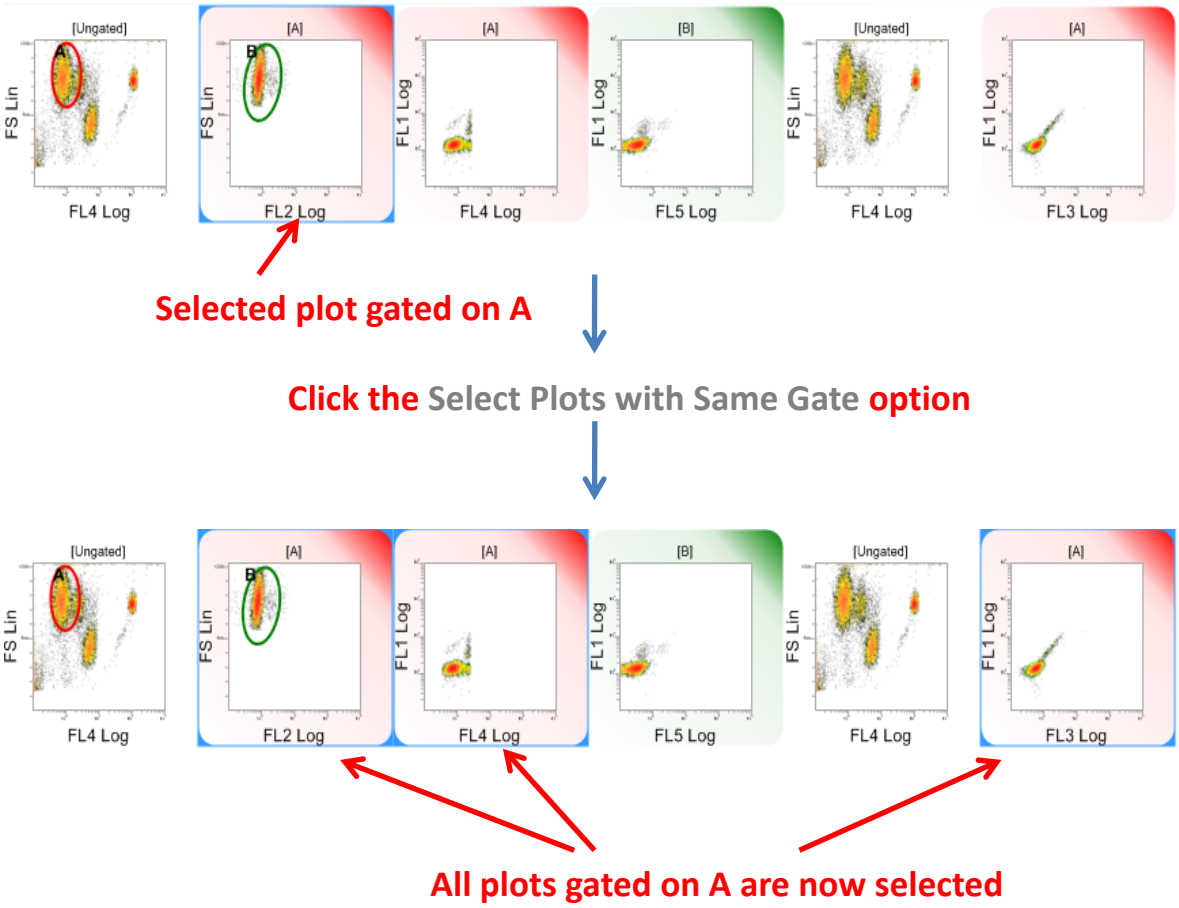
Click the **Select All** option to select all the plots in the **Plots** area.

Click the **Select Plots with Same Gate** option to select all the plots that have the same gate applied as the selected plot in the **Plots** area.

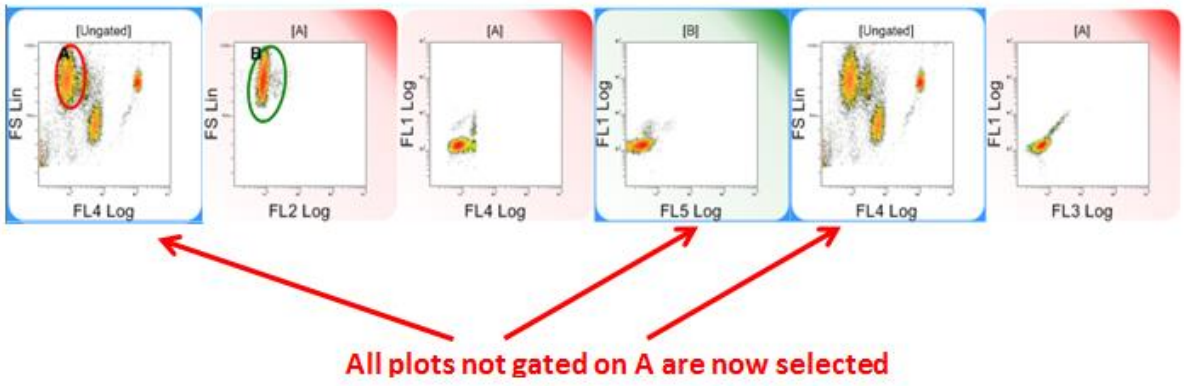
Click the **Invert Selection** option to select all the plots that are currently not selected in the **Plots** area.

Click the **Select Dual Parameter Plots** or **Select Histogram Plots** if you wish to select all dual parameter plots or all histogram plots respectively.

In the example illustrated below the selected plot has Gate A applied



Clicking the **Invert Selection** option, on the selected plots illustrated above, selects all the plots that are not currently selected as illustrated below:



12.5.6 Fonts Button

Click the **Fonts** button to display the **Edit Fonts** dialog.

12.5.7 Edit Fonts Dialog

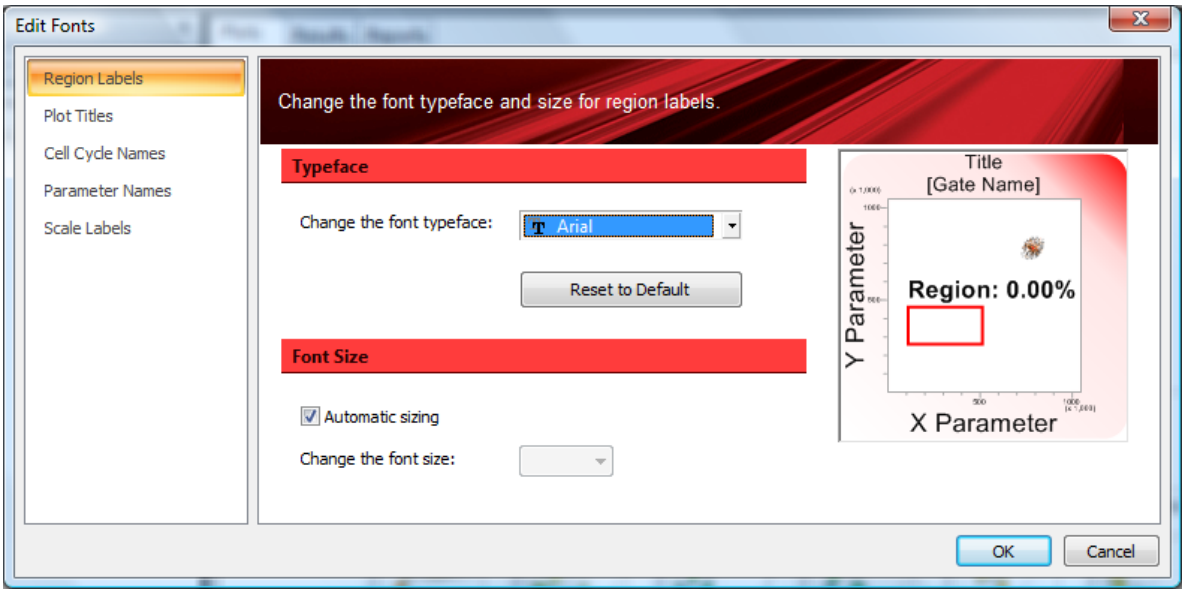
In the **Edit Fonts** dialog, you can change the font typeface and size for the plot titles, parameter names, axis scales, cell cycle names, region labels and statistics in the current **Workspace**.

If you do not specify a font size for a workspace text item, the software will choose the largest font size that will allow all of the text to be displayed or printed in the area allocated for it.

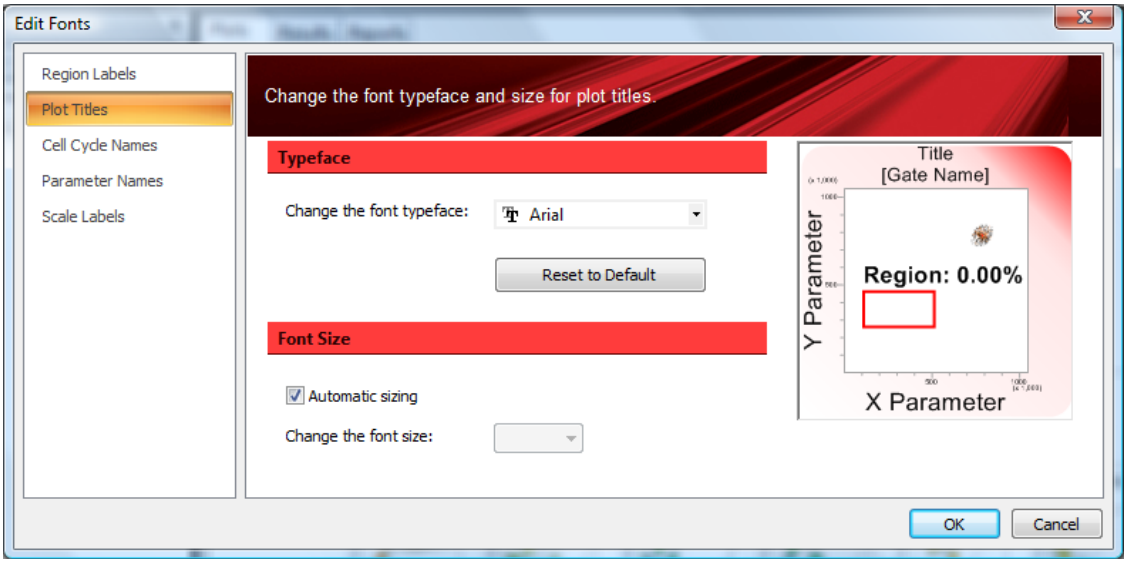
If you do not specify a font typeface for a workspace text item a default typeface as specified in the **VenturiOne Options** dialog (see section 0) shall be used.

The **Edit Fonts** dialog has several pages. You can navigate between them by clicking on the options on the left-hand side of the dialog. The currently displayed option is highlighted. The plot preview on each page displays how the selected typeface and size will look on plots.

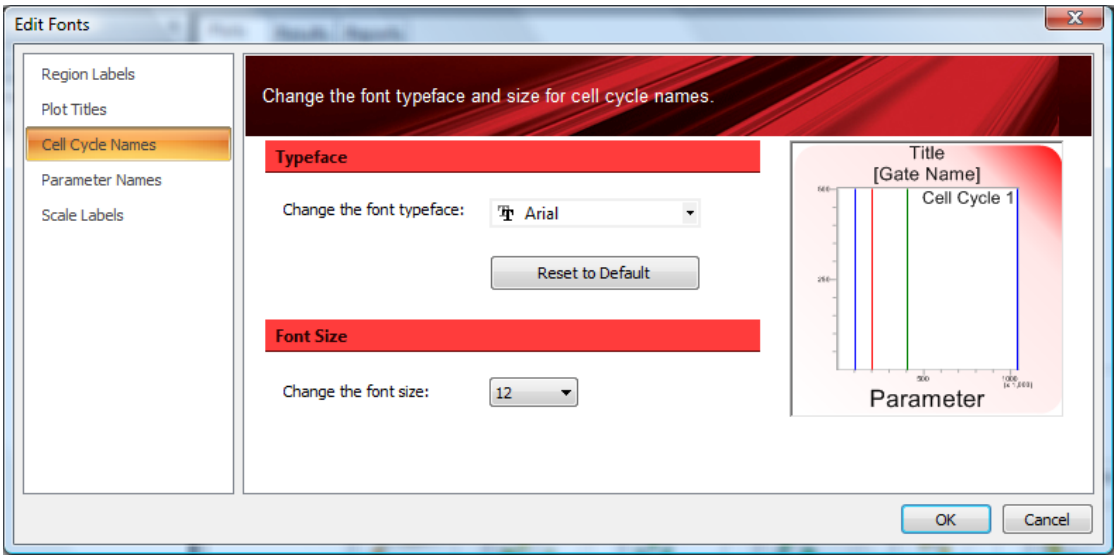
Select the **Region Labels** option on the left to display the **Region Labels** page. The **Region Labels** page allows you to specify the font typeface and size for text used for region labels.



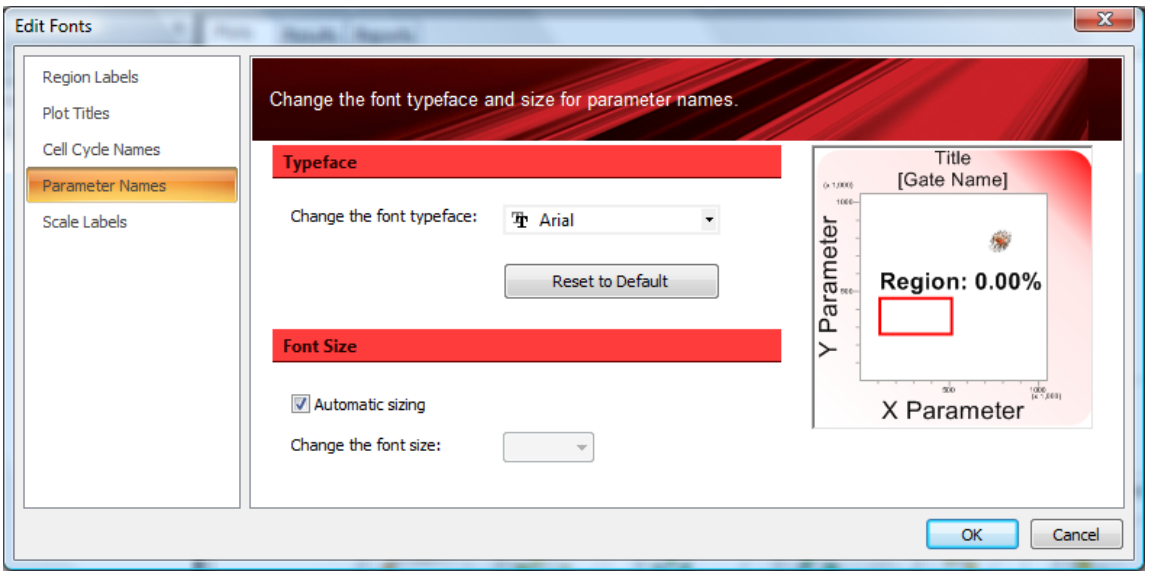
Select the **Plot Titles** option on the left to display the **Plot Titles** page**.** The **Plot Titles** page allows you to specify the font typeface and size for text used for plot titles.



Select the **Cell Cycle Names** option to display the **Cell Cycle Names** page. The **Cell Cycle Names** page allows you to specify the font typeface and size for text used for cell cycle names.



The **Parameter Names** page is displayed if you select the **Parameter Names** option. The **Parameter Names** page allows you to specify the font typeface and size for text used for X and Y parameter names on plot axis.



On each of the above pages when the dialog is launched the **Change the font typeface** is populated with the current font for the specific text item. The drop-down list contains all font typefaces available on the system. You can select a typeface from the drop-down list. If you start typing in the field auto-complete (also known as predictive text) is applied.

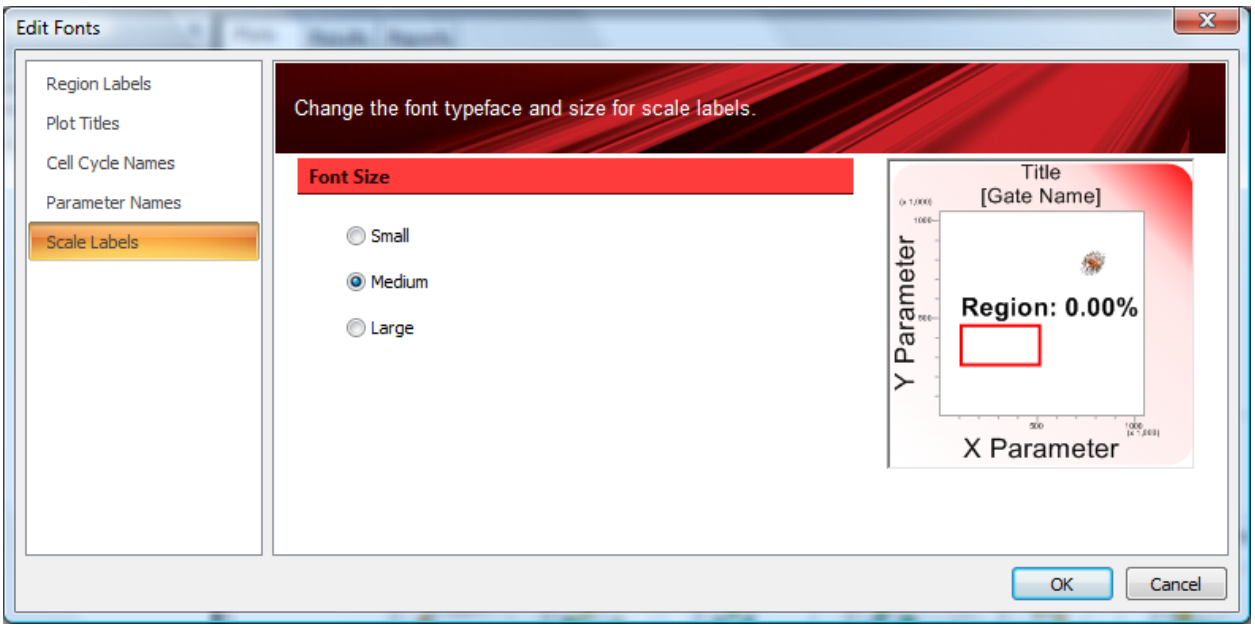
! If you select a non-True Type font or Monotype Corsiva, they are displayed as Arial

Pressing the **Reset to Default** button will reset the typeface for the specific text item to its default from **VenturiOne Options** dialog.

When the **Automatic sizing** check box is selected the size of the font is determined automatically by the software. Note that **Automatic sizing** option is not available on the **Cell Cycle Names** page.

De-select the **Automatic sizing** check box if you would like to specify the size for the specific text item. The **Change the font size** control becomes enabled. You can then select an available size from the list. If you start typing in the field auto-complete (also known as predictive text) is applied.

The **Scale Labels** page is displayed if you select the **Scale Labels** option. The **Scale Labels** page allows you to specify the font size for text used for scale labels. The three sizes available are **Small, Medium** and **Large**.


Edit Fonts
Region Labels
Plot Titles
Cell Cycle Names
Parameter Names
Scale Labels
Change the font typeface and size for scale labels.
Font Size
Small
Medium
Large
Title
[Gate Name]
Region: 0.00%
Y Parameter
X Parameter
OK
Cancel

Section 13

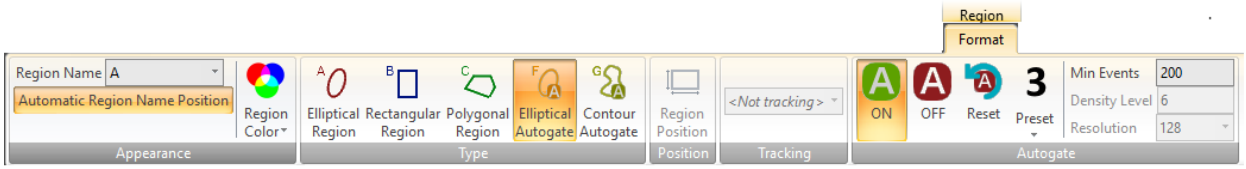
Modify Format of Regions (Region Format Tab)

Appearance Group
Type Group
Position Group
Track Regions on Multiple Plots (Tracking Group)
Appearance Group

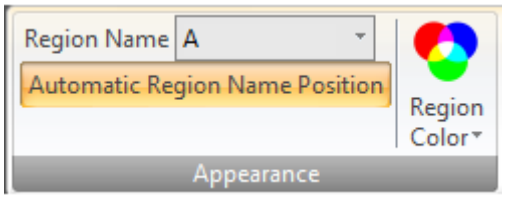
13 Modify Format of Regions (Region Format Tab)

The **Region Format** tab is only available when a region is selected in the **Plots** area.

You can use the options on the **Region Format** tab to modify the appearance and type of a selected region. The region label can also be re-positioned, and regions can be tracked to other regions.



13.1 Appearance Group



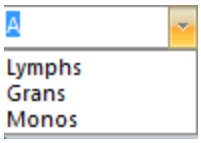
Use the options in this group to change region color, rename a region and reselect the automatic positioning of region names

13.1.1 Region Name Combo Box

Once a region is selected the Region Name combo box becomes enabled and displays the region name.

The drop-down list is populated with the names provided in the Default Region Name list in the VenturiOne Options, see section 25.1.3.1.

You can change the region name by clicking the arrow to expand the drop-down list and selecting a name from it:



You can also type in a name.

A Region name can also be changed by double clicking on the region name on the plot, see section 7.5.3 for more information.

The region name has to be a minimum of one and a maximum of fifty characters, duplicate names are not permitted. The region name cannot start with a number, contain consecutive spaces or any of the following

characters: / * ^ ! & | ( ) “ and Tab. The name cannot be any of the following reserved words: AND OR NOT XOR UNGATED.

If the name you enter violates these rules it will not be accepted by the software and the region name will not change.

If a valid name is selected or entered, the region name on the plot and in the Region Name combo box will update accordingly.

! Try to avoid applying long region names. If a name is too long, the region label will not be displayed on the plot. You should use region names that are significantly different.

13.1.2 Region Color Combo Box

Once a region is selected the Region Color combo box becomes enabled and displays the region’s color.

To change the region’s color click the arrow to display the Color control illustrated below and select the desired new color.



The region color on the plot and in the Region Color comb box will update.

! Make sure the color you select is not the same as the background color.

If the region has an associated gate, changing the region color will not change the gate color, details of how to adjust gate color is described in section 12.3.4.5.

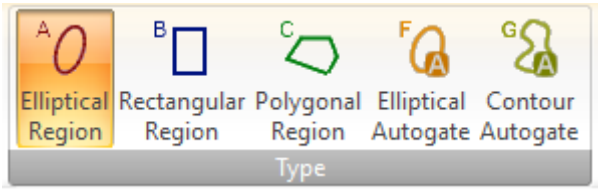
13.1.3 Automatic Region Name Position

Once a region has been created a unique name for the region is automatically generated. The region name and associated statistic are displayed adjacent to the region. You can re-position the name as desired within the limits of the plot.

To return a region name to its default position, select the region and click the **Automatic Region Name Position** button in the Label group:

13.2 Type Group

The options in the **Type** group allow you to change the type of a selected region.



Once a region has been selected, the current region type is highlighted. The region type can be switched between **Elliptical Region**, **Rectangular Region, Polygonal Region, Elliptical Augtogate and Polygonal Autogate** by selecting the respective buttons.

13.3 Position Group

The positioning of created elliptical, rectangular, linear and quadrant regions can be modified by selecting a region and clicking the **Region Position** button.

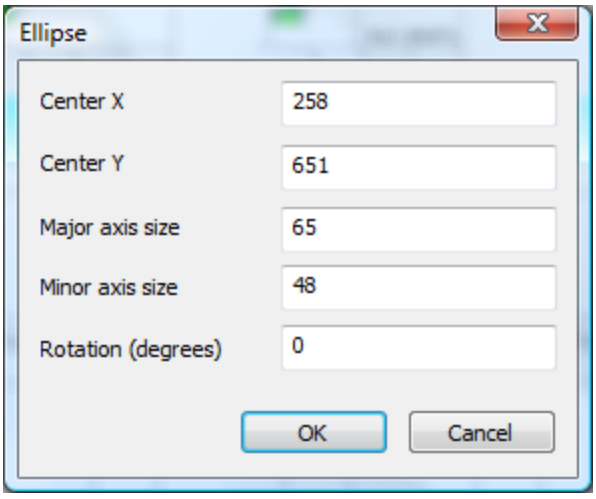


When you click the button a dialog specific for the selected region is launched.

The button is disabled if a polygonal region is selected.

13.3.1 Ellipse Dialog

If an elliptical region is selected clicking the **Region Position** button launches the **Ellipse** dialog illustrated below:



The **Center X** value is the position of the center of the ellipse on the x-axis. Increase the value to shift the ellipse to the right. Decrease the value to shift the ellipse to the left.

Center X values must fall between -1500 and 1500.

The **Center Y** value is the position of the center of the ellipse on the y-axis. Increase the value to shift the ellipse up. Decrease the value to shift the ellipse down.

Center Y values must fall between -1500 and 1500.

The **Major axis size** represents the size of the ellipse on the x-axis. Increase the value to increase the width of the ellipse. Decrease the value to decrease the width of the ellipse.

Major axis size values must fall between 0 and 1023.

The **Minor axis size** represents the size of the ellipse on the y-axis. Increase the value to increase the height of the ellipse. Decrease the value to decrease the height of the ellipse.

Minor axis size values must fall between 0 and 1023.

The **Rotation** rotates the ellipse by the number of degrees entered in the text box.

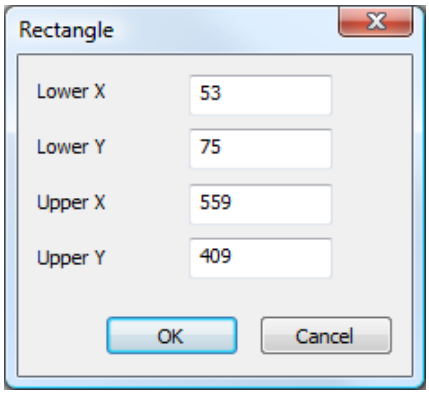
Rotation limits are -360º to 360 º.

When finished modifying the ellipse click the **OK** button on the dialog. Validation is performed. If all values are valid the dialog closes and the ellipse is changed based on the values from the dialog.

If any of the values entered are incorrect a warning message is displayed, and the dialog remains open for you to correct the error.

13.3.2 Rectangle Dialog

If a rectangular region is selected clicking the **Region Position** button launches the **Rectangle** dialog illustrated below:



The **Lower X** represents the position of the left side of the rectangle. Increase the value to shift the side to the right. Decrease the value to shift the side to the left.

Lower X values must be an integer between 0 and 1023.

The **Lower Y** represents the position of the bottom side of the rectangle. Increase the value to shift the side upwards. Decrease the value to shift the side downwards.

Lower Y values must be an integer between 0 and 1023.

The **Upper X** represents the position of the right side of the rectangle. Increase the value to shift the side to the right. Decrease the value to shift the side to the left.

Upper X values must be an integer between 0 and 1023.

The **Upper Y** represents the position of the top side of the rectangle. Increase the value to shift the side upwards. Decrease the value to shift the side downwards.

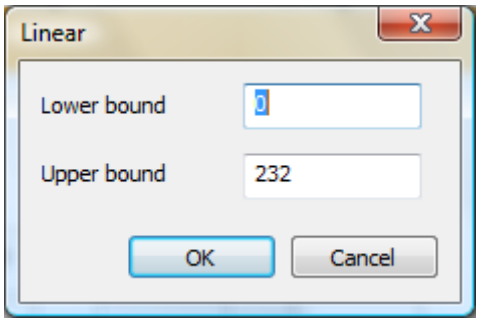
Upper Y values must be an integer between 0 and 1023.

When finished modifying the rectangle click the **OK** button. If all values are valid the dialog closes and the rectangle is changed based on the values from the dialog.

If any value is not within the 0 to 1023 limit an error message is displayed and the dialog remains open allowing you to correct the error.

13.3.3 Linear Dialog

The **Linear** dialog is launched from the **Region Position** button when a linear region is selected:



The **Lower bound** represents the position of the left point of the linear region. Increase the value to shift the point to the right. Decrease the value to shift the point to the left.

Lower bound values must be an integer between 0 and 1023.

The **Upper bound** represents the position of the right point of the linear region. Increase the value to shift the point to the right. Decrease the value to shift the point to the left.

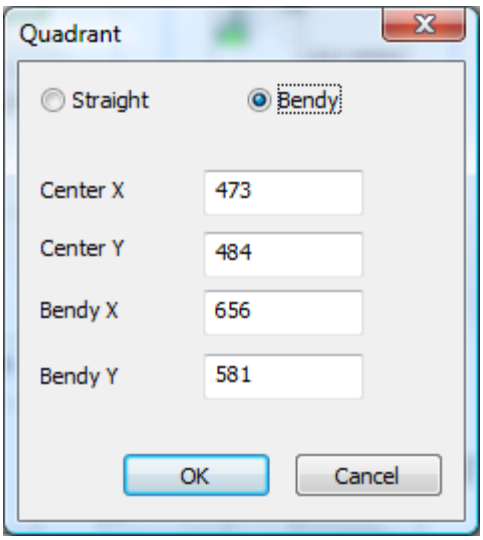
Upper bound values must be an integer between 0 and 1023.

Select the **OK** button when finished with your changes. If all values are valid the dialog closes and the linear region is changed based on the values from the dialog.

If any value is not within the 0 to 1023 limit an error message is displayed and the dialog remains open allowing you to correct the error.

13.3.4 Quadrant Dialog

The **Quadrant** dialog is launched from the **Region Position** button when a quadrant region is selected.



The **Straight** and **Bendy** radio buttons allow you to switch between straight and bendy quadrant region. See section 7.5.11 for details on quadrant regions.

The **Bendy X** and **Bendy Y** edit boxes are disabled when this button is selected.

The **Center X** represents the position of the quadrant intercept on the x-axis. Increase the value to shift the intercept to the right. Decrease the value to shift the intercept to the left.

Center X values must be an integer between 0 and 1023.

The **Center Y** represents the position of the quadrant intercept on the y-axis. Increase the value to shift the intercept upwards. Decrease the value to shift the intercept downwards.

Center Y values must be an integer between 0 and 1023.

The **Bendy X** represents the position of the 'bent' upper divider edge on the x-axis. Increase the value to shift the divider edge to the right. Decrease the value to shift the divider edge to the left.

Bendy X values must be an integer between 0 and 1023 and must be greater than the **Center X** value.

The **Bendy Y** represents the position of the 'bent' right divider edge on the y-axis. Increase the value to shift the divider edge upwards. Decrease the value to shift the divider edge downwards.

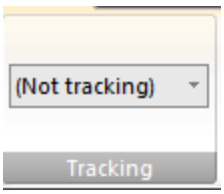
Bendy Y values must be an integer between 0 and 1023 and has to be bigger than the **Center Y** value.

Select the OK button when you are finished modifying the quadrant region. If all values are valid the dialog closes and the quadrant region is changed based on the values from the dialog.

If any value is not valid an error message is displayed, and the dialog remains open allowing you to correct the error.

13.4 Track Regions on Multiple Plots (Tracking Group)

The **Tracking** feature allows you to link region positions on plots that display the same parameters. If one of the linked regions is changed, all the linked regions are adjusted simultaneously. The controls for region tracking are positioned in the **Tracking** group of the **Region Format** tab.



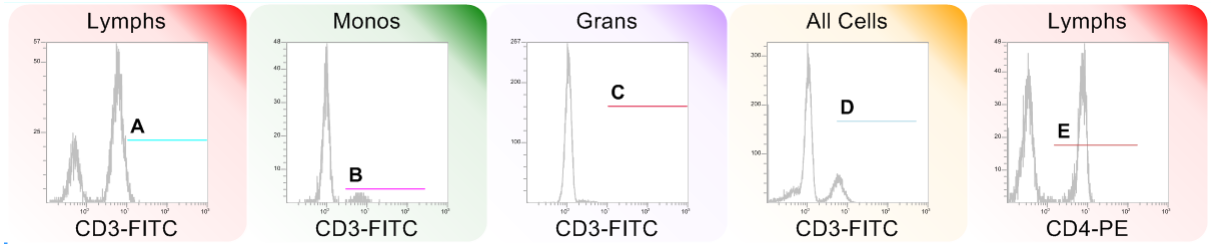
To link one region to another first select the region and then click the drop-down arrow of the **Region Tracking** combo box.

If the currently selected region can't be linked to any regions the only option in the combo box is **(Not tracking)**.

If there are regions to which the currently selected region can be linked the drop-down list displays them.

Select the region you would like the currently selected region to be linked to. The selected region is now displayed in the **Region Tracking** field.

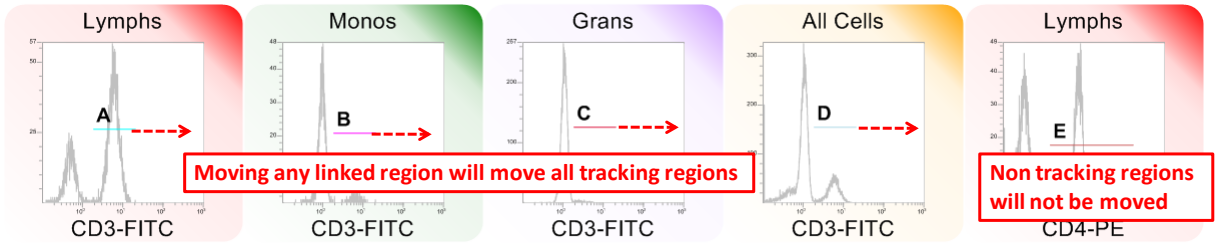
The example below shows five plots each with a linear region applied in a different position:



Regions A, B, C and D can all be linked as the plots all show the same parameter. Region E cannot be linked to the others as it is a different parameter.

To link region B to region A, first select region B on the plot and then from the **Region Tracking** drop-down list select region A. Repeat his process for regions C and D, each time linking the region to region A.

A region is only linked to one region and once it has been linked it will be removed from the **Region Tracking** list



13.4.1.1 Rules to Link Regions

Only regions that are on plots that display the same parameters can be linked.

A maximum of 256 regions can be linked for each opened Workspace.

A Linear region can only be linked to another linear region.

Elliptical, Rectangular and Polygonal regions can be linked to one another, however if regions are of different types linking them changes them to the same type as the ‘linked to’ region.

Quadrant regions cannot be part of a linked region.

Once regions are linked, only the ‘linked to’ region appears in the drop-down list when other compatible regions are selected.

When linking regions, the ‘linked’ region will inherit the position of the ‘linked to’ region.

Linked regions can be un-linked by selecting each region and then selecting **(Not Tracking)** from the **Region Tracking** combo box drop-down list.

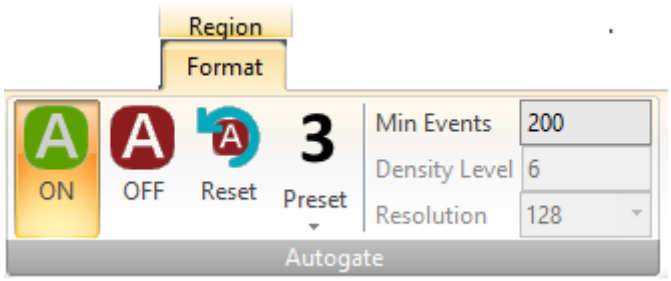
For linked linear regions only movement in a horizontal direction of the selected region is reflected in the rest of the region in the linked group, they can be set to different vertical positions.

When a ‘linked to’ region is deleted, the regions linked to it change to **(Not Tracking)**. Deleting a linked region has no effect on the linked status of the remaining regions.

Autogating regions cannot be ‘linked to’.

13.5 Autogate Group

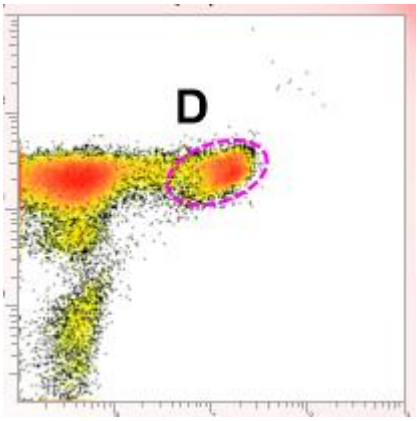
The options in the **Autogate** group allow you to change the properties of a selected region.



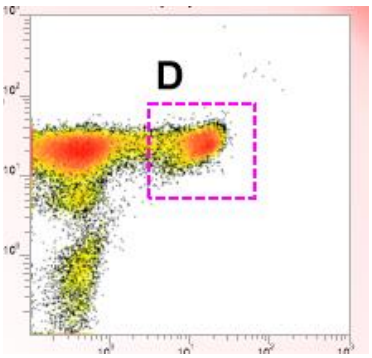
These options will only be enabled when an autogate is selected.

When the **on** option is highlighted the current autogate is enabled and will automatically re-gate if required. In this state the autogate is displayed as a solid line.

When the **Off** option is highlighted the autogate is disabled and will not automatically adjust. In this state the autogate is displayed in its last position as a dotted line.



When the **Reset** option is selected the autogate is disabled and displays the search area as a dotted line.

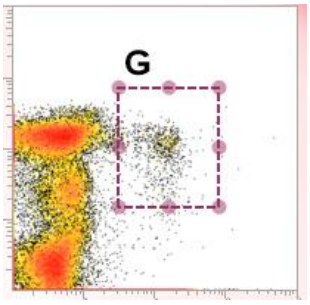


The **Pre-set** option allows the selection of one of the default autogating levels 1-4. Level 1 being the tightest autogate and level 4 being the widest.



Selecting the **Custom** option allows the user to specify the required density level and select a resolution value to achieve the optimal autogate behaviour.

The **Min Events** option allows you to specify the minimum number of events that must be within a gate before autogating will take place. If less than this number of events are present the autogate is turned off and displays the search region with a dotted outline.



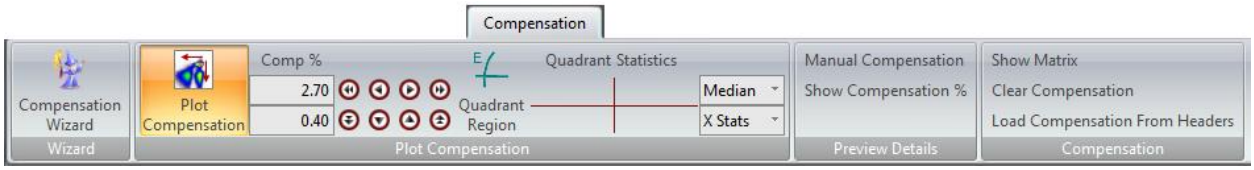
Section 14

Compensation and Compensation Tab

Wizard Group
Plot Compensation Group
Preview Details Group
Manual Compensation Group
Compensation Wizard

14 Compensation and Compensation Tab

The **Compensation** tab contains controls for viewing the compensation applied to the currently open FCS file and for computing compensation values.



VenturiOne allows you to obtain the correct compensation for a file in a number of ways. Compensation values can be restored from the FCS file header values (if the values were stored with the file). You can also calculate the compensation within the VenturiOne software and save these calculated values for future use.

By default, the software will automatically load compensation values from the FCS file header.

The status of the compensation settings of the current file is displayed in the status bar.

14.1 Wizard Group

The **Wizard** group contains the **Compensation Wizard** button:



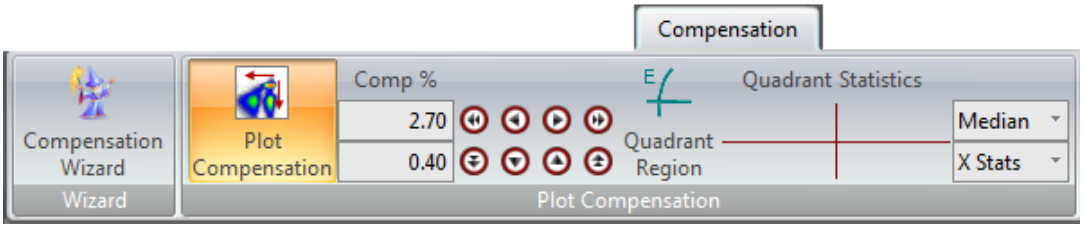
The **Compensation Wizard** button is only enabled when there are at least two items in the playlist and there are no items that have no FCS file.

Pressing the **Compensation Wizard** button launches the **Compensation Wizard** which allows you to easily compute a complete compensation matrix. The **Compensation Wizard** is described in detail in section 14.5.

14.2 Plot Compensation Group

The **Plot Compensation** controls allow the adjustment of compensation on the current sample using plots in the Plots area. Populations can be dragged into position or accurately adjusted using the arrow controls.

Mean or Median values for the current plot can be used to help set the correct compensation.



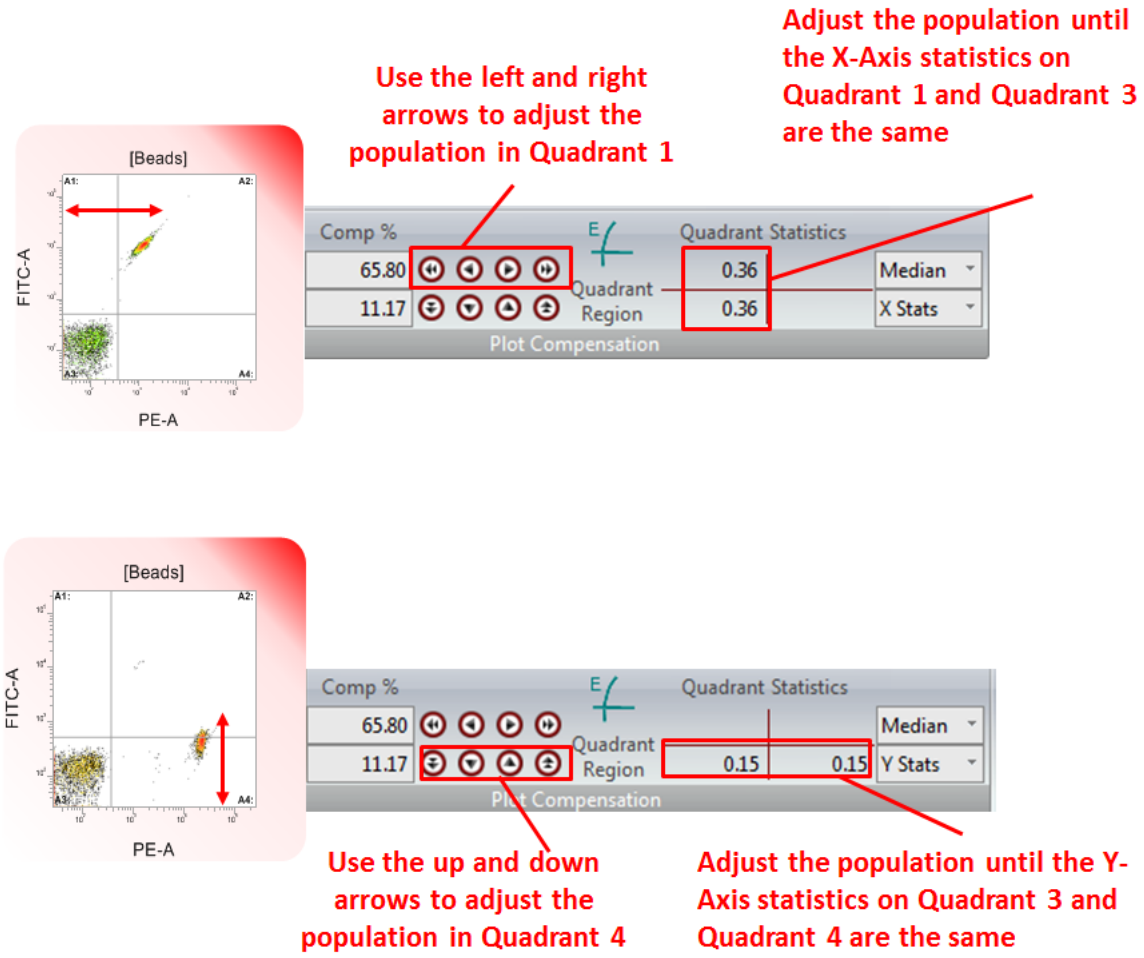
! In order to see the quadrant statistics displayed in the **Plot Compensation** group a quadrant region must be set on the currently selected plot.

To use plot compensation, highlight the **Plot Compensation** button, this enables the arrow buttons and enables manual dragging of populations on plots in the **Plots** area. The button will be unavailable if a plot is selected which does not contain parameters which can be compensated, for example Time or Scatter parameters, in this case it will be necessary to reselect the Plot Compensation button once a suitable plot has been selected.

Select a plot in the **Plots** area that contains the parameters required for compensation and then press the **Plot Compensation** button on the **Compensation** tab.

When Plot Compensation is enabled the selected plot shows a diagonal line from bottom left to top right to assist with drag/drop compensation.

Then either click and drag a population into the correct position or use the arrow buttons to move the population to the required position.



14.2.1 Plot Compensation Controls

The plot compensation controls display the compensation values for the X and Y parameters of the current plots.

14.2.1.1 Comp % Edit Boxes

The **Comp %** edit boxes display the current compensation values for the pair of parameters present on the currently selected plot.

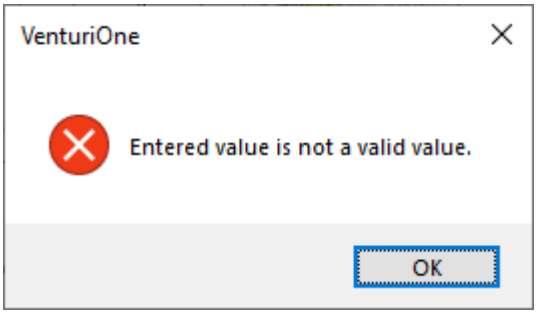
The top (X) edit box shows the subtraction of the Y-parameter from the X-parameter.
The bottom (Y) edit box shows the subtraction of the X-parameter from the Y-parameter.

The edit boxes allow the entry of compensation values.

Up to six characters can be entered into the edit boxes in the range 0.00 to 100.00.

Entered values are rounded to 2 decimal places.

If text is entered which cannot be converted to a number, or the number is outside the valid range then an error message is displayed.



14.2.1.2 Compensation Arrow Buttons

The Compensation adjustment buttons allow the fine adjustments of compensation % values.



For the top row, from the left, the compensation % adjustments are:
- Increase the X Compensation value by 0.10
- Increase the X Compensation value by 0.01
- Decrease the X Compensation value by 0.01
- Decrease the X Compensation value by 0.10

For the bottom row: the compensation % adjustments are:
- Increase the Y Compensation value by 0.10
- Increase the Y Compensation value by 0.01
- Decrease the Y Compensation value by 0.01
- Decrease the Y Compensation value by 0.10

Compensation values are limited to the range 0.00 to 100.00.

The direction of the arrow icons indicates the way the plot populations move rather than the way the compensation values change.

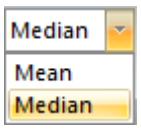
14.2.1.3 Quadrant Statistics

Statistics are displayed when the current FCS file is able to be compensated, and a dual parameter plot displaying parameters which can be compensated is selected and the plot contains a quadrant region

If the statistic cannot be calculated due to insufficient events, then the edit box will show ‘ERROR’.
If multiple quadrant regions are present on the plot, then the statistics are only displayed for the quadrant region set created first.

14.2.1.4 Quadrant Statistics Mean/Median Button

The Mean/Median button is enabled when an FCS file which is able to be compensated is loaded and controls whether the mean or median statistic is displayed for the quadrant region.



Clicking on the button will allow the selection of method, either mean or median. The text will display the currently selected statistic.

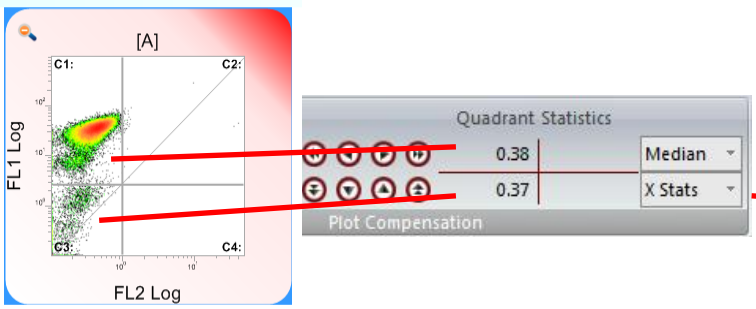
The button will default to ‘Median’.

14.2.1.5 Quadrant X Stats/Y Stats Button

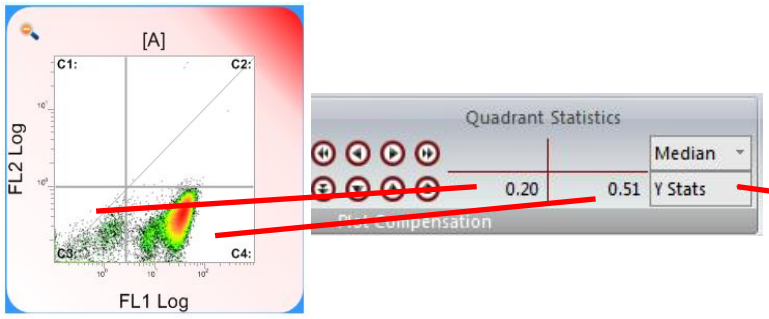
This button is enabled when an FCS file which is able to be compensated is loaded and controls whether the displayed statistics are for the X parameter or the Y parameter.

Clicking on the button will allow the selection of X or Y statistics. The button text will display the currently selected parameter.

The button will default to ‘X Stats’.



Select X-Stats to display the X-Axis statistics on Quadrant 1 and Quadrant 3



Select Y-Stats to display the Y-Axis statistics on Quadrant 3 and Quadrant 4 of the currently selected plot

14.3 Preview Details Group

14.3.1 Manual Compensation Using the Preview Plots

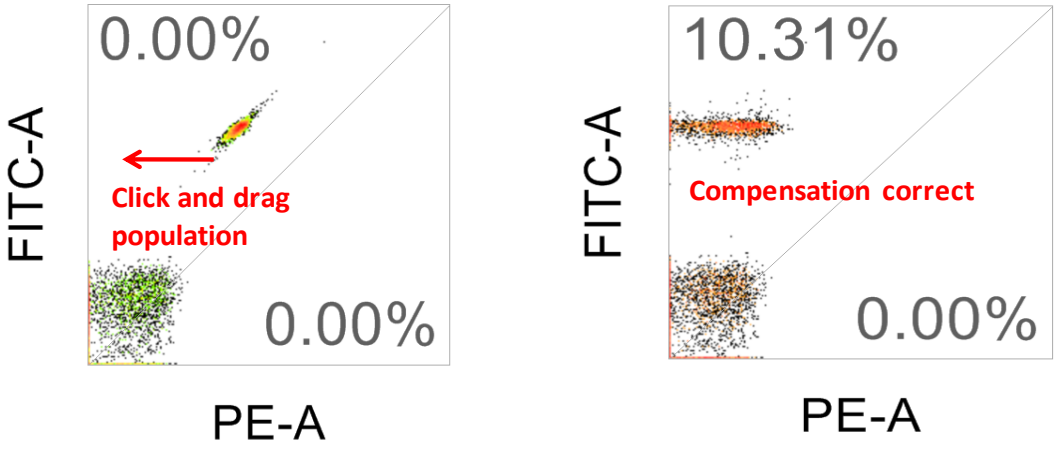
Controls in the **Preview Details** group allow you to manually adjust the compensation of the current sample using the preview plots and display the compensation percentage on the preview plots.



The buttons in the group are only enabled when an FCS file which is able to be compensated is loaded in the **Workspace**.

Click the **Manual Compensation** button if you would like to manually adjust the compensation settings of the currently open FCS file. The button becomes highlighted indicating that manual compensation is turned on.

When manual compensation is on, the preview plots display a diagonal line from lower left to upper right corner. This line distinguishes the two coefficient sections. Drag above the line in a horizontal direction to adjust one coefficient, as illustrated below. Similarly, you can also drag below the line in a vertical direction to adjust the other coefficient. The compensation coefficients can be adjusted from 0-100%.



Only the current plot is updated during dragging. When the dragging is complete, all selected plots and preview plots affected by the change are updated.

Click the **Show Compensation %** button to display the compensation coefficients for each parameter combination on all dual parameter preview plots, as in the above example.

Compensation coefficients are only displayed on preview plots that have two relevant fluorescent combination parameters.

Re-click the **Show Compensation %** button to hide the coefficients.

14.4 Compensation Group

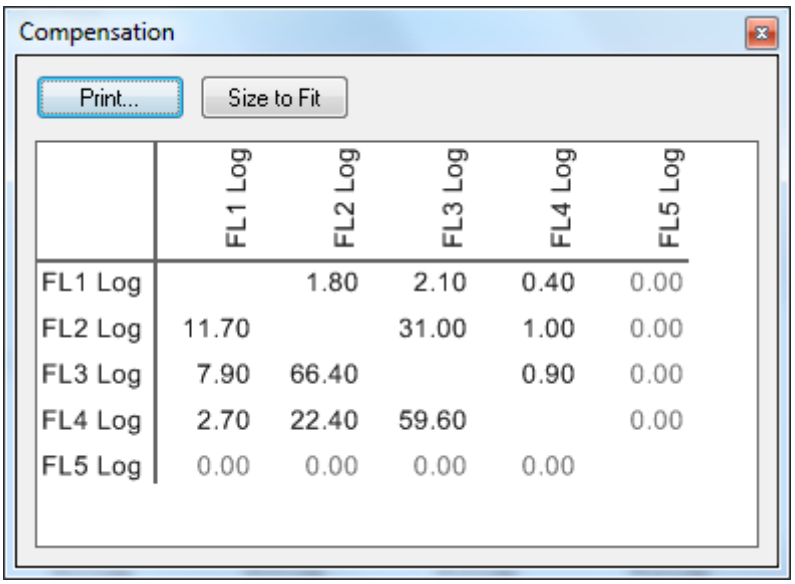
The **Compensation** group has controls for displaying the compensation matrix, for clearing the current compensation matrix and for loading the compensation settings from the current file header.



Some older instruments do not have high enough resolution data to allow analysis time compensation to be performed, so the compensation controls, excluding the **Show Matrix** button, will be disabled for FCS files generated from these instruments.

14.4.1 Compensation Matrix

Click the **Show Matrix** button to display the **Compensation Matrix** dialog. The **Compensation Matrix** dialog shows the compensation matrix associated with the current file.



	FL1 Log	FL2 Log	FL3 Log	FL4 Log	FL5 Log
FL1 Log		1.80	2.10	0.40	0.00
FL2 Log	11.70		31.00	1.00	0.00
FL3 Log	7.90	66.40		0.90	0.00
FL4 Log	2.70	22.40	59.60		0.00
FL5 Log	0.00	0.00	0.00	0.00	

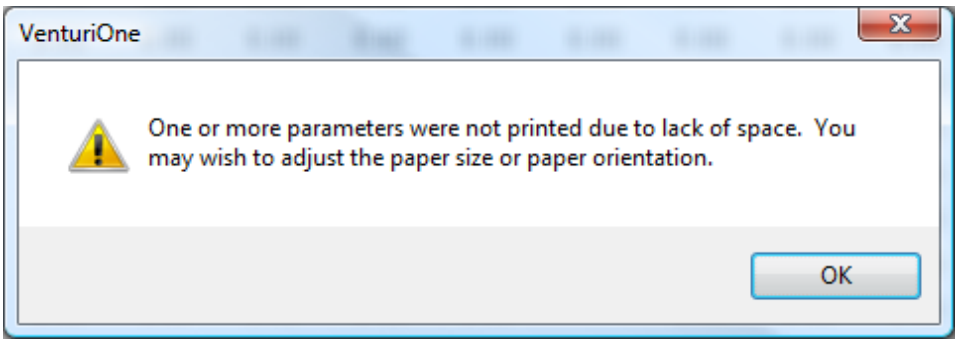
The matrix uses the display names of the parameters as specified in the **Parameters Properties** dialog (see section 10.2).

Click the **Print** button if you would like to print the compensation matrix.

The default font size for printing the matrix is 10 pt.

If the matrix does not fit in the printing area the font size for the print out of the matrix will be reduced; if the minimum font size is reached and the matrix still cannot fit in the printing area the printout switches layout (from portrait to landscape or vice versa) and the fitting procedure is applied again.

If the matrix still cannot fit, the following message is displayed at the end of printing:



Select **OK** closes the message; the printout of the matrix is cropped.

Click the **Size to Fit** button to re-size the **Compensation** dialog to fit the size of the current matrix; this is restricted by the Screen size of your monitor.

When a new FCS file is opened the matrix automatically re-sizes to fit the new compensation values.

14.4.2 Clear Compensation

Click the **Clear Compensation** button to clear the active compensation; all coefficients in the currently active matrix will be reset to 0.00%. This action will not clear the calculated compensation matrix stored in memory.

The **Clear Compensation** button is only enabled when an FCS file which is able to be compensated is loaded in the **Workspace**.

14.4.3 Load Compensation From Headers

Click the **Load Compensation From Headers** button to retrieve the compensation matrix from the current FCS file headers and apply it as the active compensation matrix.

The **Load Compensation From Headers** button is only enabled when an FCS file which is able to be compensated is loaded in the Workspace.

14.5 Compensation Wizard

The **Compensation Wizard** simplifies the process of generating a full fluorescence compensation matrix.

14.5.1 Initial Playlist setup

Before starting the **Compensation Wizard,** you need to load all of the single stained samples and (if appropriate) the negative control sample into the **Playlist**.

For ease of use you should order the files with the negative control first, followed by the single stained samples in parameter order. E.g. FL1, FL2, FL3 etc. You will be able to re-allocate files later if required.

If a single FCS file contains more than one positive stain you must load in the file once for each stain present.

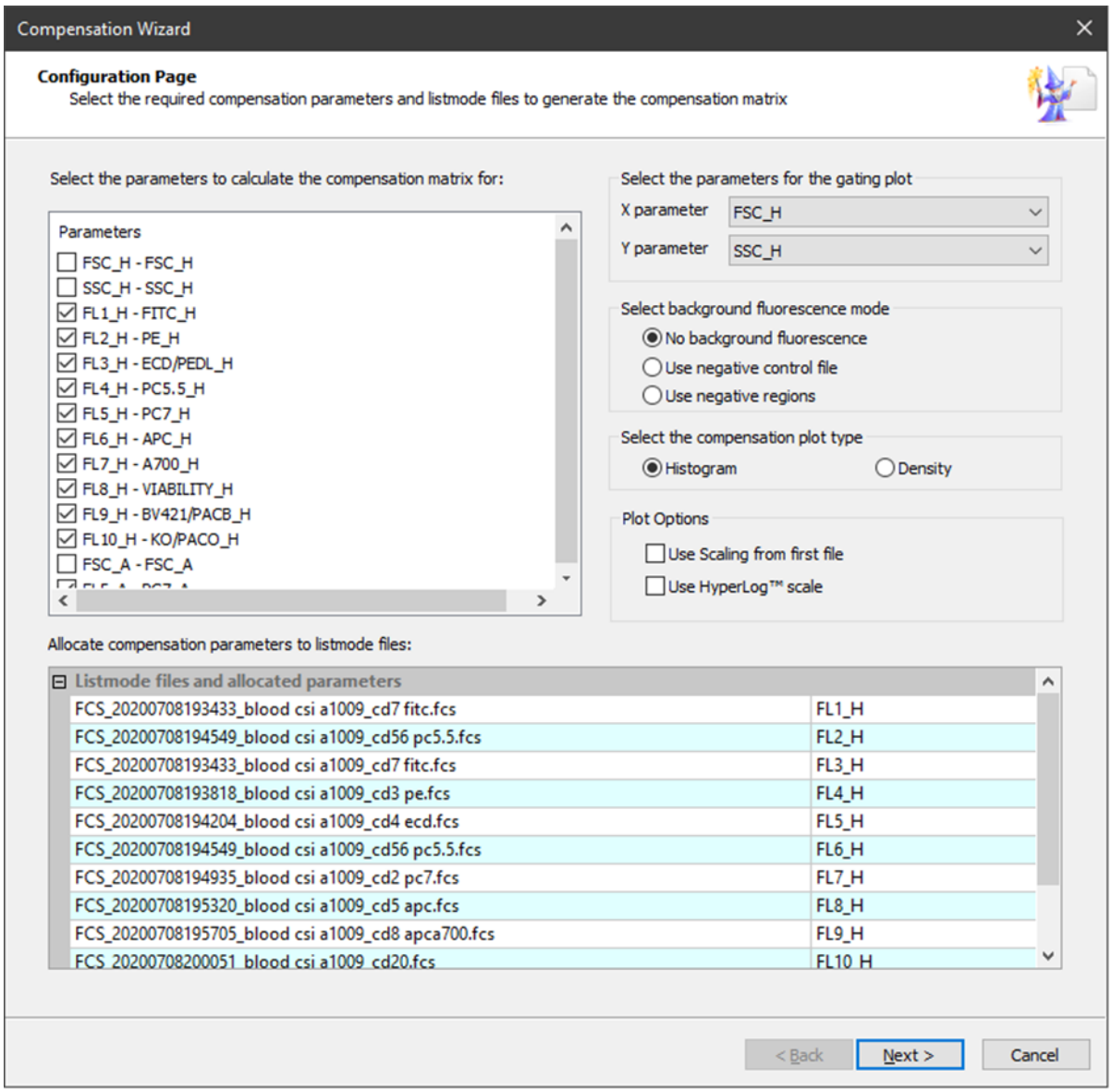
The wizard will allocate files based on the playlist starting from the first file. Additional files can be present in the Playlist but will not be recognized by the wizard.

Once the **Playlist** contains the required compensation setup files, click the **Compensation Wizard** button (see section 14.1) to launch the wizard.

14.5.2 Configuration Page

The first page of the wizard, the **Configuration** page, is displayed when the wizard is launched.

On this page you can select the parameters you wish to compensate and allocate an FCS file to each of them. You can specify how negative control values should be calculated. You can also define the plot type required for definition of positive and negative populations.



14.5.3 Parameters List

The **Parameters** list displays all the parameters from the first FCS file in the **Playlist** in the format Parameter Name ($PnN) - Stain name ($PnS).

Parameters identified as fluorescence are automatically checked. You can uncheck the ones you do not want to compensate.

Parameters that are not recognized as fluorescence parameters cannot be checked. See section 10.2.2 for details on parameter classification and how to reclassify parameters.

14.5.4 Gating Plot Parameter Selection

The **X parameter** and **Y parameter** combo-boxes allow you to select the parameters for the primary bead / cell Gating Plot. They are populated with all the parameters shown in the **Parameters** list.

14.5.5 Background Fluorescence Mode

The radio buttons in the **Select background fluorescence mode** group allow you to select whether a separate background fluorescence control is being used (select the **Use negative control file** option). Alternatively, you can use negative events within a positive sample to determine the background for each sample (select **Use negative regions**).

If no background control is present, select the **No background fluorescence** radio button.

14.5.6 Compensation Plot Type

You can select to use either histogram plots or dual parameter density plots for the definition positive and negative events for each parameter, by selecting the **Histogram** or **Density** options in the **Select the compensation plot type** group respectively.

14.5.1 Plot Options

By default, the plots in the compensation wizard will be displayed at the full range of the data. If you have customized the scaling of the workspace parameters, you can apply the parameter scaling settings from the first file in the playlist to all compensation plots by selecting the **Use Scaling from first file** option.

You can also select the **Use HyperLog scale** option to use HyperLog scaling in the compensation calculation plots.

14.5.2 Allocate Parameters to Listmode Files

The **Listmode files and allocated parameters** list allows you to allocate one of the parameters selected for compensation to each FCS file.

The Listmode files (left-hand) side of the list shows the files from the **Playlist**, in their current order, starting from the first file. The list contains one FCS file for each selected Compensation Parameter. If **Use negative control file** radio button is selected, the list also contains a file to be used as the negative control file. When the selection of parameters changes the list updates accordingly.

The allocated parameters (right-hand) side of the list shows the allocated Compensation Parameters.

Each row consists of a drop-down list. The drop-down list contains all the fluorescence parameters from the Parameters list selected for compensation.

When the **Use negative control file** radio button is selected the drop-down list also includes an item ‘Negative’ at the top.

<Negative>
1-488/530/30-A
1-488/585/42-A
1-488/610/20-A
1-488/710/50-A
1-488/780/60-A
4-638/660/20-A
2-407/450/50-A
2-407/525/50-A

Selecting an item from the drop-down list which is already selected for a different file clears the setting for that file.

The default allocation will be the Negative Control file first (if selected) followed by the selected parameters in the order of the **Parameter** list.

If the **Listmode files** list is updated (parameters selection or changing the **Use negative control file** radio button selection) the allocated parameters return to their default allocations.

14.5.3 Next button

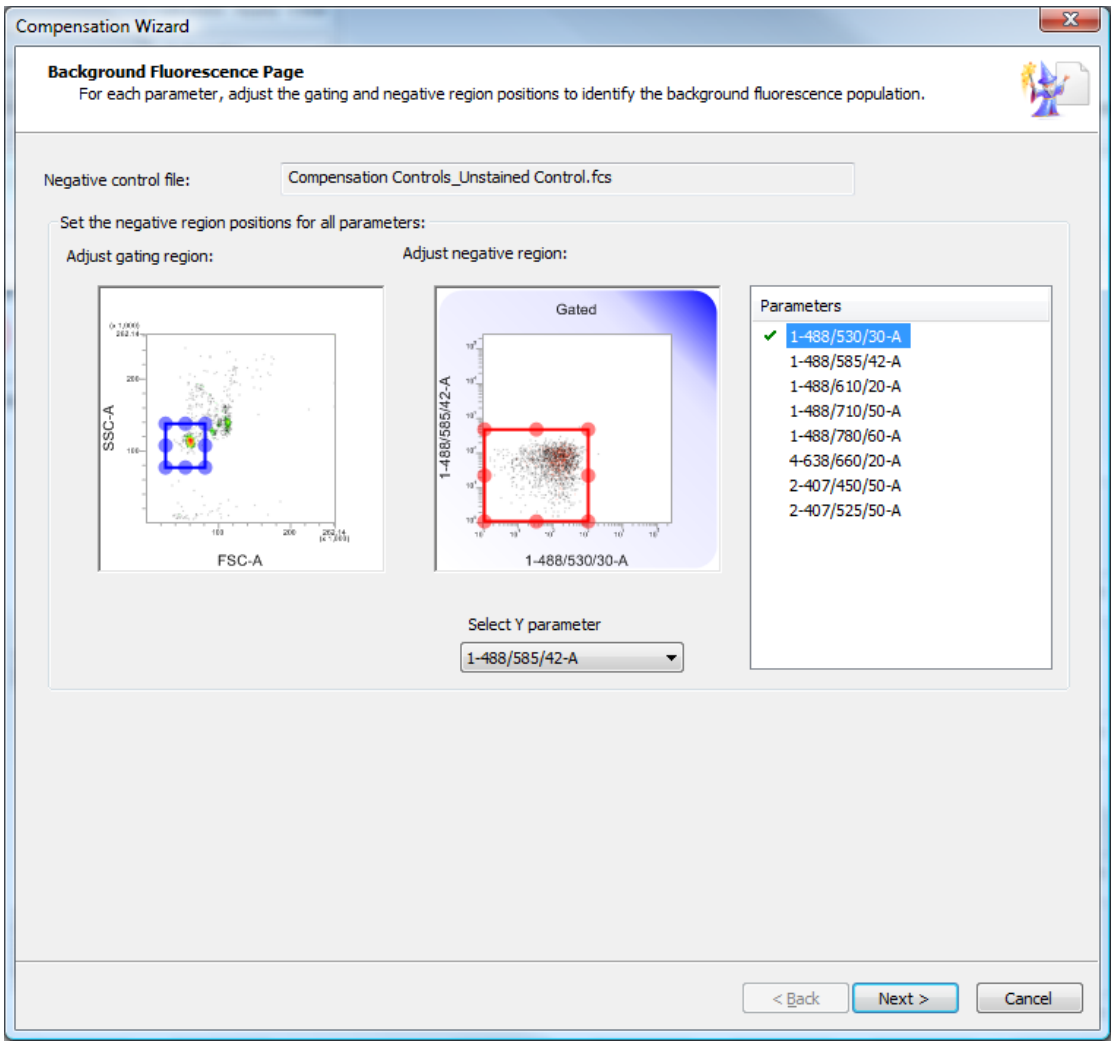
Select the **Next** button to proceed to the next page of the wizard. If the **Negative control file** option is selected the next page is the **Background Fluorescence** page, otherwise it is the first **Compensation** page.

If the selections made on the **Configuration** page are incorrect you will not be allowed to proceed to the next page and an appropriate error message will be displayed.

14.5.4 Background Fluorescence Page

The **Background Fluorescence** page of the **Compensation Wizard** is only displayed if the **Use negative control file** option is selected on the **Configuration** page.

On this page you will define a default gate position for subsequent pages, and then use a region to define the negative events for each parameter.



The **Negative control file** field displays the name of the negative control FCS file that will be used for the background fluorescence computation.

14.5.5 Gating Region Plot

The gating region plot is an ungated dual parameter density plot. The X and Y parameters on the plot are those selected on the **Configuration** page.

The plot contains a single rectangular blue colored region.

You can move and resize the region as required. Any adjustment of the region automatically updates the background fluorescence plot.

14.5.6 Negative Region Plot

The negative region plot is used to define the negative population for the X parameter of the current plot. A region needs to be defined for each parameter to be compensated.

The plot will be either a histogram or dual parameter density plot depending on the selection on the Configuration Page. The plot is gated on the Gating region.

The plot contains a single region, colored red that can be moved and resized as required to define the negative events.

If the plot is a dual parameter plot you can change the Y parameter in the **Select Y parameter** combo box. The combo box is only visible when the negative region plot is a dual parameter plot.

14.5.7 Parameters List

The **Parameters** list contains all fluorescence parameters that are selected for compensation on the **Configuration** page.

The currently selected parameter is highlighted in the list.

Parameters which have had the negative region configured are indicated by a tick in the checkbox.

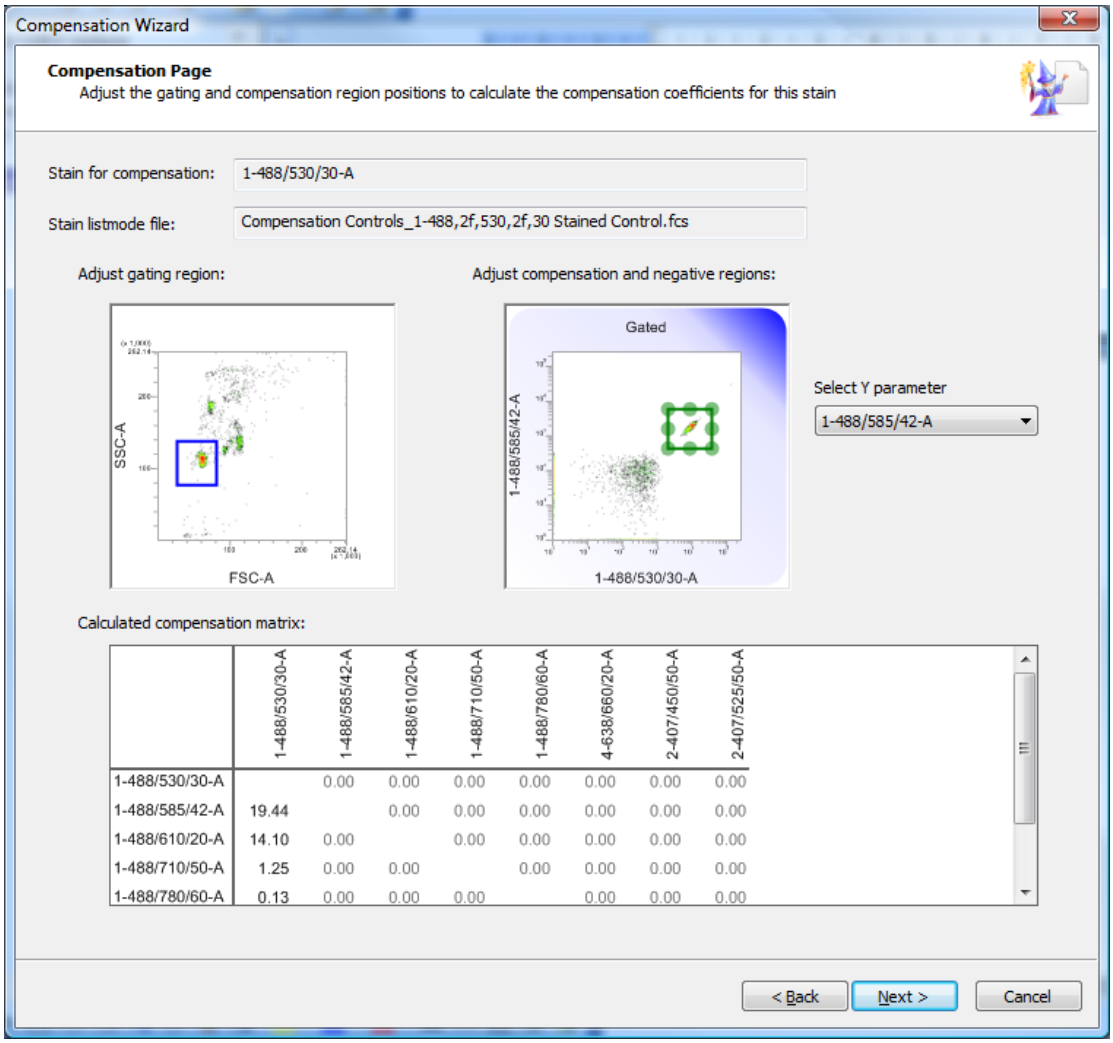
14.5.8 Next Button

If not all the parameters listed in the **Parameters** list have been configured (checkbox ticked), then clicking the **Next** button will select the next un-checked parameter in the list.

When all parameters have been configured then the **Next** button will proceed to the first **Compensation** page of the wizard.

14.5.9 Compensation Page

The **Compensation** page will be displayed once for each selected compensation parameter.



The **Stain for compensation** field specifies the stain that is being currently compensated.

The **Stain listmode file** field specifies the name of the FCS file used for the compensation calculation.

14.5.10 Gating region plot

The gating region plot is an ungated dual parameter density plot. The X and Y parameter on the plot are those selected on the **Configuration** page.

The plot contains a single rectangular blue colored region.

You can move and resize the region as required. Any adjustment of the region automatically updates the compensation plot and the **Calculated compensation matrix**.

14.5.11 Compensation plot

The compensation plot is a single or dual parameter plot depending on the selection on the Configuration Page. The plot is gated on the Gating region plot.

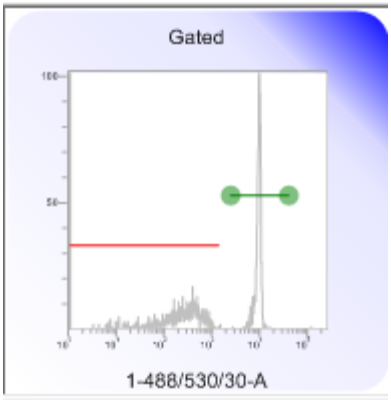
The X parameter on the plot is the current compensation parameter.

If the plot is a dual parameter plot you can change the Y parameter in the **Select Y parameter** combo box. The combo box is only visible when the compensation plot is a dual parameter plot.

The compensation plot contains a green colored region used to specify the positive population for that stain.

You can move and resize the region. Adjusting the region updates the **Calculated compensation matrix.**

If you have selected the **Use negative regions** option on the **Configuration** page the compensation plot also contains a red colored region which is used to specify the background fluorescence population.



You can move and resize the region. Adjusting the region updates the **Calculated compensation matrix**.

14.5.12 Calculated compensation matrix

The **Calculated compensation matrix** displays the currently calculated compensation coefficients.

The **Calculated compensation matrix** format is the same as the **Compensation** dialog (see 14.4.1).

! The top and bottom channels of the plot are excluded from the calculations.

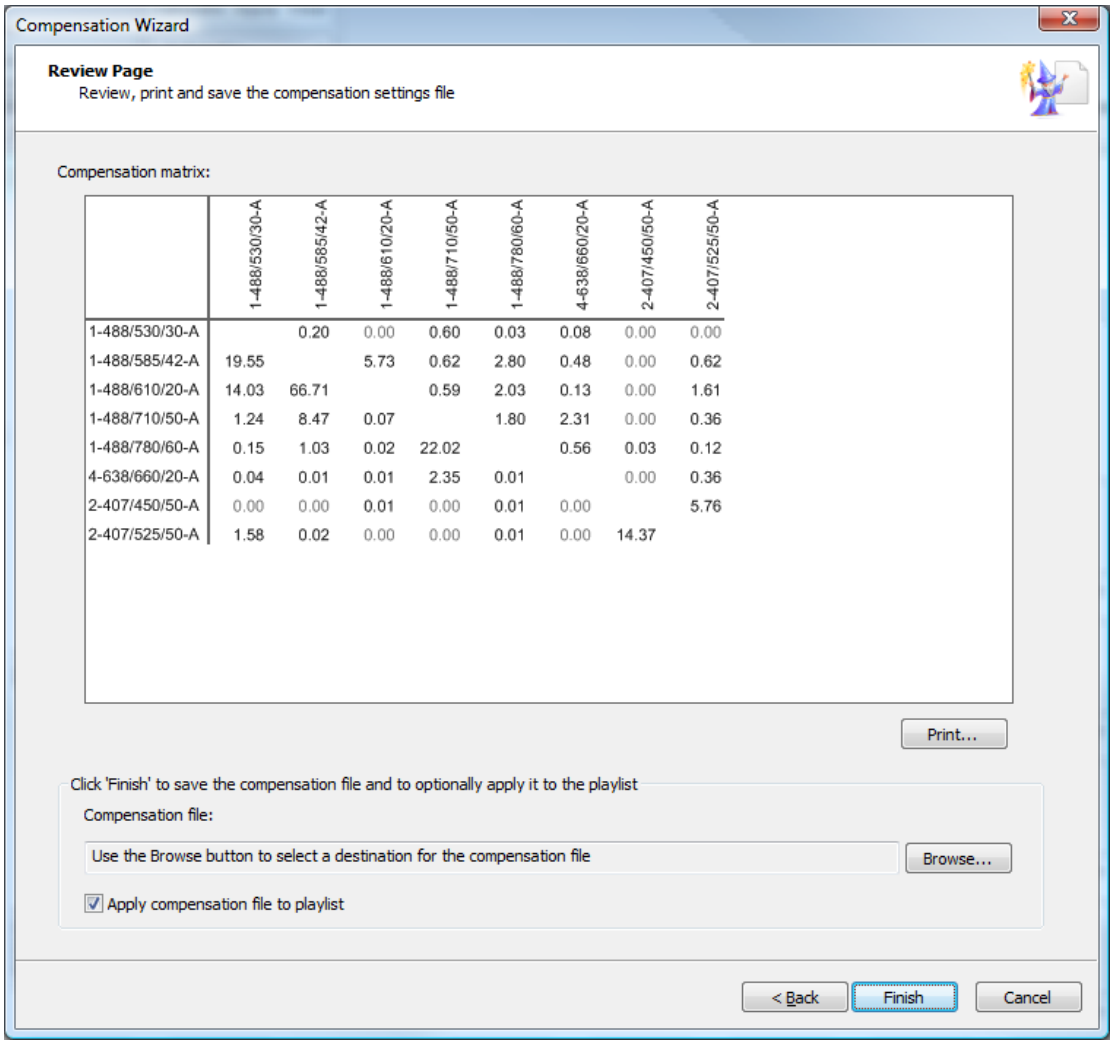
14.5.13 Back and Next Buttons

Selecting the **Back** button returns you to the previous page of the **Compensation Wizard**.

The **Back** button on the first **Compensation** page is disabled if the **Use negative control file** option was not selected.

Selecting the **Next** button proceeds to the next **Compensation** page or to the **Review** page when on the last **Compensation** page.

14.5.14 Review Page



The **Compensation matrix** displays the completed matrix of compensation values.

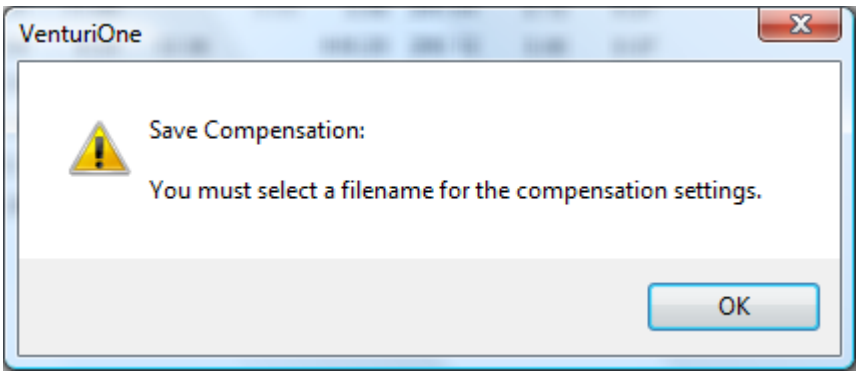
Click the **Print** button to print the compensation matrix.

The **Compensation file:** field displays the destination path and filename for the compensation file. Click the **Browse** button to specify the destination and name for the compensation file. The compensation file is not saved at this time.

Check the **Apply compensation file to playlist** checkbox if you wish to replace the current compensation values in the workspace with the newly calculated compensation coefficients.

Select the **Finish** button to complete the Compensation Wizard and save the compensation file with the specified name.

If no filename has been specified for the compensation file, a warning message is displayed when you click **Finish**:



Select **OK** on the message to close it and launch the Windows **Save As** dialog allowing you to specify a file name for the compensation file

If you then specify a valid filename in the **Save As** dialog, the **Compensation Wizard** will complete once you click **Save** in the dialog.

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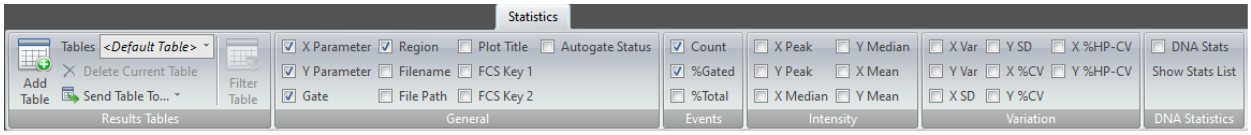
Section 15

Statistics Tab

Statistics Tab Behavior
Results Group
General Group
Count Group
Percents Group
Intensity Group
Variation Group
DNA Statistics Group

15 Statistics Tab

In VenturiOne you can select a statistic to be displayed on the plots in the **Plots** area. You can select this statistic on the **Statistics** tab of the **Ribbon**. You can also select which statistic(s) are displayed in the **Results** table. New tables can be created, and the contents of each table can be filtered to show selected results.



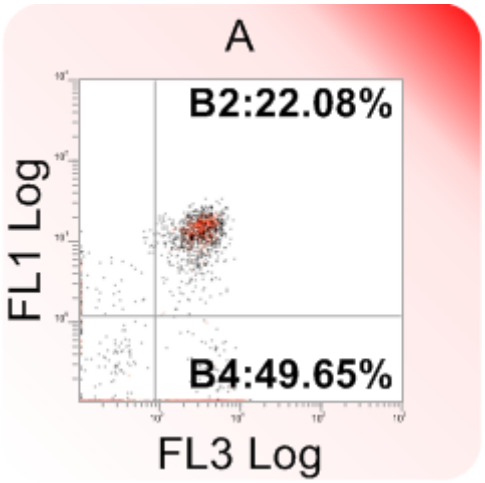
15.1 Statistics Tab Behavior

The **Statistics** tab behaves differently depending on which tab in the **Workspace** is selected.

When in the **Plots** tab of the **Workspace** only one statistic can be checked at any time. The currently checked statistic is displayed adjacent to the region for all regions on all plots in the **Plots** area. If you check a new statistic the previously checked one is automatically un-checked.

By default, the **%Gated** statistic is displayed on plots.

When **% Gated** is checked on the **Statistics** tab the **% Gated** value is displayed in the plots, as illustrated below:



Results will not be truncated, so any statistic that is too large to appear on a plot will be hidden.

You can display just the region name by ensuring all check boxes are deselected.

The statistics in the **General** and the **DNA** groups cannot be displayed on plots and the controls in these groups are disabled when in the **Plots** tab of the **Workspace**.

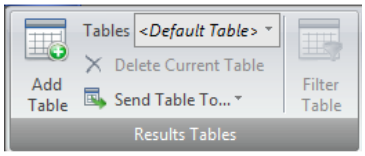
When in the **Results** tab of the **Workspace** any number of statistics can be checked and the statistical values for the checked statistics are displayed in the **Results** table.

See section 16 for more details of the display of statistics in the **Results** tab.

When in the **Reports** tab of the **Workspace** the **Statistics** tab is only enabled when a **Stats Box** is selected. Statistical values for the checked statistics are displayed in the **Stats Box**.

15.2 Results Table Group

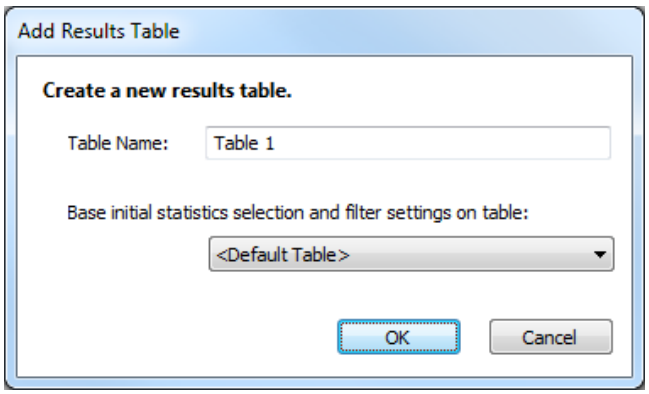
The options in this group are used to create new results tables, filter results and select a results table to display.



The Default table displays all results from all regions; additional tables can be added to display specific results.

15.2.1 Add Table

Selecting **Add Table** displays the Add Results Table Dialog which allows you to give the new table a name and pick an existing table to base the results on.



15.2.2 Tables

The **Tables** drop-down list displays all the currently defined results tables, the selected table will appear on the results tab of the workspace.

15.2.3 Delete Table

Selecting this button deletes the currently selected results table. The default table cannot be deleted.

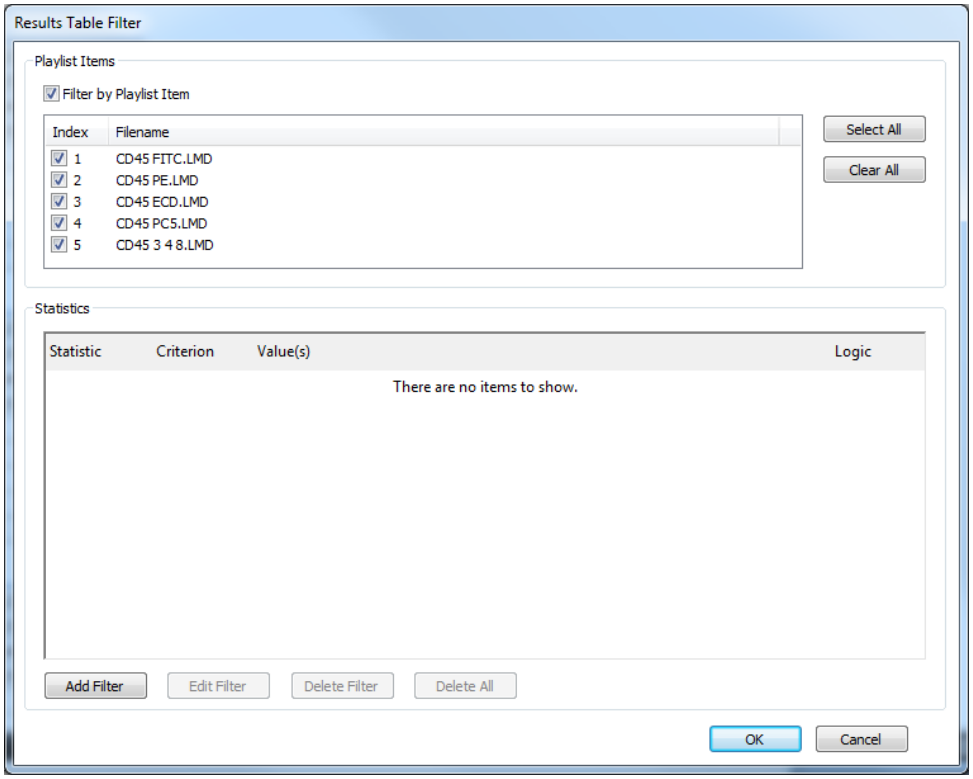
15.2.4 Send Table To…

Select this button to send the currently selected results table to the report. A new report page will be created, and current results table will be to that page.

15.2.5 Filter Table

Select the Filter Table button to display the Filter Table dialog.

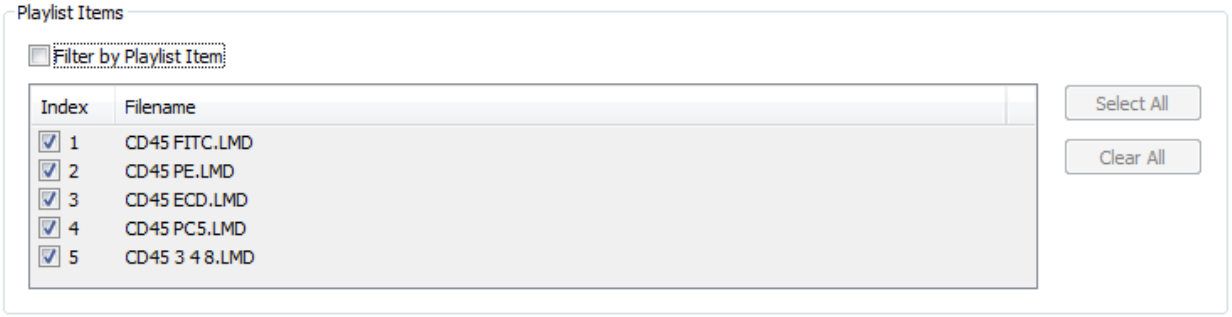
15.2.1 Add Table



This dialog allows the selection of files to include and the creation of filters.

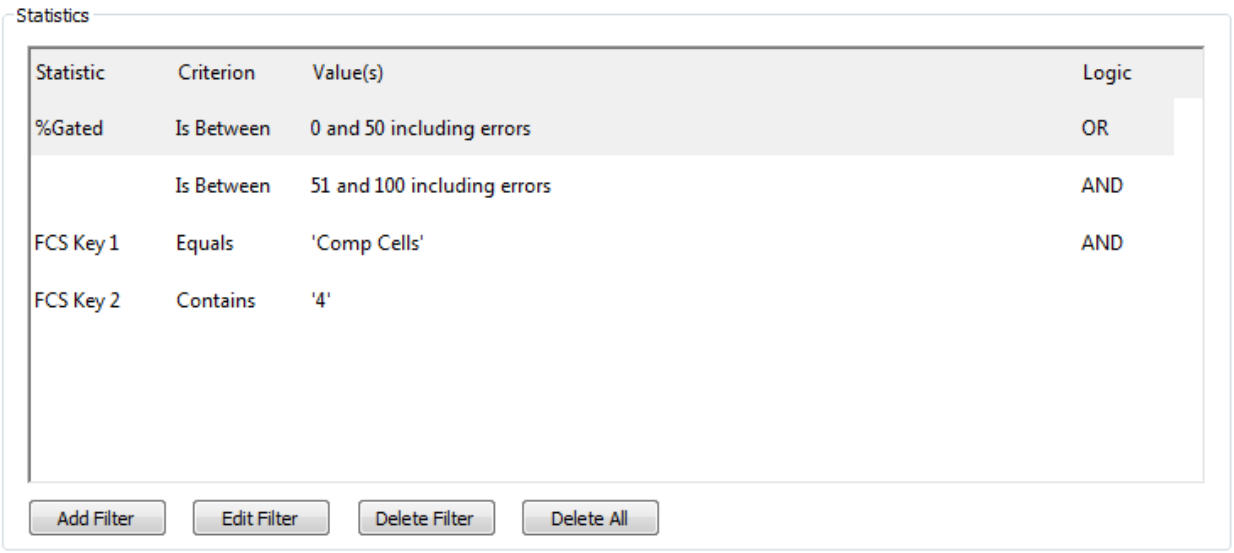
15.2.1.1 Playlist Items Section

By default, all results from all regions



To show results from specific files check the Filter by Playlist Item checkbox and uncheck those files not required in the current results table.

15.2.1.2 Statistics

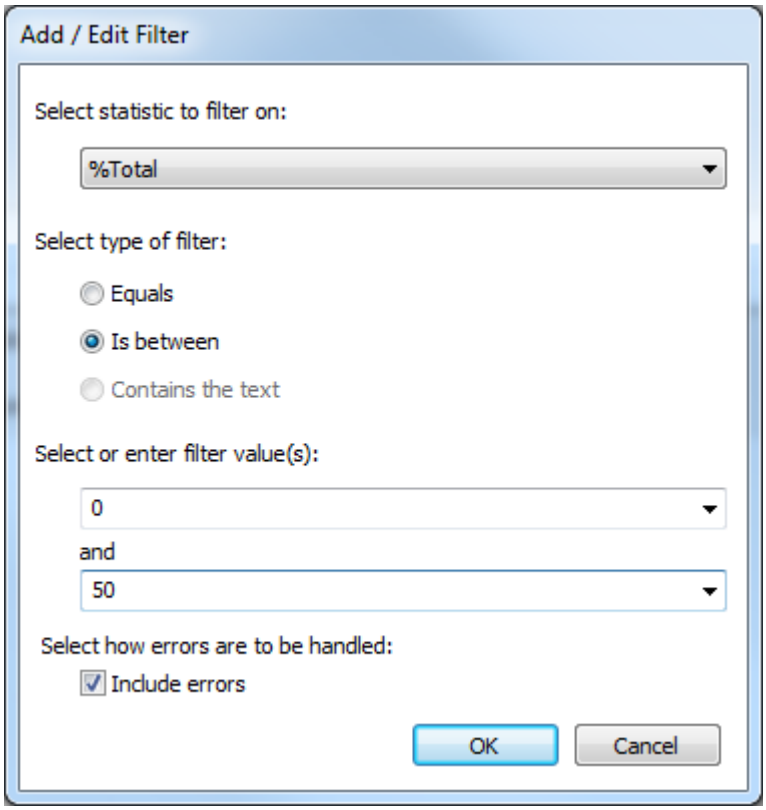


The controls in the statistics group allow you to create criteria to filter results on.
The filters for the current results table are listed

The controls under the list allow you to add, edit or remove filters.

15.2.1.3 Add / Edit Filter Control

This dialog is displayed when you select the **Add Filter** or **Edit Filter** buttons



When adding a new filter, first select a statistic field to filter on and then select the type of filter you wish to apply. If editing an existing filter, the selected statistic cannot be changed.

If the selected field is a numerical field, you can select the **Equals** option or the **Is between** option.

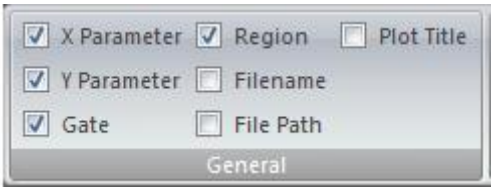
If the selected field is a text field, you can select either the **Equals** or **Contains the text** option.

Use the **Select or Enter filter value(s)** controls to either select a value from the available list or enter your required values.

Multiple filters can be set for each table.

15.3 General Group

The statistics in this group, when checked, are displayed in the **Results** table and in selected **Stats Boxes** on the reports.



X Parameter displays the X parameter of the plot containing the region.

Y Parameter displays the Y parameter of the plot containing the region.

Gate displays the name of the gate on which the region is gated.

Region displays the name of the region or the DNA plot name.

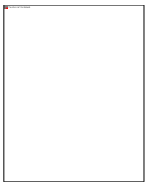
Filename displays the FCS file name.

File Path displays the FCS full path and file name.

Plot Title displays the title of the plot.

15.4 Count Group

The statistic in this group, when checked, is displayed on **Plots**, in the **Results** table and in selected **Stats Boxes** on the reports.



Count displays the number of events in the region.

15.5 Percents Group

The statistics in this group, when checked, are displayed on **Plots**, in the **Results** table and in selected **Stats Boxes** on the reports.



% Gated displays the percentage of events in the region compared to all the events in the parent gate.

% Total displays the percentage of events in the region compared to all the events in the file.

15.6 Intensity Group

The statistics in this group, when checked, are displayed on **Plots**, in the **Results** table and in selected **Stats Boxes** on the reports.



The **Intensity** group displays statistical options that express the intensity of the generated populations. The options are defined below:

X Peak displays the peak channel (mode) for the x-axis histogram of a region.

Y Peak displays the peak channel (mode) for the y-axis histogram of a region. Where the region is only a single parameter region the entry on the results table is left blank.

X Median displays the median average for the x-axis histogram of a region.

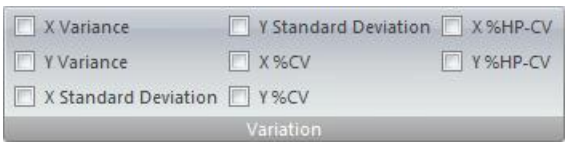
Y Median displays the median average for the y-axis histogram of a region. Where the region is only a single parameter region the entry on the results table is left blank.

X Mean displays the mean average for the x-axis histogram of a region.

Y Mean displays the mean average for the y-axis histogram of a region. Where the region is only a single parameter region the entry on the results table is left blank.

15.7 Variation Group

The statistics in this group, when checked, are displayed on **Plots**, in the **Results** table and in selected **Stats Boxes** on the reports.



The **Variation** group displays options that express the variation of populations. The options are defined below:

X Variance displays the variance for the x-axis histogram of a region.

Y Variance displays the variance for the y-axis histogram of a region. Where the region is only a single parameter region the entry on the results table is left blank.

X Standard Deviation displays the standard deviation for the x-axis histogram of a region.

Y Standard Deviation displays the standard deviation for the y-axis histogram of a region. Where the region is only a single parameter region the entry on the results table is left blank.

X %CV displays the Coefficient of Variation for the X scale range of events. This allows comparison of the variation of populations that have significantly different mean values; it is displayed as a percentage. The X %CV is calculated by dividing the Standard Deviation by the Arithmetic Mean and is displayed as a percentage.

Y %CV displays the Coefficient of Variation for the Y scale range of events. This allows comparison of the variation of populations that have significantly different mean values; it is displayed as a percentage. The Y %CV is calculated by dividing the Standard Deviation by the Arithmetic Mean and is displayed as a percentage.

X %HP-CV displays the Half-Peak Coefficient of Variation for the X scale range of events. The X %HP-CV uses a Standard Deviation calculated from the scale width between the half peak points either side of the Peak. Once the Standard Deviation is calculated it is divided by the Arithmetic Mean and displayed as a percentage.

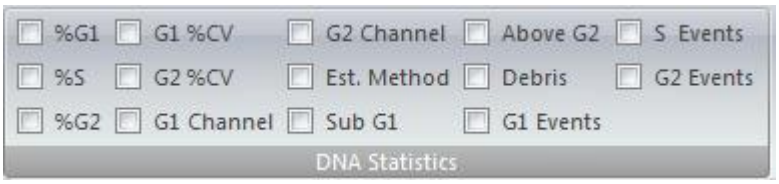
Y %HP-CV displays the Half-Peak Coefficient of Variation for the Y scale range of events. The Y %HP-CV uses a Standard Deviation calculated from the scale width between the half peak points either side of the Peak. Once the standard deviation is calculated it is divided by the Arithmetic Mean and displayed as a percentage.

15.8 DNA Statistics Group

The **DNA Statistics** group displays the statistical options associated with the DNA Cell Cycle plots. See section 7.8 for further information on DNA Cell Cycle plots.

The statistics in this group, when checked, are displayed in the **Results** table and in selected **Stats Boxes** on the reports.

When a cell cycle plot is present in the **Plots** area, the statistics in the **DNA Statistics** group are checked by default.



%G1 displays events in the G1 phase, represented as a percentage of the total of events in G1, G2 and S phase.

%S displays events in the S phase, represented as a percentage of the total of events in G1, G2 and S phase.

%G2 displays events in the G2 phase, represented as a percentage of the total of events in G1, G2 and S phase.

G1 %CV displays the Coefficient of Variation for the G1 phase. This is calculated by dividing the G1 phase Standard Deviation by the Arithmetic Mean and is displayed as a percentage.

G2 %CV displays the Coefficient of Variation for the G2 phase. This is calculated by dividing the G2 phase Standard Deviation by the Arithmetic Mean and is displayed as a percentage.

G1 Channel displays the position of the G1 calculated peak channel.

G2 Channel displays the position of the G2 calculated peak channel.

Est. Method displays the estimate method used. This can be Automatic or User.

Sub G1 displays the number of events above the lower threshold divider and below the G1 phase.

Above G2 displays the number of events below the upper threshold divider and above the G2 phase.

Debris displays the number of DNA debris events. These are the events outside the threshold limits.

G1 Events displays the number of events in the G1 phase.

S Events displays the number of events in the S phase.

G2 Events displays the number of events in the G2 phase.

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Section 16

Results Tab of the Workspace

Results Table
DNA Plots Results Representation
Group Results by Column Headers
Column Header Context Menu

16 Results Tab of the Workspace

In the **Result** tab of the **Workspace** you can view statistics associated with the regions created in the **Plots** area. You can copy statistics for use in other applications, export statistics to CSV and XML files and print statistics using the options on the **File Menu**.

16.1 Results Table

Selecting the **Results** tab displays the currently selected results table. By default, this table shows all results associated with the regions in all the workspaces in the playlist. When you select the **Results** tab the **Ribbon** switches to the **Statistics** tab.

New results tables can be created and filtered as described in section 15.2.

Each region created in the **Workspace** generates a results row in the **Results** table. For a quadrant region four rows are created, one for each quadrant.

Plots | Results - <Default Table> | Overlays | Reports

Drag a column header here to group by that column.

Filename	X Parameter	Y Parameter	Gate	Region	Count	%Gated
AS 4 Color ITlow 07 634.LMD	FS	SS	Ungated	A	4759	11
AS 4 Color ITlow 07 634.LMD	CD4-RD1		A	B	1160	24
AS 4 Color ITlow 07 634.LMD	CD4-RD1		A	(A) 2	4759	11
AS 4 Color ITlow 07 634.LMD	CD8-ECD		A	C	1622	34
AS 4 Color ITlow 07 634.LMD	CD8-ECD		A	(A) 3	4759	11
AS 4 Color ITlow 07 634.LMD	CD3-PC5	CD4-RD1	A	D1	16	0
AS 4 Color ITlow 07 634.LMD	CD3-PC5	CD4-RD1	A	D2	1151	24
AS 4 Color ITlow 07 634.LMD	CD3-PC5	CD4-RD1	A	D3	1856	39
AS 4 Color ITlow 07 634.LMD	CD3-PC5	CD4-RD1	A	D4	1736	36
AS 4 Color ITlow 07 634.LMD	CD3-PC5	CD4-RD1	A	(A) 4	4759	11
AS 4 Color ITlow 07 635.LMD	FS	SS	Ungated	A	8135	11
AS 4 Color ITlow 07 635.LMD	CD56-RD1		A	B	563	7
AS 4 Color ITlow 07 635.LMD	CD56-RD1		A	(A) 2	8135	11
AS 4 Color ITlow 07 635.LMD	CD19-ECD		A	C	1427	18
AS 4 Color ITlow 07 635.LMD	CD19-ECD		A	(A) 3	8135	11
AS 4 Color ITlow 07 635.LMD	CD3-PC5	CD56-RD1	A	D1	440	5
AS 4 Color ITlow 07 635.LMD	CD3-PC5	CD56-RD1	A	D2	201	2
AS 4 Color ITlow 07 635.LMD	CD3-PC5	CD56-RD1	A	D3	2914	36
AS 4 Color ITlow 07 635.LMD	CD3-PC5	CD56-RD1	A	D4	4580	56
AS 4 Color ITlow 07 635.LMD	CD3-PC5	CD56-RD1	A	(A) 4	8135	11
AS 4 Color ITrol 08 632.LMD	FS	SS	Ungated	A	5183	19
AS 4 Color ITrol 08 632.LMD	CD4-RD1		A	B	2470	48
AS 4 Color ITrol 08 632.LMD	CD4-RD1		A	(A) 2	5183	19
AS 4 Color ITrol 08 632.LMD	CD8-ECD		A	C	1179	23
AS 4 Color ITrol 08 632.LMD	CD8-ECD		A	(A) 3	5183	19
AS 4 Color ITrol 08 632.LMD	CD3-PC5	CD4-RD1	A	D1	10	0

Results for all files within a **Playlist** will be displayed if **Background Calculation** is enabled (see 6.5.1), otherwise only results for the current file will be displayed.

Only the statistics selected in the **Statistics** tab are displayed in the table. Each statistic is displayed in a separate column in the table.

Columns will default to automatically adjust their width to fit the widest text in the column. The width of a column can be manually changed by dragging the column divider at the right of the column to be adjusted.

Once a column width has been manually adjusted it will not adjust to fit any new text in the column. Double-clicking the column divider at the right of a column will set that column back to automatically adjust its width

The heading for each column is the name (from the **Statistics** tab) of the statistic displayed in this column.

When an unchecked box is checked the respective column is inserted in the table.

You can re-order the columns by dragging and dropping their headers.

Columns can be removed from the table by un-checking the check box in the **Statistics** tab. Columns, except for the **Error Message** column, can also be removed by dragging a column header off the column header area.

If a statistical value cannot be calculated, **ERROR** will be displayed instead of a numerical value.

If a value is not applicable to the row it is left blank. Not applicable items are:

- DNA Statistics for a non-cell cycle region.
- Y values for a linear region.
- Count, Percents, Intensity and Variation statistics for a cell cycle plot.

The table can be sorted by any column in an ascending or descending order by clicking the column title.

16.1.1 Select Results Rows

You can select results rows in the following ways:

- Left or right mouse click on a results row selects it.
- Holding down the Ctrl key or Shift key allows multiple rows to be selected.
- Ctrl+A selects all the rows in the table.
- Ctrl+Shift+End selects all rows from the currently selected one to the end of the table.
- Ctrl+Shift+Home selects all rows from the currently selected one to the top of the table.

Selected rows are highlighted in blue.

Selected rows can then be copied for pasting into other applications e.g. Microsoft Excel

16.2 DNA Plots Results Representation

Each DNA cell cycle plot generates a results row in the **Results** table and results for the DNA statistics selected on the **Statistics** tab are displayed. For a cell cycle plot an additional **Error Message** column is added to the **Results** table. The message reported by the Cell Cycle Analysis, denoting whether the algorithm experienced any problems, is displayed in this column.

The possible **Error Messages** that can be displayed in the results table are listed below:

- Successful Fit (None – Fit OK)
- Difficulty fitting G1 peak, used your estimate (1 – User Pk1)
- Difficulty fitting G2/M peak, used your estimate (2 – User Pk2)

- Poor histogram, used less accurate method of fit (3 - Poor Fit)
- G1 CV out of range. Re-try using new estimate of G1 channel (4 - CV1 Range)
- G2 CV out of range. Re-try using new estimate of G2 channel (5 – CV2 Range)
- Large discrepancy of CVs. Fit may be in error (6 – CV Comp)
- Difficulty fitting G1 and G2 peaks, used your estimates (7 – User Peaks)
- G1 and G2 CVs out of range. Re-try using new estimates of G1 and G2 channels (8 – CVs Range)
- Could not estimate G2 more than G1 estimate. Could not fit histogram (9 – No Fit)
- Estimate of G1 and G2 too close to each other. (10 – No Fit)
- Estimate of G1 too close to lower noise level. (11 – No Fit)
- Estimate of G2 too close to upper noise level (12 – No Fit)
- Estimate of G1 and G2 too close to noise levels (13 – No Fit)
- Cell Cycle Exception happened (101 – No Fit)
- Histogram length and input channels inconsistent, no fit computed (102 – No Fit)
- Start Channel greater than End Channel, no fit computed (103 – No Fit)
- G1 estimate out of range, no fit computed (104 – No Fit)
- G2 estimate out of range, no fit computed (105 – No Fit)
- G1 and G2 estimates out of range, no fit computed (106 – No Fit)
- Histogram length less than or equal zero, no fit computed (107 – No Fit)
- Histogram events less than 500, no fit computed (108 – No Fit)
- Lower noise level higher than upper noise level, no fit computed (109 – No Fit)
- Error (Default)

16.3 Group Results by Column Headers

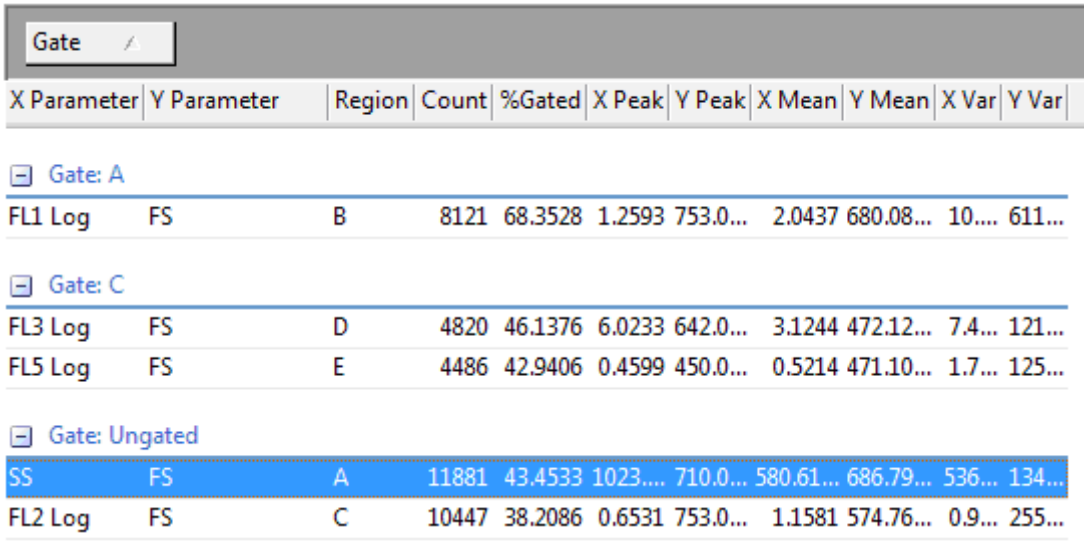
Results can be grouped by the values displayed in the column headers. You can do this by dragging a column header from the results table onto the group control labeled **Drag a column header here to group by that column**.

When the header is dragged, two red arrows indicate where the column header will be placed on the **Drag a column header here to group by that column** control:

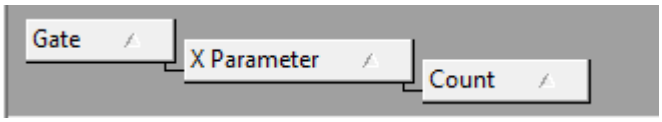


When a header is dragged onto the group control the header is moved there (and removed from the table). If **Ctrl** key is held down while a header is dragged it is copied rather than moved.

Below is an example of results grouped by **Gate**:



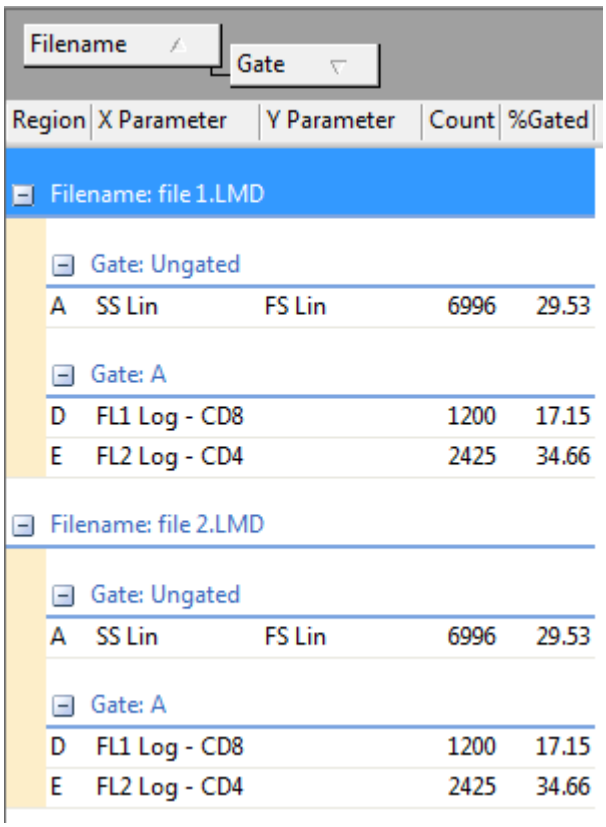
More than one header can be placed in the group control and results will be grouped by all the headers there. The headers are linked by arrows denoting the sort order:



The sort order can be changed by dragging a header to a different position.

The sorting can be changed between ascending and descending by clicking the arrow on the header.

Below is an example of results grouped by **File Name** and **Gate**:



The information displayed in the groups can be collapsed by clicking on the button and can be expanded by clicking the button.

A column header can be removed from the grouping by dragging it back to its position in the results table. When a column header is dragged back to the results table, two red arrows indicate where the header will be placed. The header can also be dragged off the table and it will be removed from the group control.

16.4 Column Header Context Menu

Right click on any column header to display the column header pop-up menu that contains all the statistics from the **Statistics** tab.

A checked statistic denotes that the corresponding header is displayed in the results table.

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Section 17

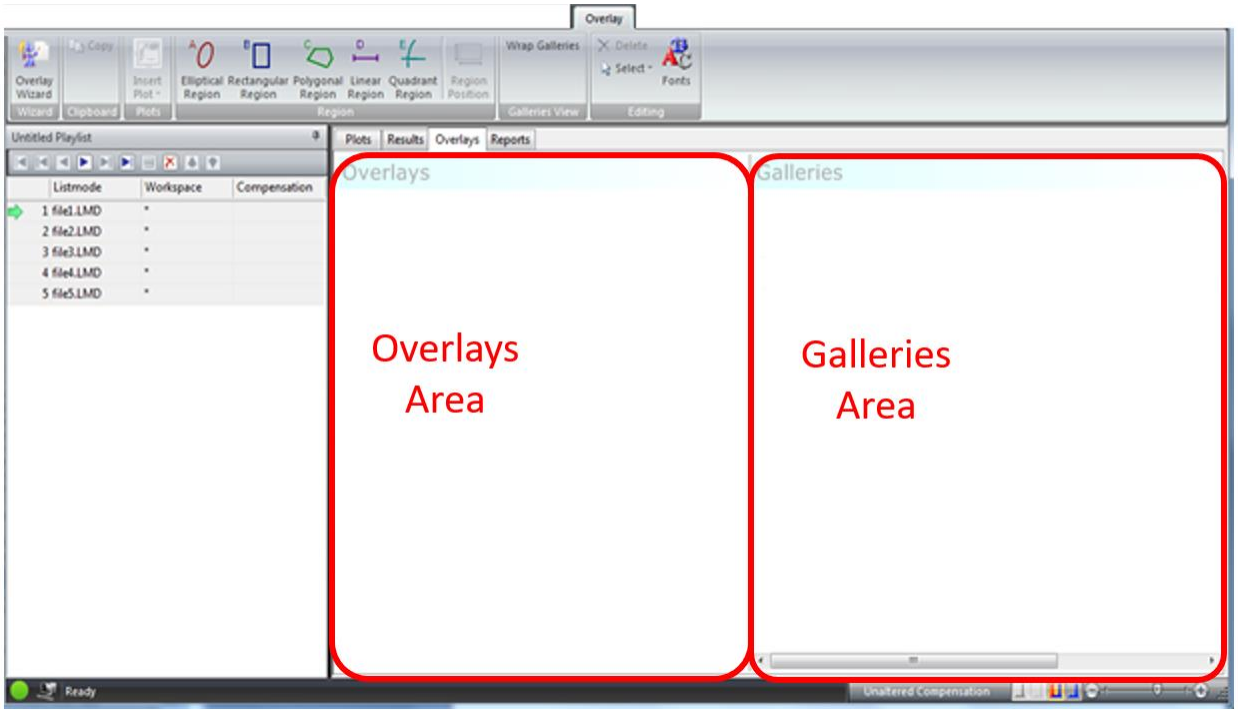
Overlay Plots

Playlist and Group Modes
Create an Overlay Plot
The Overlays Workspace

17 Overlay Plots

In VenturiOne you can create overlays of single or dual parameter plots in the **Overlays** tab of the **Workspace**.

Clicking on the **Overlays** tab in the Workspace will display a blank area as illustrated below:



The Overlays tab of the Ribbon automatically becomes active when the Overlays tab of the Workspace is selected.

The Overlays workspace contains two areas:

Overlays area - Displays 2D or 3D overlay view of available Overlay Plots.
Galleries area – Displays the individual plots available to each Overlay Plot.

Resize plots in the Overlays or Galleries area using the Resize Plots Slider as described in section 7.4.5.

17.1 Playlist and Group Modes

In VenturiOne you can work with a playlist in two modes.

Playlist Mode – allows any plot from any file to be added to an overlay, this mode gives the most flexibility.

Group Mode – simplifies analysis when using groups of samples by allowing you to create an Overlay Plot for one group of samples and automatically apply that overlay to the rest of the groups in the playlist.

You can enable Group mode and select the Group size in the Playlist tab of the Ribbon as described in section 6.1

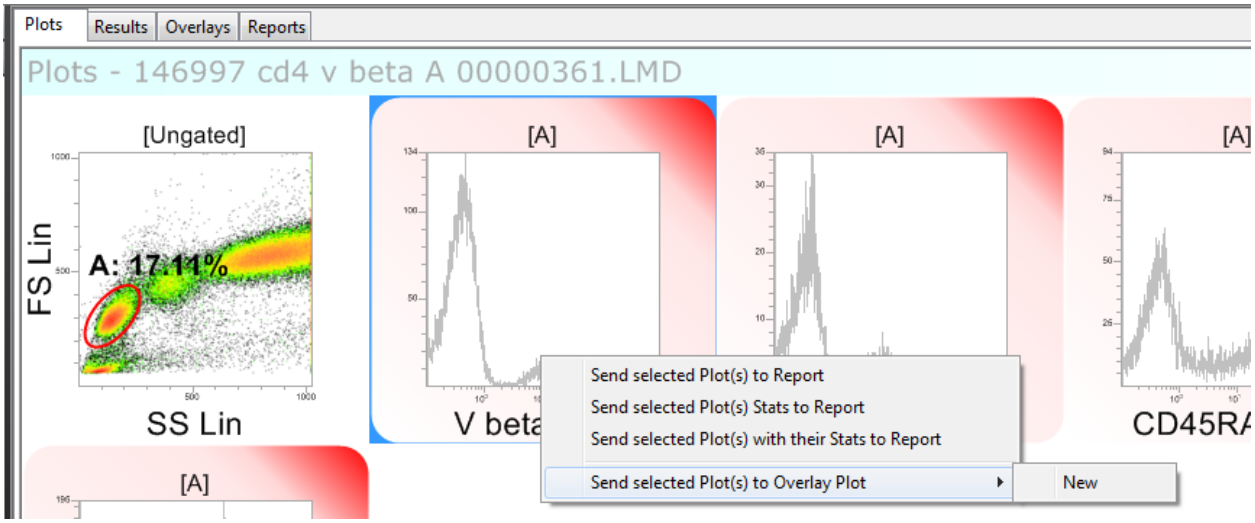
You can create either Playlist or Group based Overlay Plots using the Overlay Wizard; see section 18.1 for details on the Overlay Wizard.

17.2 Create an Overlay Plot

A new Overlay Plot is created by sending plots from the Plots tab of the workspace to the Overlays tab.

17.2.1 Add Plots to a New Overlay

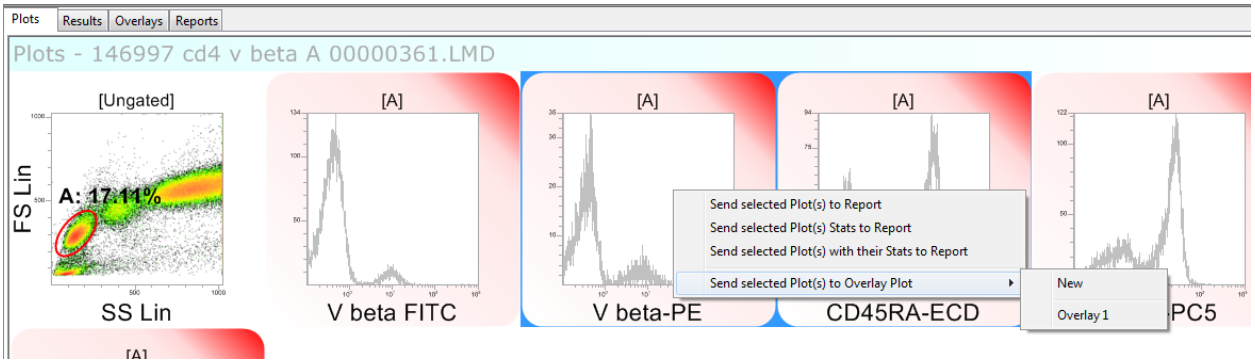
To add new plots from the Plots area into a new Overlay Plot; select the required plot(s), then right click and select **Send selected Plot(s) to Overlay Plot** from the right click context menu. Then select **New**.



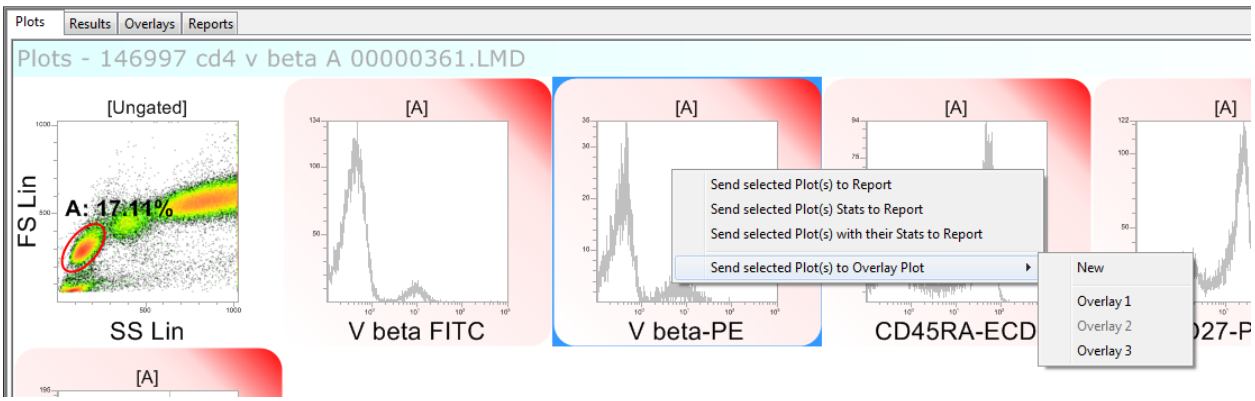
An Overlay Plot cannot contain both single and dual parameter plots. If you have selected both types of plot a new Overlay Plot will be created for each type.

17.2.2 Add New Plots to an Existing Overlay Plot

If an Overlay Plot already exists, you can choose to send plots to it by selecting the required Overlay Plot from the right click context menu.



More than one instance of a plot cannot exist in an **Overlay Plot**, therefore if the currently selected plot(s) already exists in an **Overlay Plot**, then that plot will be grayed in the context menu and you will not be able to select it.



An **Overlay Plot** cannot contain both single and dual parameter plots. Any **Overlay Plot**s to which the currently selected plots cannot be copied will be grayed in the context menu list.

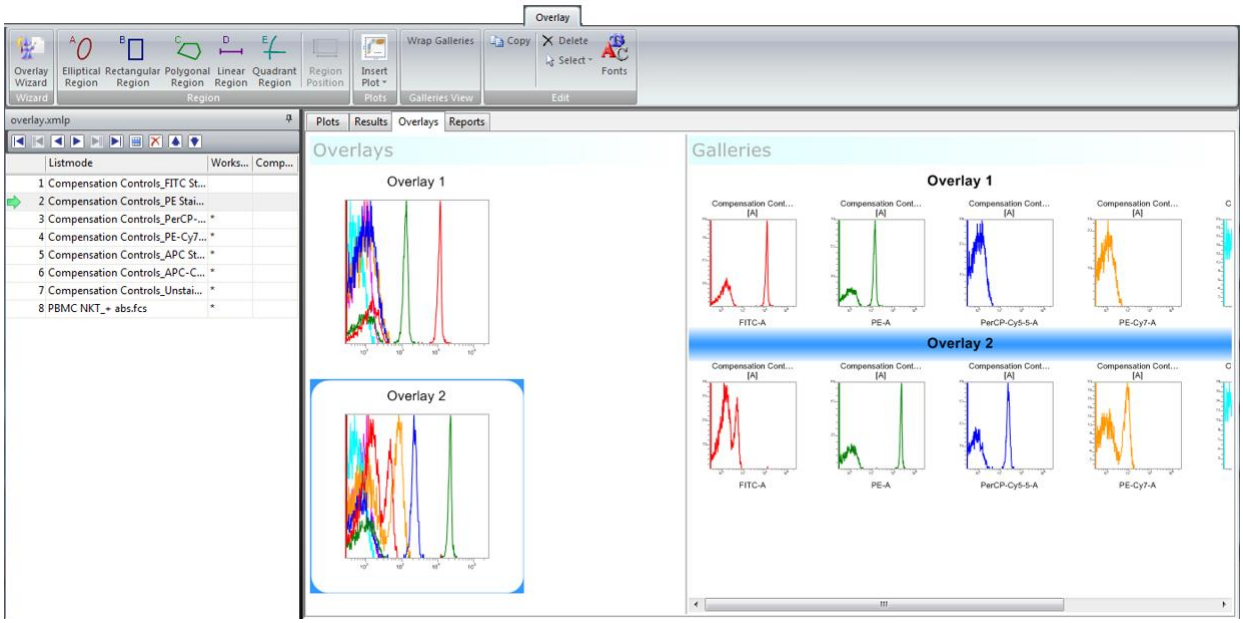
You can add plots into a selected overlay from the currently open file by selecting the Insert Plot option from the Overlays tab of the ribbon. See section 18.2.

If zoom and scale settings exist in the plot from the Plots area, these will be persisted in the Overlay plots.

17.3 The Overlays Workspace

The Overlays area is divided into two areas – **Overlays** and **Galleries.**

Overlays area - Displays 2D or 3D Overlay Plot of selected plots.
Galleries area – Displays the individual plots that make up each Overlay Plot.

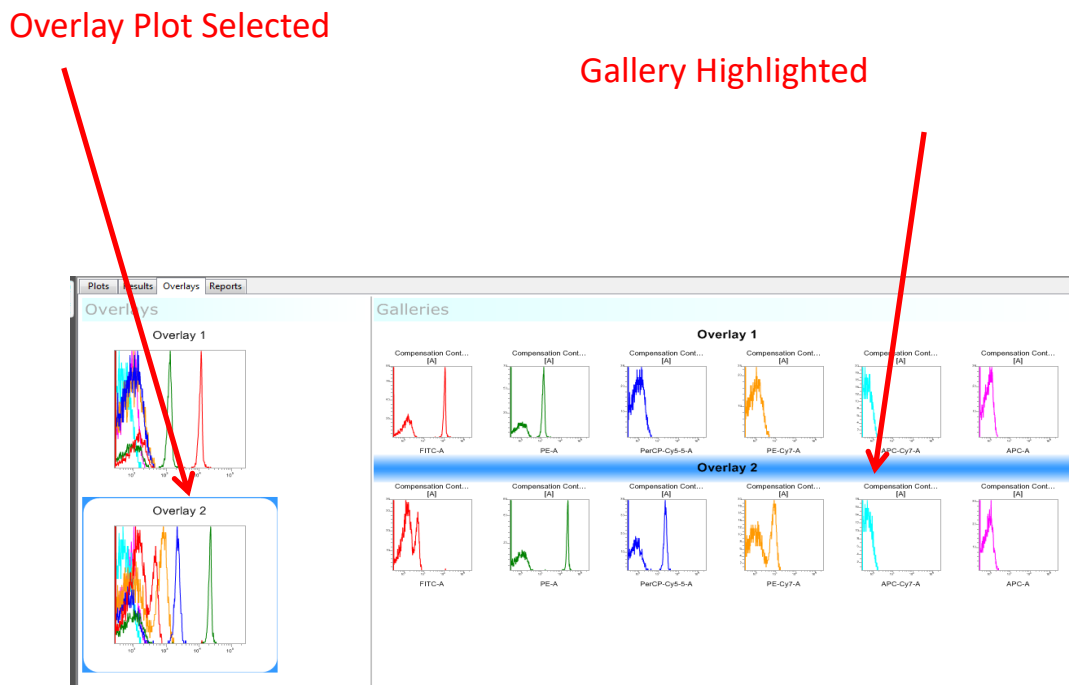


Controls on the **Overlay** tab of the Ribbon allow you to run the Overlay Wizard or change the way the Overlays workspace appears. See section 18 for more information.

17.3.1 Overlay Plot Selection

You can select one or more Overlay Plots and re-order the plots within the Overlays area of the workspace. Changing the order of the Overlay Plots will also change the order of the associated Galleries.

If an Overlay Plot is selected a blue selection area is displayed around the plot and the associated Gallery title will also be highlighted as shown below.



When you select an Overlay Plot, the **Overlay Format** tab becomes available on the **Ribbon** which allows you to change the format of all plots that are available to that overlay. The **Overlay Format** tab is described in section 19.

17.3.2 Gallery Plot Selection

To change settings for an individual plot within an Overlay Plot select it in the Galleries area. Multiple selections can be made as shown below. All selected plots are highlighted.

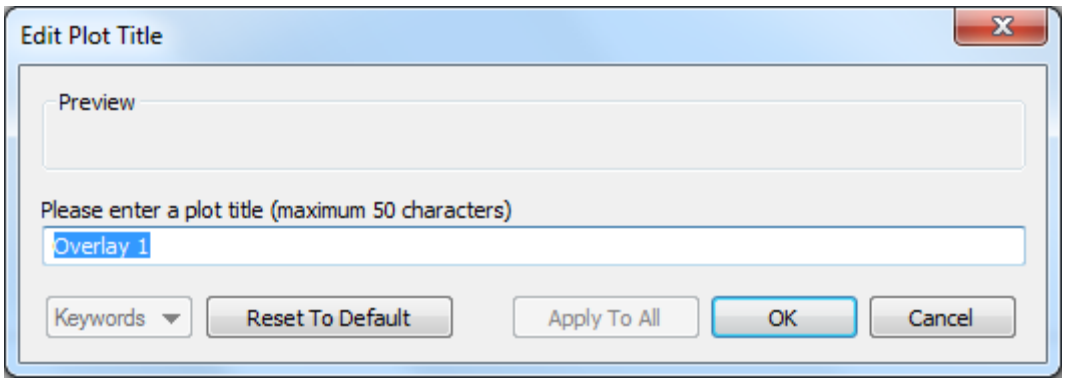


Selected plots can be re-ordered in the Gallery by dragging the plots into a new position; plots will be displayed on the Overlay Plot in that new order.

17.3.3 Overlay Plot Title

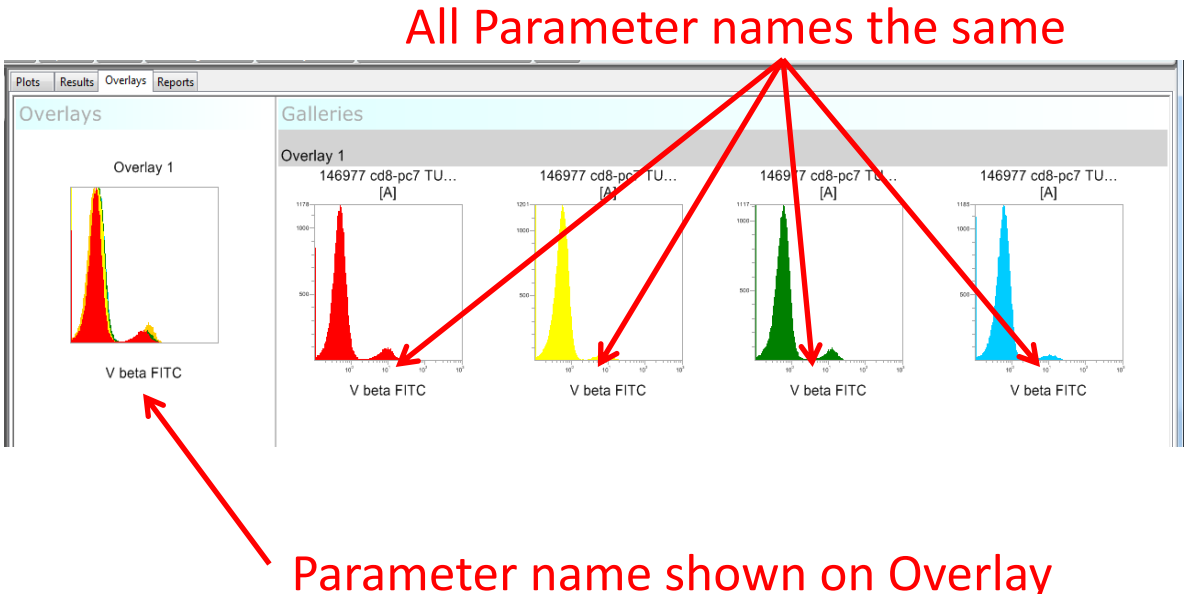
Each **Overlay Plot** has a plot title which defaults to the Overlay number, e.g. **Overlay 1,** but may be changed.

To change the plot title double click on the current plot title and when the **Edit Plot Title** dialog appears enter a custom plot title of up to 50 characters.

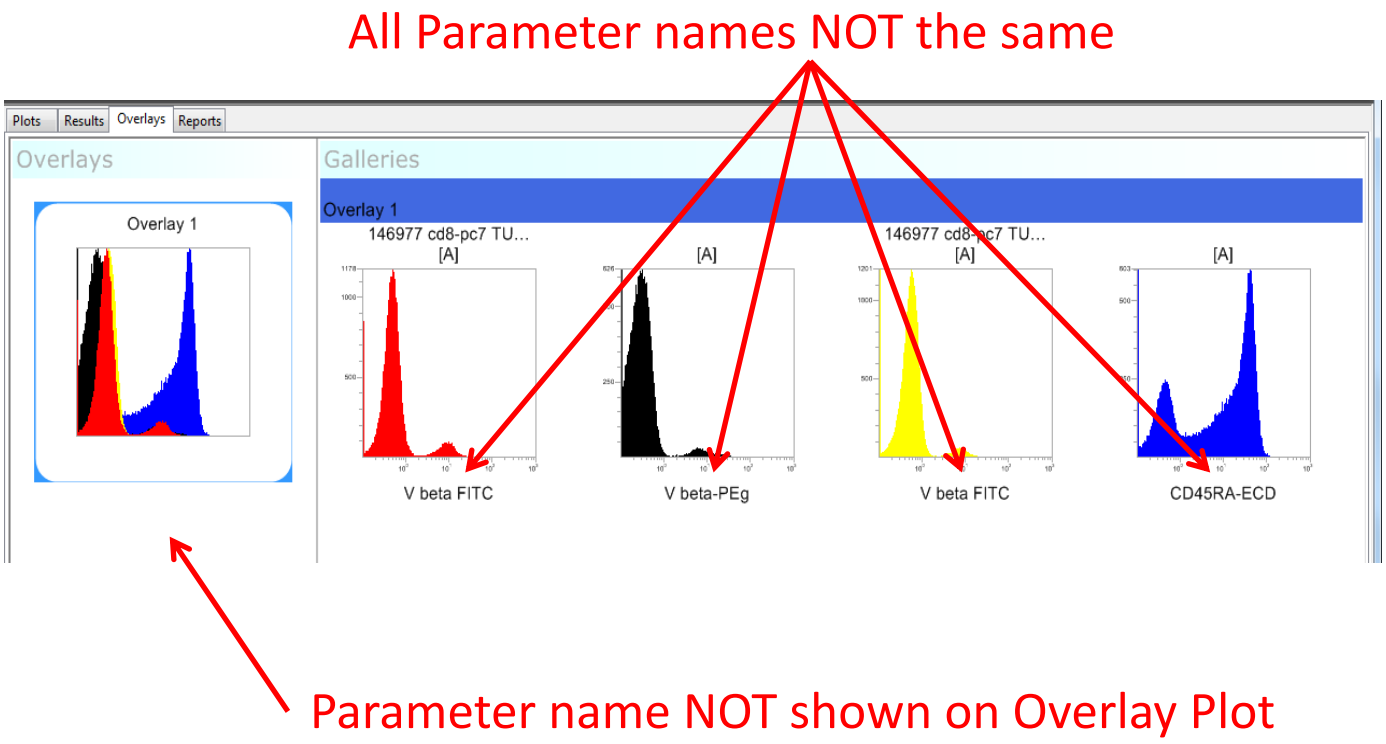


17.3.4 Overlay Axis Label

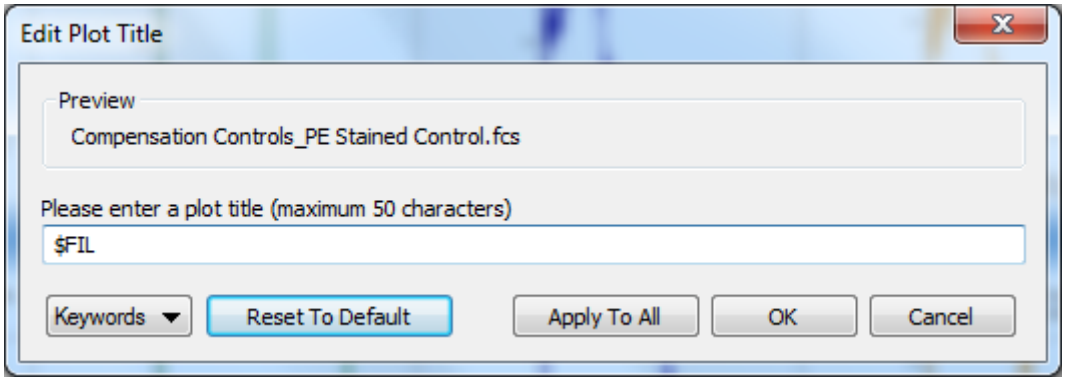
An Overlay Plot will have axis labels displayed if all of the parameter names of the plots in the Gallery have the same label.



If the gallery plots for the Overlay Plot have different parameter labels, no axis label will be displayed for the Overlay Plot.



You can manually enter a parameter axis label for the Overlay Plot by double clicking on the axis to display the **Edit Axis** dialog.



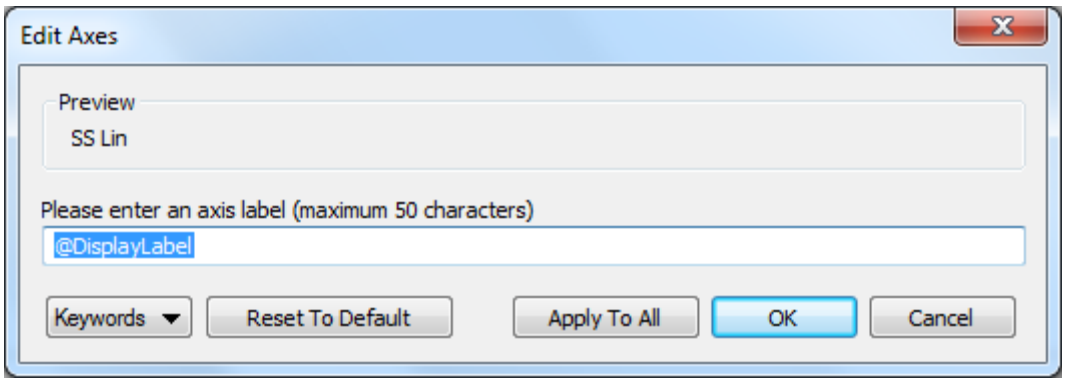
By default, the axis label will be set to File name, which will display the $FIL FCS keyword for that parameter from the FCS file. You may enter up to 50 characters as a description.

Press the **Reset to Default** button to return the label to the default file name setting.

17.3.5 Gallery Axis Label

Each Gallery plot can have an axis label displayed, by default this label will be the $PxS FCS keyword.

To change the parameter axis label double click on the axis label to display the **Edit Axis** dialog.



By default, the axis label is set to **@DisplayLabel**, which displays the $PxS FCS keyword for that parameter from the FCS file. You may enter up to 50 characters as a description.

The **Keywords** button allows you to select from a list of available FCS keywords present in the file header to display as the axis label.

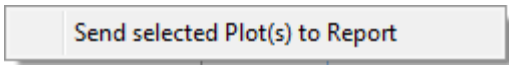
You may combine multiple FCS headers and text to create a customized axis label.

The **Apply to All** button applies the current axis label to all of the plots in the Gallery for the current Overlay Plot. If the plot is a dual parameter plot this button only sets the current axis (x or y).

Press the **Reset to Default** button to return the label to the default **@DisplayLabel** setting.

17.3.6 Overlay Plot Right Click Context Menu

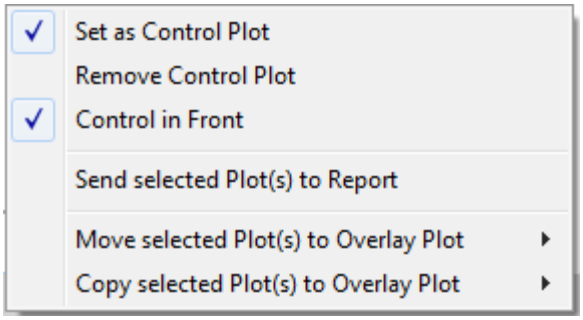
Right click in the Overlay Plot area, with one or more Overlay Plots selected, displays the **Send Selected Plot(s) to Report** context menu. This option will send all selected Overlay Plots to a new page on the report.



See section 20 for more information on creating and optimizing reports.

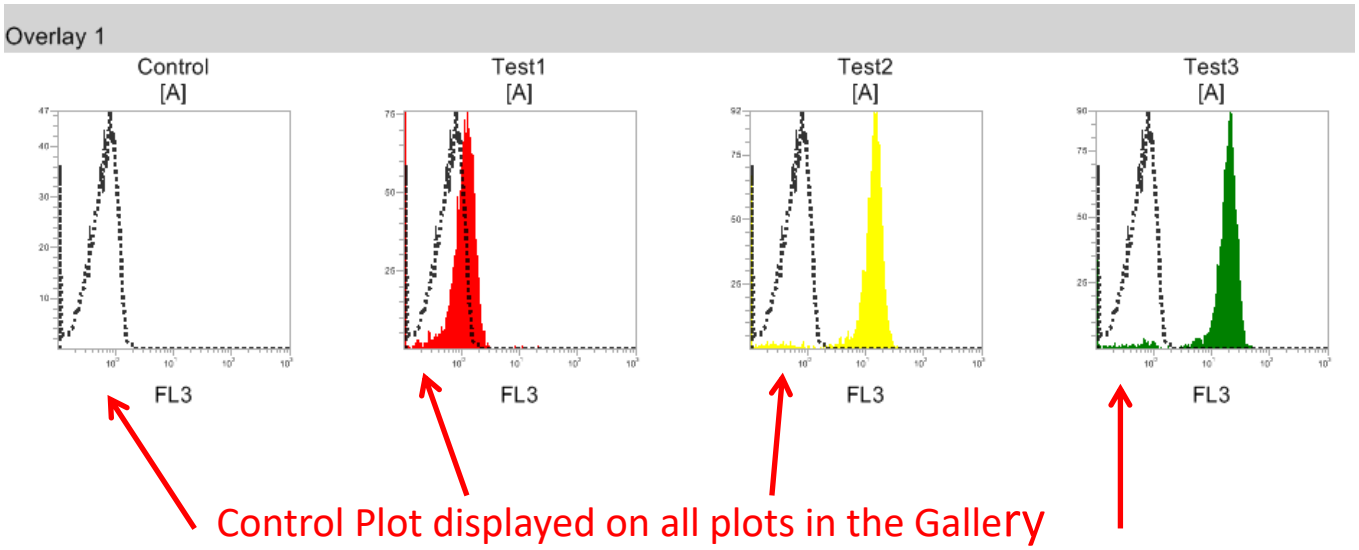
17.3.7 Galleries Right Click Context Menu

Right click in the Galleries area with plot(s) selected displays the following right click context menu:



17.3.8 Set as Control Plot

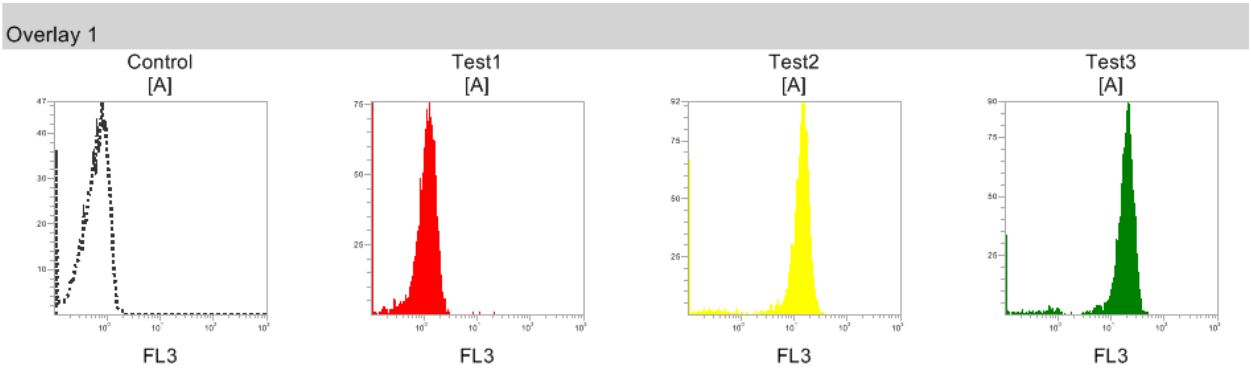
Set as Control Plot is only available when a single gallery plot is selected. The selected plot is added as an overlay on all gallery plots of the current Overlay Plot - this option is normally used to display a control plot on all test plots.



Format options, such as line styles, applied to the original control plot will be replicated on all plots.

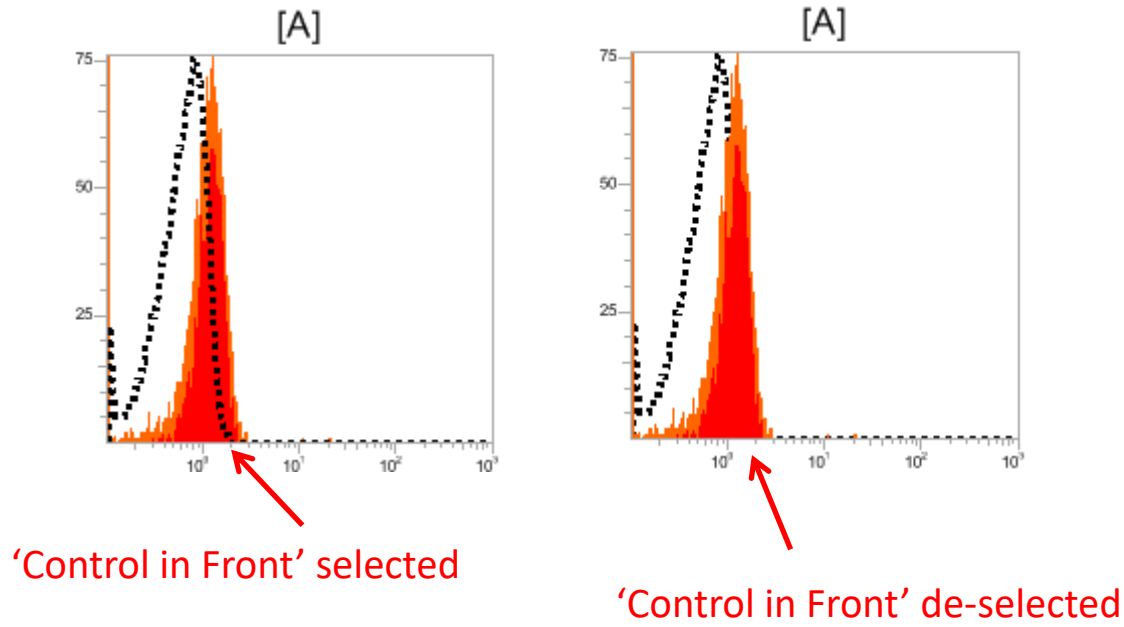
17.3.9 Remove Control Plot

Remove Control Plot is only available when a plot is set as a control for the Gallery. This option removes the control plot overlay from all plots in the gallery.



17.3.10 Control in Front

Control in Front is only available when a plot is set as a control for the current gallery. This option forces the Control plot overlay to be ordered to the front of each plot in the current gallery. Deselect this option to force the control overlay to be ordered behind the gallery plot data.



17.3.11 Send selected Plots to Report

Send selected Plots to Report is available for both Overlay Plots and Gallery plots. This option sends the currently selected plots to a new page at the end of the current Report. See section 20 for more information on Reports.

17.3.12 Move selected Plot(s) to Overlay Plot

Move selected Plot(s) to Overlay Plot is available for Gallery plots. This option moves the currently selected plots from the current Overlay Plot to a new selected Overlay Plot.

If all the selected plots already exist in an Overlay Plot, then that Overlay Plot is grayed out in the list.
If some of the selected plots already exist in the target Overlay Plot, then any new plots will be added but all selected plots will be removed from the current plot.

17.3.13 Copy selected Plot(s) to Overlay Plot

Copy selected Plot(s) to Overlay Plot is available for Gallery plots. This option takes a copy of the selected plots from the current Overlay Plot and adds them to a new selected Overlay Plot.

If all of the selected plots already exist in an Overlay Plot, then that Overlay Plot is grayed out in the list.

If some of the selected plots already exist in the target Overlay Plot, then any new plots will be added but existing plots will not be added to the target Overlay.

Section 18

Overlay Tab

Wizard Group
Plots Group
Region Group
Galleries View Group
Edit Group
Overlay Wizard

18 Overlay Tab

The **Overlay** tab of the **Ribbon** contains controls that allow you to add plots to the **Overlays** workspace and control the layout of the workspace.



When you switch to the **Overlays** tab of the **Workspace** the **Ribbon** automatically switches to the **Overlay** tab.

18.1 Wizard Group

The **Wizard** group contains the **Overlay Wizard** button:



Select the **Overlay Wizard** button to launch the **Overlay Wizard** which allows you to create Overlay Plots from a playlist of files. The **Overlay Wizard** is described in section 18.6.

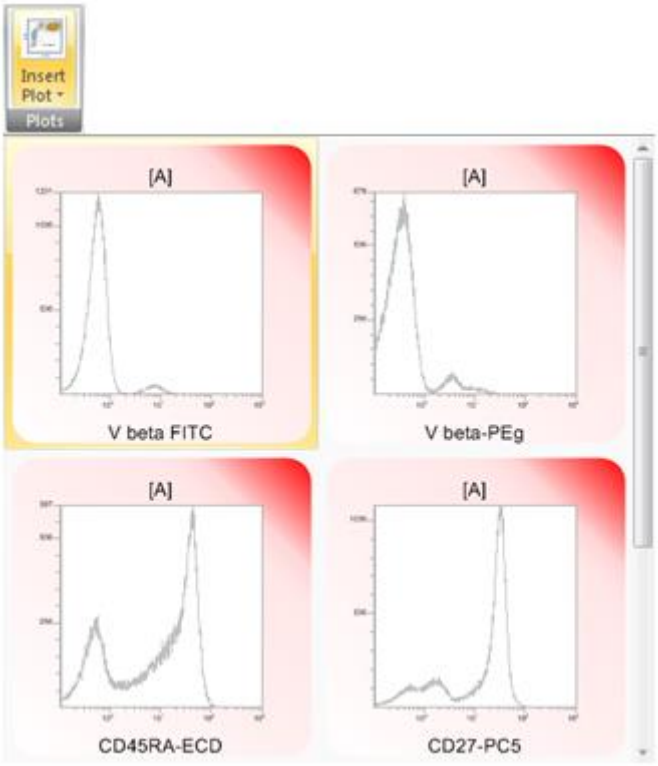
The button is disabled when there are no plots present in the current **Plots** tab of the workspace.

18.2 Plots Group



The **Insert Plot** button is only enabled when the one **Overlay Plot** is selected in the Overlays area.

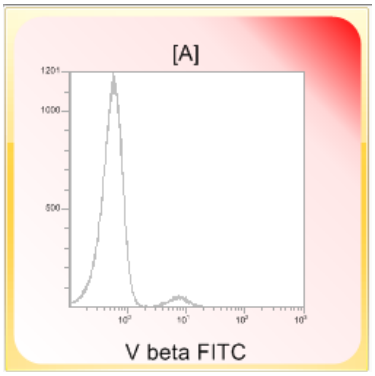
Click the **Insert Plot** button to display a drop-down selection of all the plots currently open in the Plots **Workspace** as illustrated below:



When more than four plots are available the plot display is scrollable.

The order in which the plots appear in this list matches the order they appear in the **Workspace** when in **Gallery** view.

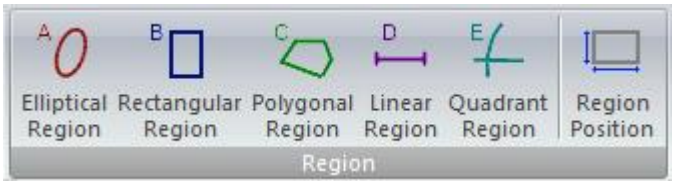
When hovering the mouse cursor over a plot in the display, plots that are not part of the current Overlay Plot will be highlighted; plots that are not highlighted are already part of the current Overlay Plot and cannot be added again.



If you click on a highlighted plot it is inserted into the current Overlay Plot.

18.3 Region Group

The **Region** group on the **Overlay** tab of the Ribbon contains controls to create and edit regions.



You can use the controls here to add regions on to Overlay plots.

Up to 5 regions can be drawn on each Overlay plot. Only one quadrant region can be drawn on each dual parameter plot.

18.3.1 Elliptical Region Button

The **Elliptical Region** button is used to draw an elliptical region on the desired plot. See section 7.5.7 for more details on how to create and edit elliptical regions.

18.3.2 Rectangular Region Button

The **Rectangular Region** button is used to draw a rectangular region on the desired plot. See section 7.5.8 for more details on how to create and edit rectangular regions.

18.3.3 Polygonal Region Button

The **Polygonal Region** button is used to draw a polygonal region on the desired plot. See section 7.5.9 for more details on how to create and edit polygonal regions.

18.3.4 Linear Region Button

The **Linear Region** button is used to draw a linear region on a single parameter plot. See section 7.5.10 for more details on how to create and edit linear regions.

18.3.5 Quadrant Region Button

The **Quadrant Region** button is used to insert a quadrant on the desired plot. See section 7.5.11 for more details on how to create and edit quadrant regions.

18.3.6 Region Position Button

Select the **Region Position** button to modify the position of created elliptical, rectangular, linear and quadrant regions. The region position dialog is displayed. See section 7.5.6 for more information on the Region Position dialog.

18.4 Galleries View Group

You can use the controls in the **Galleries View** group to modify the way in which plots are displayed in the **Galleries** area.

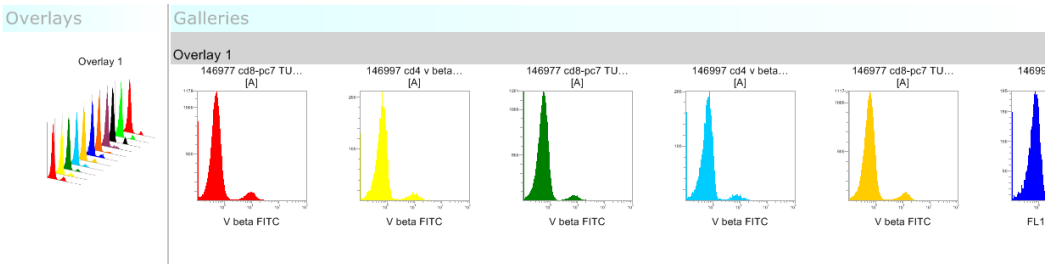


18.4.1 Wrap Galleries Button

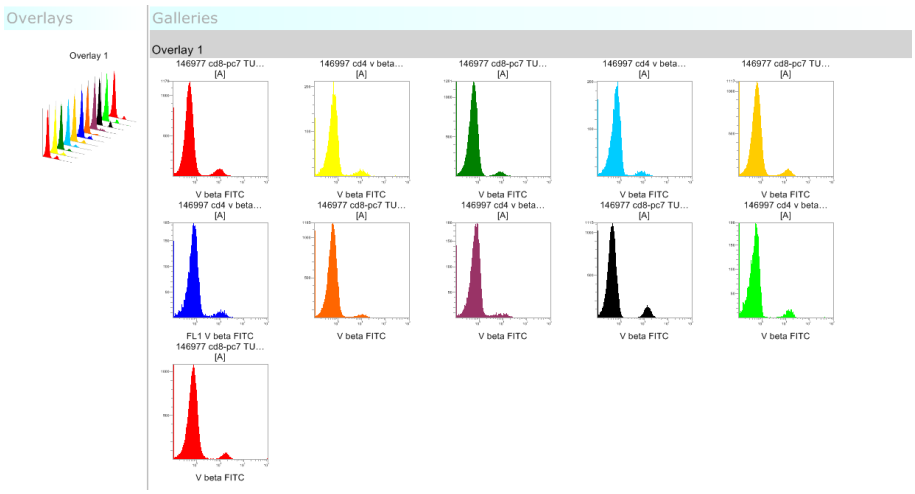
The Wrap Galleries button controls the display of gallery plots for each overlay plot in single or multiple rows.

This option wraps the display of gallery plots on to multiple rows, if necessary, to fit the current window width.

Gallery Not Wrapped



Gallery Wrapped



18.5 Edit Group

The **Edit** group contains controls that allow you to Copy, Delete and Select plots in the **Plots** area and to edit the fonts of text items in the current **Workspace**:



18.5.1 Copy Button

The **Copy** button is disabled when there are no plots selected in the **Overlays** or **Galleries** area.

Click the **Copy** button to copy an image of the currently selected plot(s) onto the Clipboard. You can then paste them into other applications (Microsoft Word, Power Point etc.).

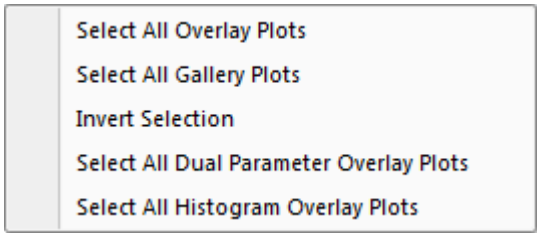
18.5.2 Delete Button

Click the **Delete** button to delete the currently selected plots or region.

If the deleted plot has a region applied, deleting the plot also deletes the region and removes the region from any gating logic. See section 7.4.6.1 for details.

18.5.3 Select Button

If you click the **Select** button the following menu is displayed:



Click **Select All Overlay Plots** to select all the plots in the **Overlays** area.

Click **Select All Gallery Plots** to select all the gallery plots for the currently selected Overlay Plot. This option is only available when one overlay is active.

Click **Invert Selection** to select all the plots that are currently not selected in the **Gallery or Overlays** area. This option is only enabled if either a selection is made or when only one Overlay is active.

Click **Select All Dual Parameter Overlay Plots** or **Select All Histogram Overlay Plots** to select all dual parameter or all histogram overlay plots respectively.

18.5.4 Fonts Button

Click **Fonts** button to display the **Edit Fonts** dialog.

18.5.5 Edit Fonts Dialog

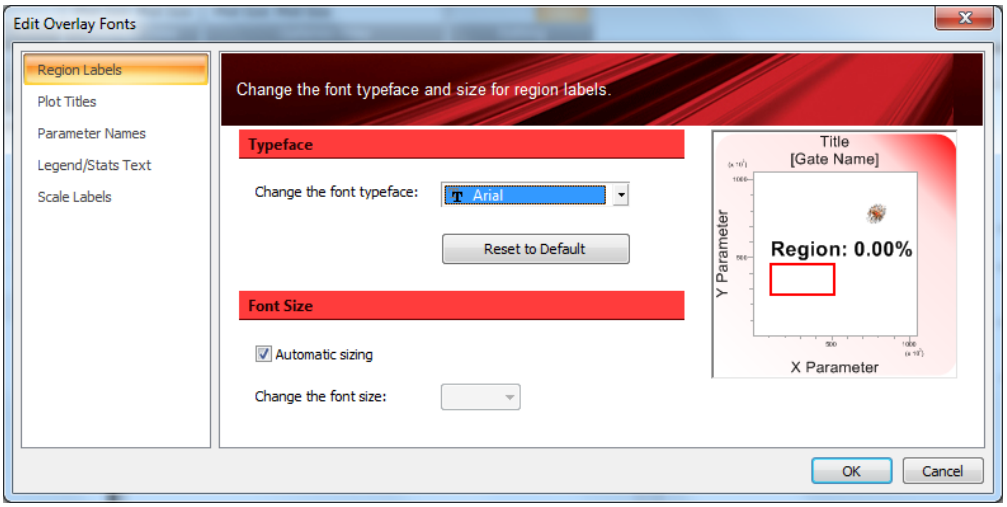
In the **Edit Fonts** dialog, you can change the font typeface and size for the plot titles, parameter names, axis scales, Legend / Stats text, region labels and statistics for all plots in the Overlays tab.

If you do not specify a font size for a workspace text item, the software will automatically choose the largest font size that will allow all of the text to be displayed or printed in the area allocated for it.

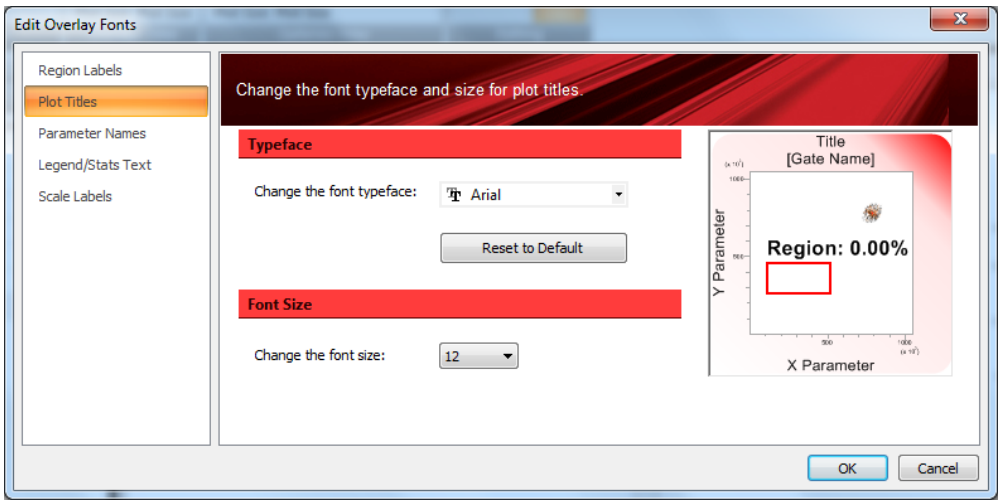
If you do not specify a font typeface for a workspace text item a default typeface as specified in the **VenturiOne Options** dialog (see section 0) shall be used.

The **Edit Fonts** dialog has several pages. You can navigate between them by clicking on the options on the left-hand side of the dialog. The currently displayed option is highlighted. The plot preview on each page displays how the selected typeface and size will look on plots.

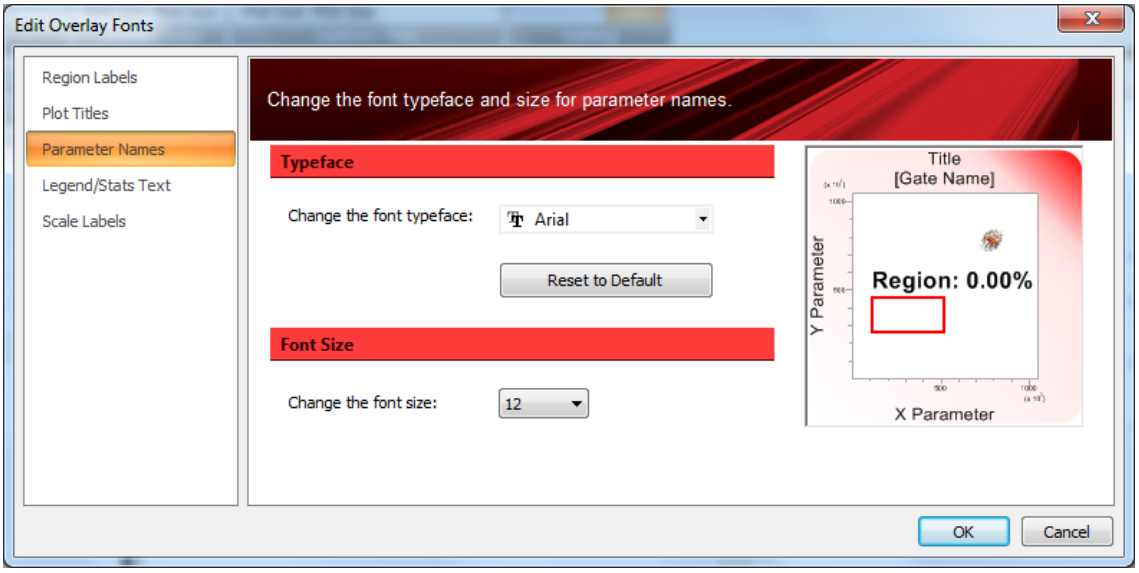
Select **Region Labels** on the left to display the **Region Labels** page. This page allows you to specify the font typeface and size for text used for region labels.



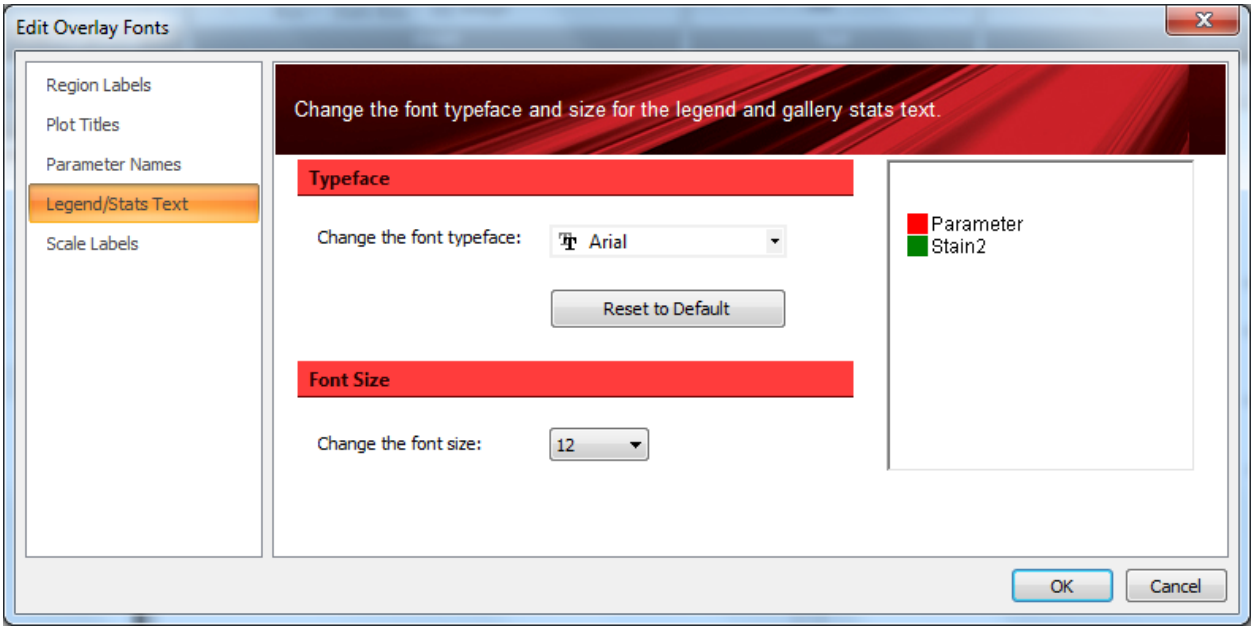
Select **Plot Titles** on the left to display the **Plot Titles** page**.** This page allows you to specify the font typeface and size for text used for plot titles.



The **Parameter Names** page is displayed if you select **Parameter Names**. This page allows you to specify the font typeface and size for text used for X and Y parameter names on plot axes.



Select **Legend/Stats Text** to display the **Legend/Stats Text** page. This page allows you to specify the font typeface and size for text used for Overlay plot and Gallery plot legend label and statistics.



On each of the above pages when the dialog is launched the **Change the font typeface** is populated with the current font for the specific text item. The drop-down list contains all font typefaces available on the system. You can select a typeface from the drop-down list or type in the field.

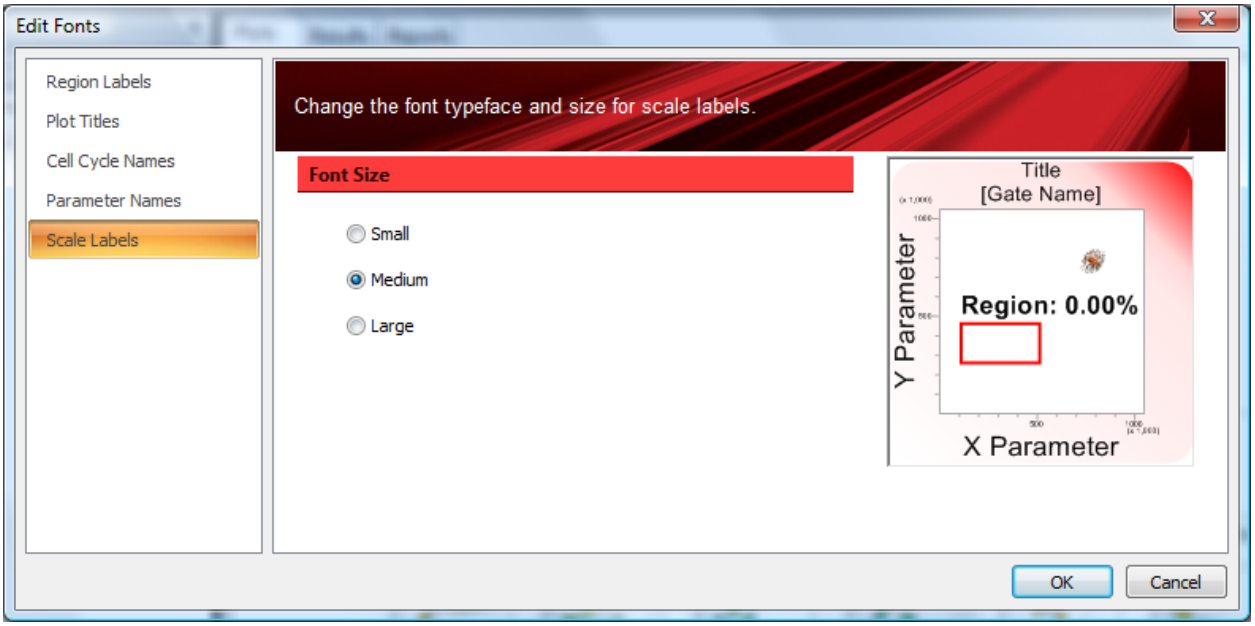
! If you select a non-True Type font or Monotype Corsiva, they are displayed as Arial.

Press **Reset to Default** button to reset the typeface for the specific text item to its default from **VenturiOne Options** dialog.

When the **Automatic sizing** check box is selected the size of the font is determined automatically by the software.

De-select the **Automatic sizing** check box if you would like to specify the size for a text item. **Change the font size** control becomes enabled to select an available size from the list or type in the field.

The **Scale Labels** page is displayed if you select the **Scale Labels** option. This page allows you to specify the font size of text used for scale labels. The three sizes available are **Small, Medium** and **Large**.



18.6 Overlay Wizard

The **Overlay Wizard** simplifies the process of generating Overlay plots from a **Playlist** of samples.

The Overlay Wizard supports both **Playlist Mode** and **Group Mode.**

By default the software will be in Playlist mode, if you wish to select Group Mode you can do this in the Playlist tab of the Ribbon, for more details see section 6.1.

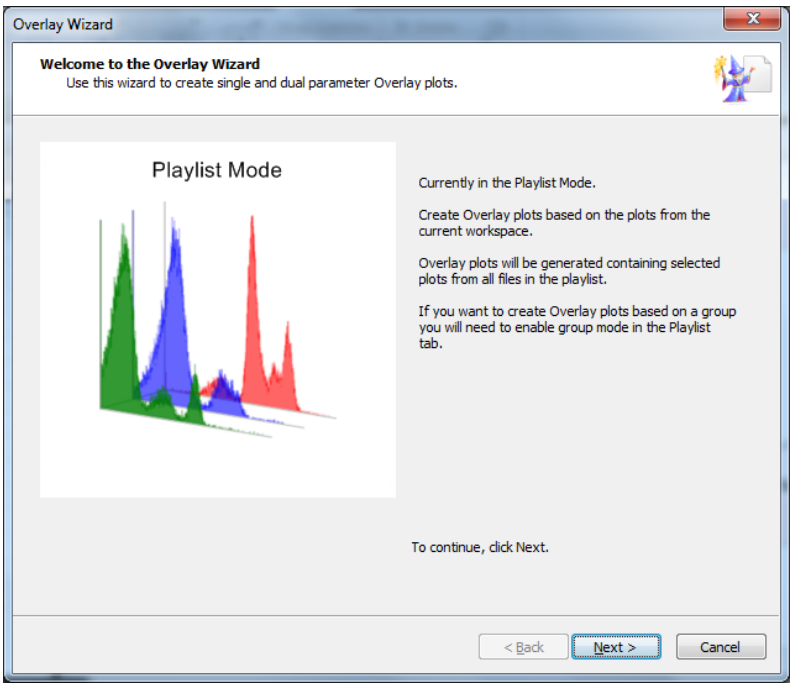
18.6.1 Playlist Mode Welcome Page

In Playlist Mode the wizard displays the plots present in the first file of the playlist and uses the plot selected as a template to select plots from all other files in the Playlist.

! In order to function correctly workspaces in the playlist must be the same for all files.

The Overlay Wizard Welcome Page, as shown below, displays the current mode. If the wrong mode is displayed you should exit the Overlay Wizard, select **Group Mode** from the Playlist tab of the Ribbon, see section 6.1, and then restart the Overlay Wizard.

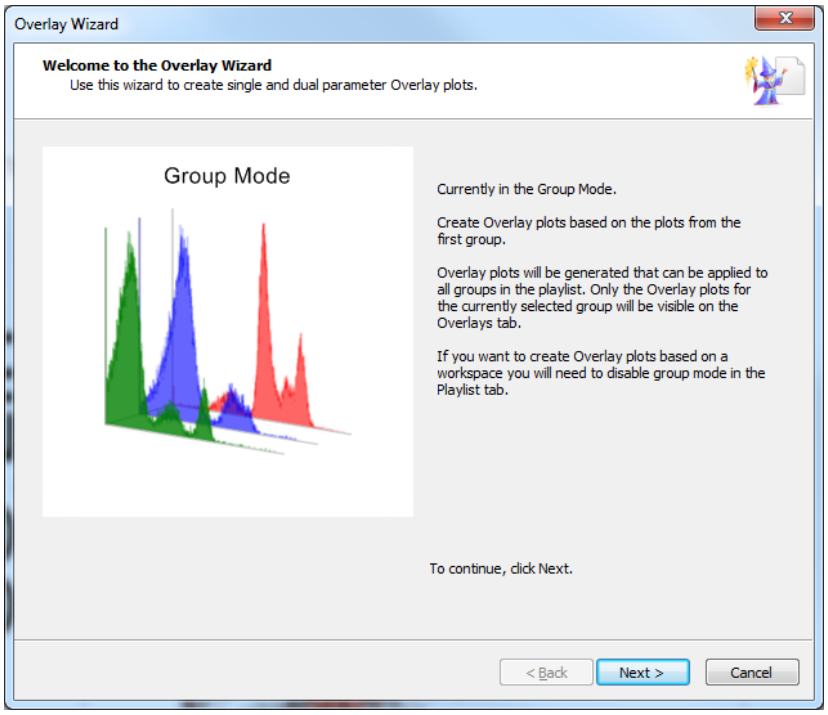
Click the **Next** button to proceed to the **Plot Selection** page of the wizard.



18.6.2 Group Mode Welcome Page

In Group Mode the wizard displays the plots present in all files from the first Group of the playlist and allows selection of any plots from the Group. One Overlay plot is generated for each Group; additional plots are generated if both single and dual parameter plots are selected.

! In order to function correctly workspaces in the playlist must be the same for all files.

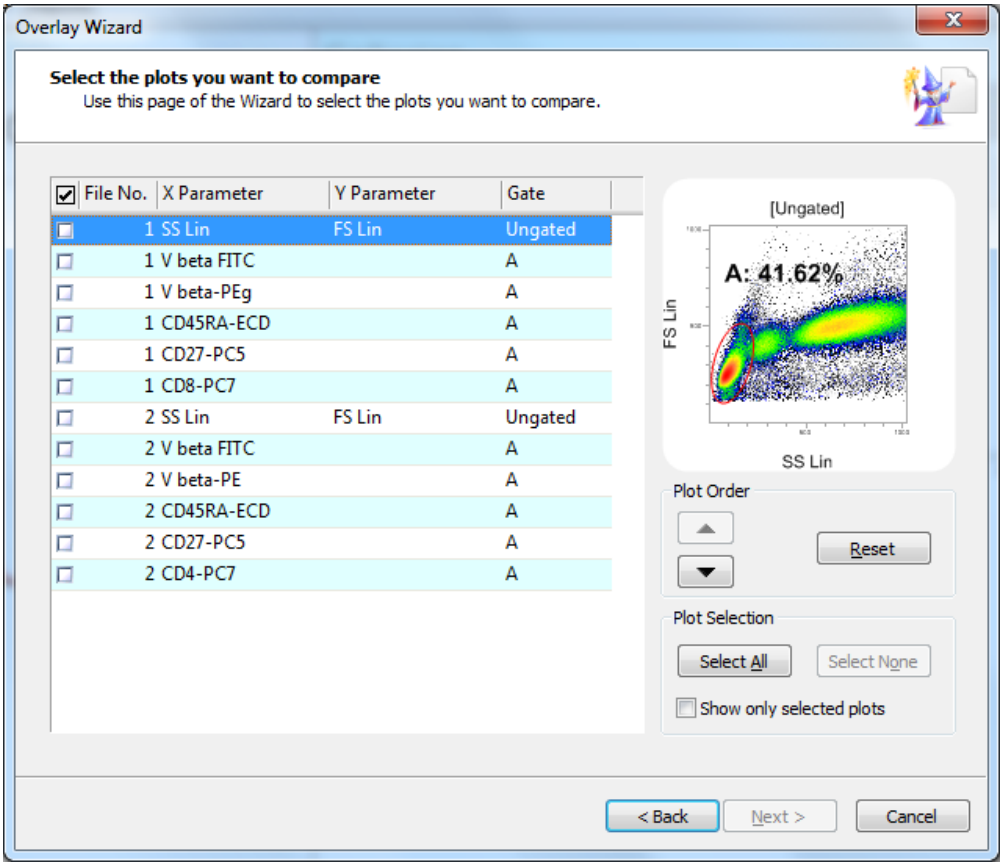


The Overlay Wizard Welcome Page, as shown above, displays the current mode; if the wrong mode is displayed you should exit the Overlay Wizard, deselect **Group Mode** from the Playlist tab of the Ribbon, see section 6.1, and then restart the Overlay Wizard.

Click the **Next** button to proceed to the **Plot Selection** page of the wizard.

18.6.3 Plot Selection Page

The **Plot Selection** page shown below enables you to pick the required plots to create an **Overlay Plot**



When in **Playlist Mode,** a list of the plots from the current **Workspace** is displayed.

When in **Group Mode** a list of all plots from all the **workspaces** in the first group is displayed.

For each plot the list displays the item number for the workspace containing the plot, the X and Y parameters and the Gate.

To add a plot to the **Overlay Plot**, check the box next to the relevant plot in the list.

If a single plot in the list is highlighted a preview of that plot is displayed.

Plots appear in the created Overlay Plot in the order they appear in the Plot list**.**

You can use the **Move Up**  and **Move Down**  buttons to move selected plots up and down in the list. To reset the plot order, use the **Reset** button.

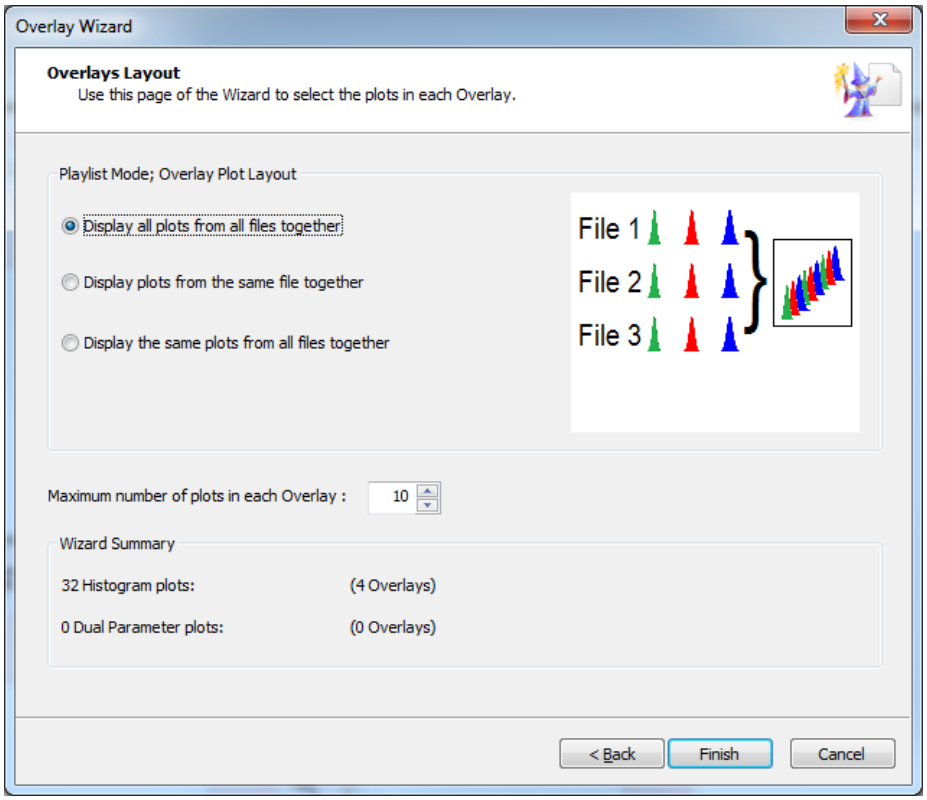
You can use the **Select All** and **Select None** buttons to easily select or deselect all plots.

If you would like the Plot list to display only the plots which you have selected for the report check the **Show only selected plots** checkbox.

Select the **Next** button to proceed to the **Overlay Plot Selection** page.

18.6.4 Overlay Plot Layout Page

Overlay Plot Layout Page allows you to select options for the way Overlay Plots are created.

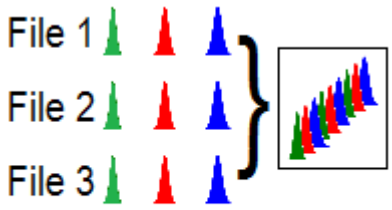


18.6.4.1 Playlist Mode Overlay Plot Layout

When in **Playlist Mode** the **Playlist Mode Overlay Plot Layout** options are available. These options control how the plots you have selected will be added to the Overlay Plot.

When **Display all plots from all files together** is selected, all the selected plots from all the files in the playlist are displayed on one overlay plot, as illustrated below.

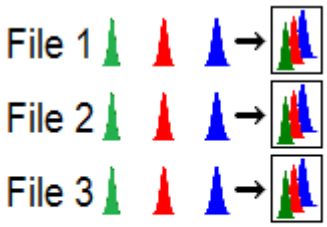
If you have selected both single and dual parameter plots, these are arranged on separate **Overlay Plots**.



Display all plots from all files together

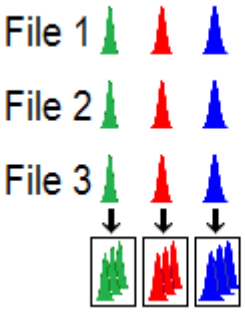
When **Display all plots from the same file together** is selected, all the selected plots from each file in the playlist are displayed on one overlay plot. Each file in the playlist is displayed on a new Overlay Plot, as illustrated below.

If you have selected both single and dual parameter plots, these are arranged on separate **Overlay Plots**.



Display all plots from the same file together

When **Display the same plots from all files together** is selected, the same plot from all the files in the playlist is displayed on one overlay plot. Different plots are displayed on separate Overlay Plots as illustrated below.



Display the same plots from all files together

18.6.4.2 Maximum number of plots in each overlay

The **Maximum number of plots in each overlay** option allows you to control the maximum number of plots that are placed on each overlay plot. If the number of plots selected exceeds this number entered here, additional **Overlay Plots** are created as required.

18.6.4.3 Wizard Summary

The Wizard Summary section displays the number of single parameter and the number of dual parameter plots selected and details how many **Overlay Plots** are created based on the selections made above.

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Section 19

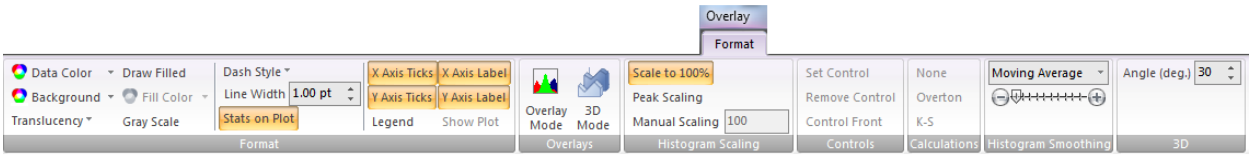
Modify Format of Overlay Plot (Overlay Format Tab)

Format Group
Overlays Group
Histogram Scaling Group
Controls Group
Calculations Group
Histogram Smoothing Group
3D Group

19 Modify Format of Overlay Plot (Overlay Format Tab)

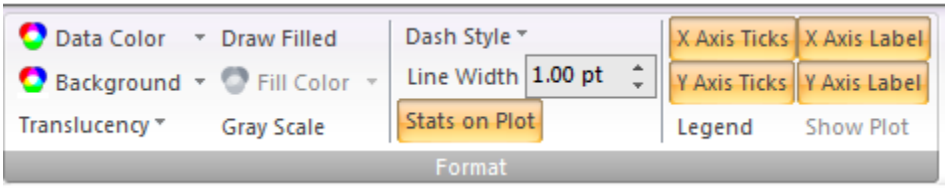
You can use the controls on the **Overlay Format** tab to adjust the settings of selected plots in the **Overlays** and **Galleries** areas of the **Overlay** workspace tab.

The **Overlay Format** tab is only available when at least one plot is selected in the **Overlays** or **Galleries** area.



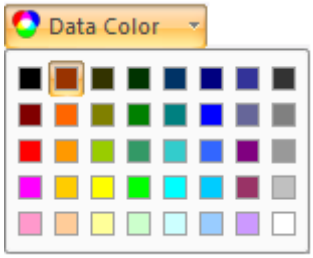
19.1 Format Group

The Format Group contains options to adjust line and fill styles of Overlay and Gallery plots, also options for the display of plots, scaling and legend.



19.1.1 Plot Color Options

The **Data Color** button is enabled when one or more plots are selected in the Galleries area. Select this option to display a color chart control to allow modification of the data color for all selected plots.



The **Background** button is enabled when one or more plots are selected in either the Overlay or Galleries area.

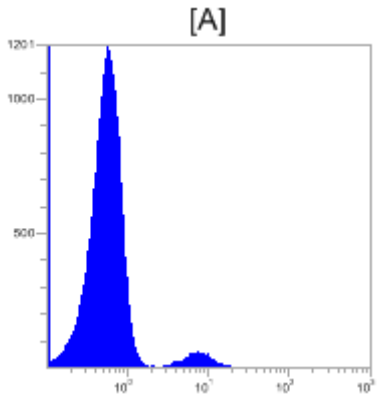
Select this option to display a color chart control to allow modification of the background color for all selected plots.



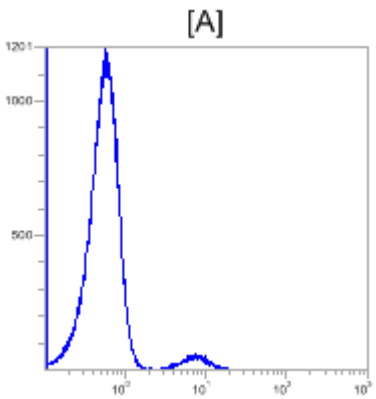
The **Draw Filled** button is available when one or more plots are selected in the Overlay or Galleries area.

If an Overlay Plot is selected, pressing this option will cause each of the plots in the currently selected Overlay plot to be filled with the same color as the data color.

If one or more Gallery Plots are selected, pressing this option will cause each of the selected plots to be filled with the currently set data color for each plot.



Plot Filled



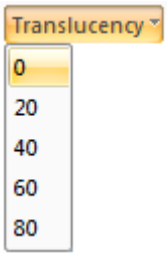
Plot Not Filled

The **Fill Color** button is available when one or more filled plots are selected in the Overlay or Galleries area. Select this option to display a color chart control to allow modification of the fill color for all selected plots.

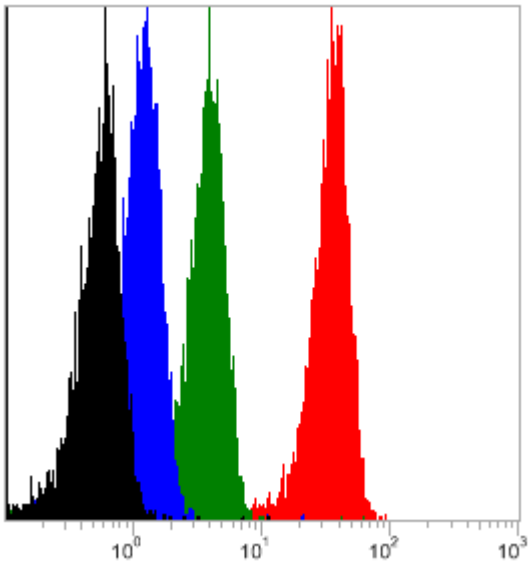


! Please note: Use color selection with caution as it is possible to choose the same color for Data Color, Background Color and Fill color, most importantly if white is used.

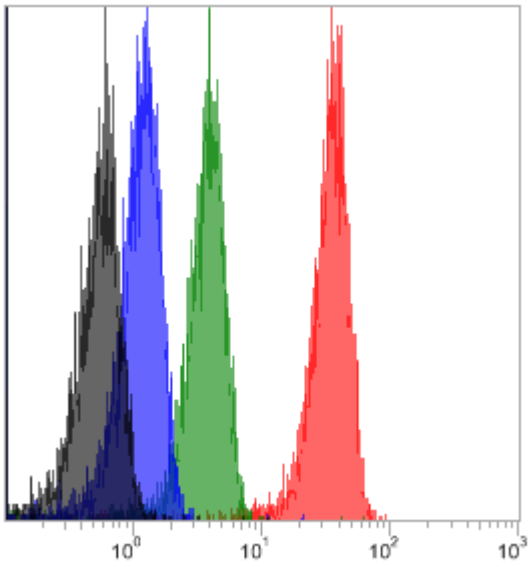
The **Translucency** button is available when one or more plots are selected in either the Overlay or Galleries area. This option displays a translucency percentage selection control to allow modification of the translucency level for all selected plots. In the control 0% is non-translucent and 80% is the maximum level of translucency.



Translucent plots can improve the visualization of overlapping populations as illustrated below:

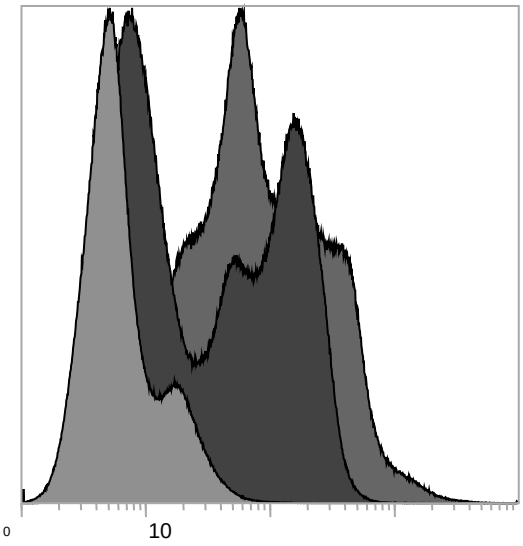


0% Translucency



40% Translucency

The **Gray Scale** button is available when one or more plots are selected in the Overlay or Galleries area This option toggles the color display of selected plot(s) between the standard color palette and a gray scale



When Gray Scale is selected, the ‘Data Color’ and ‘Fill Color’ color chart control displays a gray scale palette with 40 different gray scales from black to white as illustrated below:



. The ‘Background’ color chart control always displays a colored palette.

19.1.2 Dash Style and Stats on Plot Options

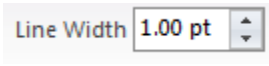
The **Dash Style** button is available when one or more plots are selected in either the Overlay or Galleries area. This option displays a Dash Style control to allow the modification of the dash style for each plot.



Select an Overlay Plot with this option to modify all of the gallery plots in the currently selected Overlay plot with the same dash style.

Select one or more Gallery Plots with this option to modify only the selected plots with the same dash style.

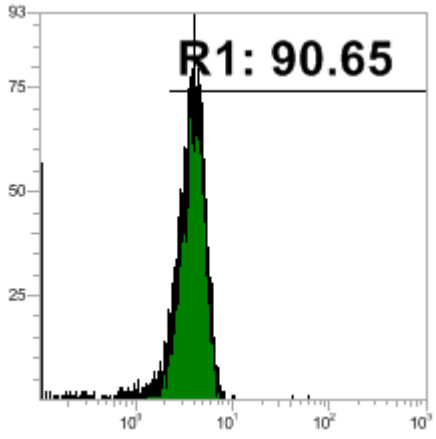
The **Line Width** edit box is available when one or more plots are selected in either the Overlay or Galleries area. Entering a value in the edit box or using the Up / Down arrows to change the displayed number adjusts the thickness of the data line for each selected plot.

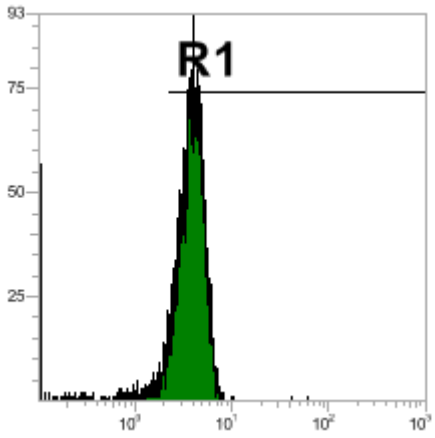


Select an Overlay Plot with this option to modify all of the gallery plots in the currently selected Overlay plot with the same line width.

Select one or more Gallery Plots with this option to modify only the selected plots with the same line width.

The **Stats on Plot** option is available when one or more plots are selected in either the Overlay or Galleries area. This option determines where region statistics are displayed, on the Gallery plot or at the side of the plot, as illustrated below:



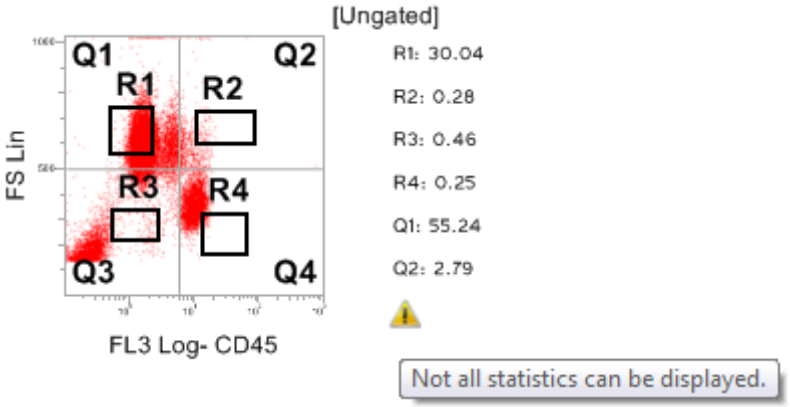


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Select an Overlay Plot with this option to modify all of the gallery plots in the currently selected Overlay plot.

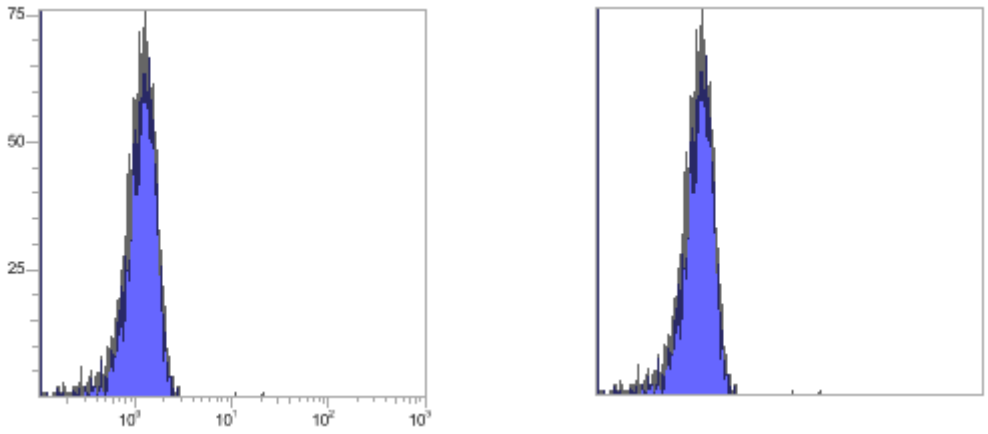
Select one or more Gallery Plots with this option to modify only the selected plots.

Legend font size can be increased. All results may not appear in the legend; a warning icon is displayed as illustrated below.



19.1.3 Axis Tick Mark, Axis Label, Legend and Show Plot Options

The **X Axis Ticks** and **X Axis Ticks** buttons are available when one or more plots are selected in either the Overlay or Galleries area. Select this option to display the X and / or Y axis scale tick marks on a plot. Deselect this option to hide the tick marks on selected plots.



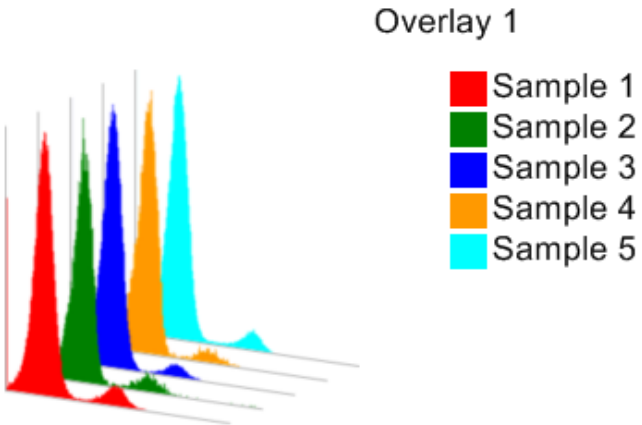
Select an Overlay Plot with this option to display scale tick marks on all the Gallery plots in the selected Overlay plot. However, scale tick marks are only displayed on the Overlay plot if the scaling is identical for all plots.

Select one or more Gallery Plots with this option to display X and /or Y axis scale tick marks on each of the selected plots. Deselect this option to hide the X and Y axis scale tick marks.

19.1.4 Legend

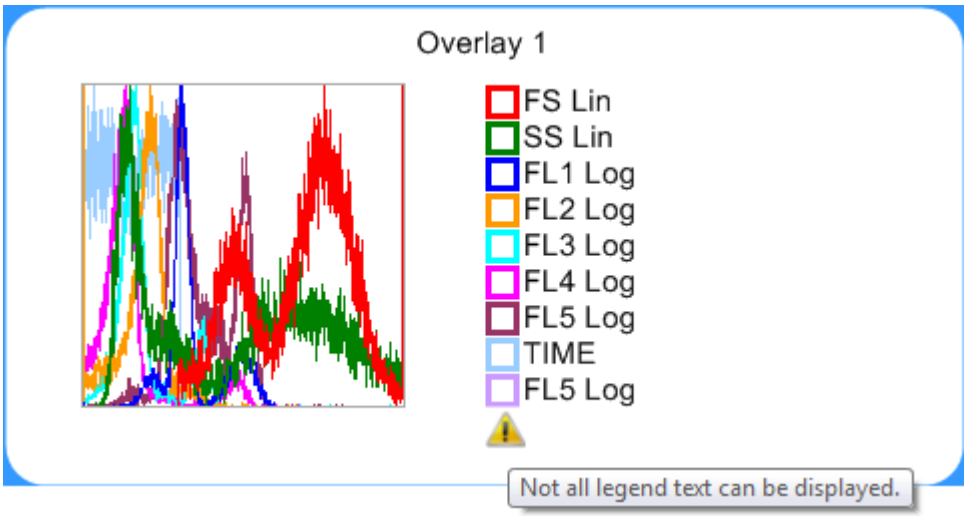
The **Legend** button is available when one or more Overlay Plots are selected. Select this option to display the plot legend pane at the side of the selected Overlay Plots.

For each plot, the overlay line color and a description is displayed. The default description is the X-axis label. Dual parameter overlay plots have both X and Y-axis labels displayed.



To modify the Legend label, double click on the label and enter the required text or change the plot axis labels in the Galleries area.

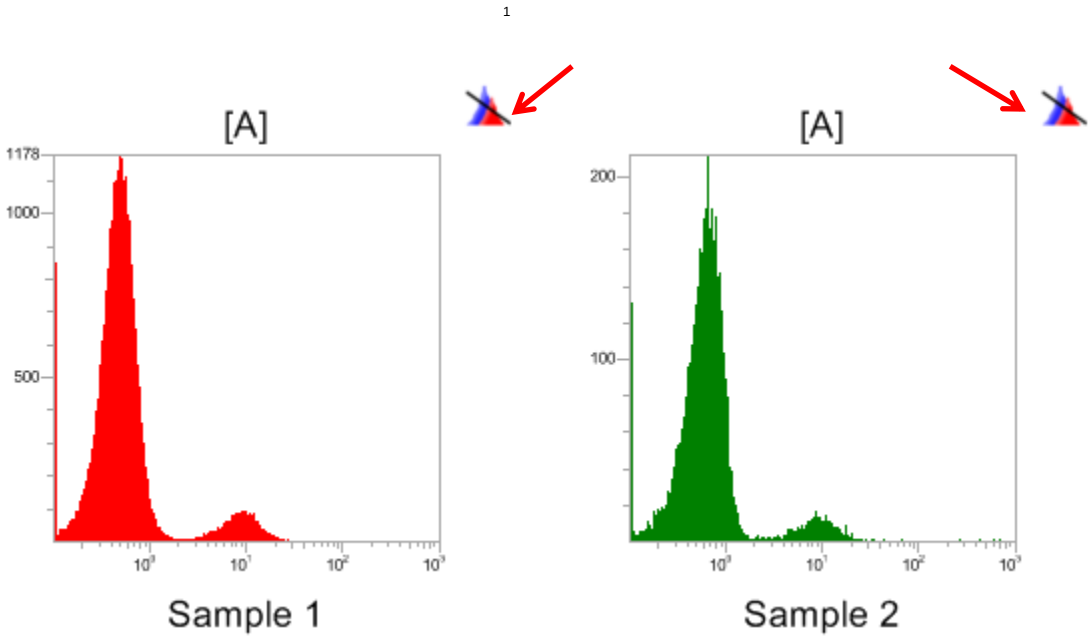
If there are too many items present in the legend and not all legend text appears, a warning icon is displayed as illustrated below.



19.1.5 Show Plot

The **Show Plot** button is available when one or more plots are selected in the **Galleries**. Select this option to display the selected plots in the Overlay Plot; deselect this option to remove selected plots from the Overlay Plot.

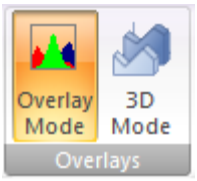
Any plots in the gallery which are not hidden will display a 'Not Displayed' icon in the Galleries area as illustrated below:



This icon is not visible in reports or copied and pasted images.

19.2 Overlays Group

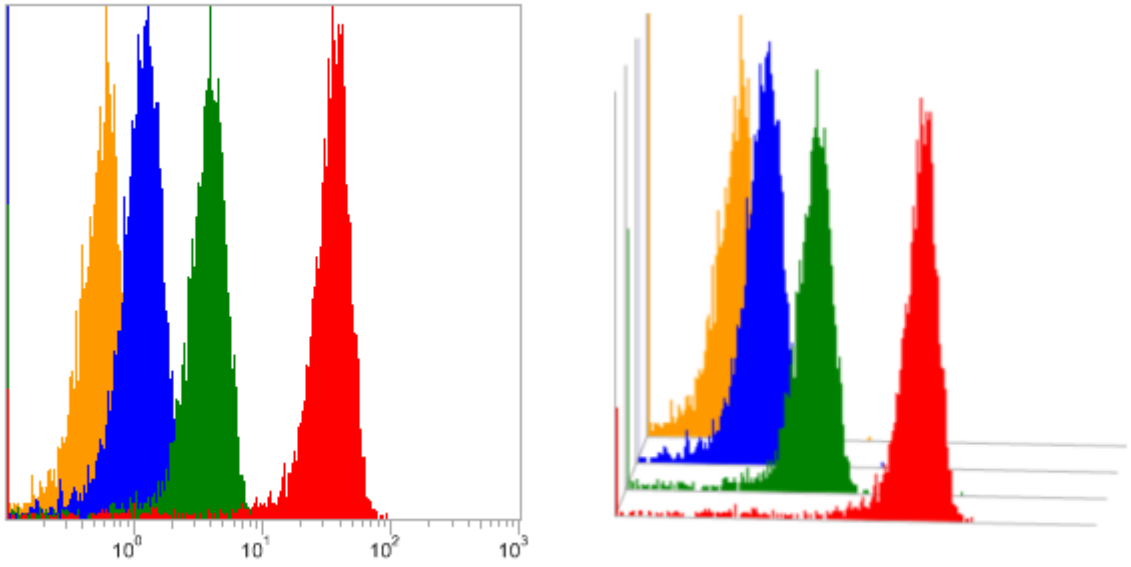
The Overlays group contains buttons to switch the available views for the Overlay plot from **Overlay Mode** to **3D Mode**.



The buttons are available when one or more plots are selected in the **Overlays** area. The highlighted button indicates the current mode of the selected plot(s). When different modes are present in the selected plots no button will be highlighted.

Select **Overlays Mode** to change all selected Overlay Plots to display in overlay mode.

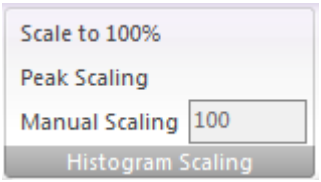
Select **3D Mode** to change all selected Overlay Plots to display in 3D mode as illustrated below.



10

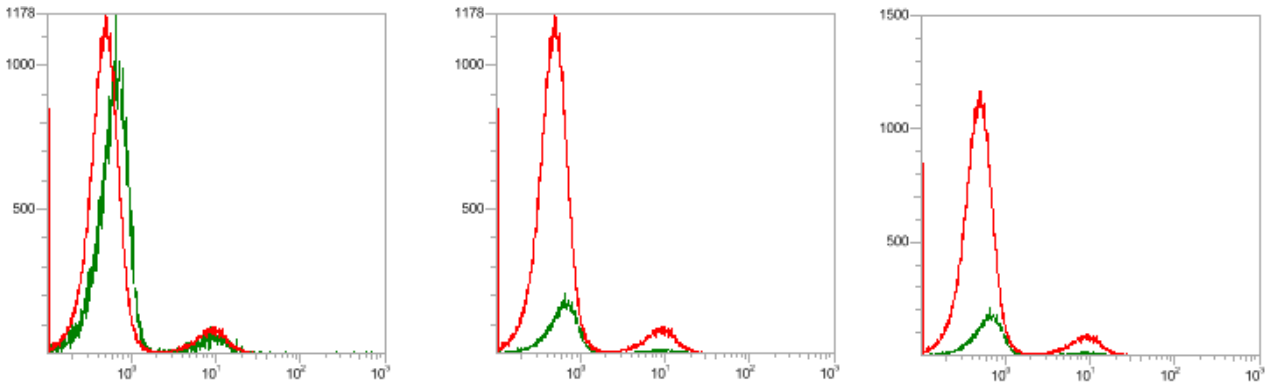
19.3 Histogram Scaling Group

The options within the Histogram Scaling group control the scale settings for histograms in both the Overlay and Galleries areas.



These options adjust the scale of the selected plots. They are mutually exclusive where only one option can be selected at any one time.

Select an Overlay Plot to apply the selected scale option on all gallery plots of the selected Overlay Plot. Select one or more Gallery Plots to apply the selected scale option on only the selected plots.



The **Scale to 100%** option scales all selected plots to their maximum values. If a Control plot is present in the Galleries area, then the control and test histograms are each scaled to their maximum values.

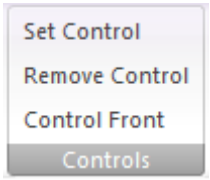
The **Peak Scaling** option is only useful if a Control plot is present in the Galleries area, when this option is selected the control and test histogram are both scaled to the highest scale factor of either histogram.

If no control plot is set, then **Scale to 100%** and **Peak Scaling** have the same values.

The **Manual Scaling** option will apply the selected custom value to all selected plots. Enter a value and press enter to apply that value to all selected plots.

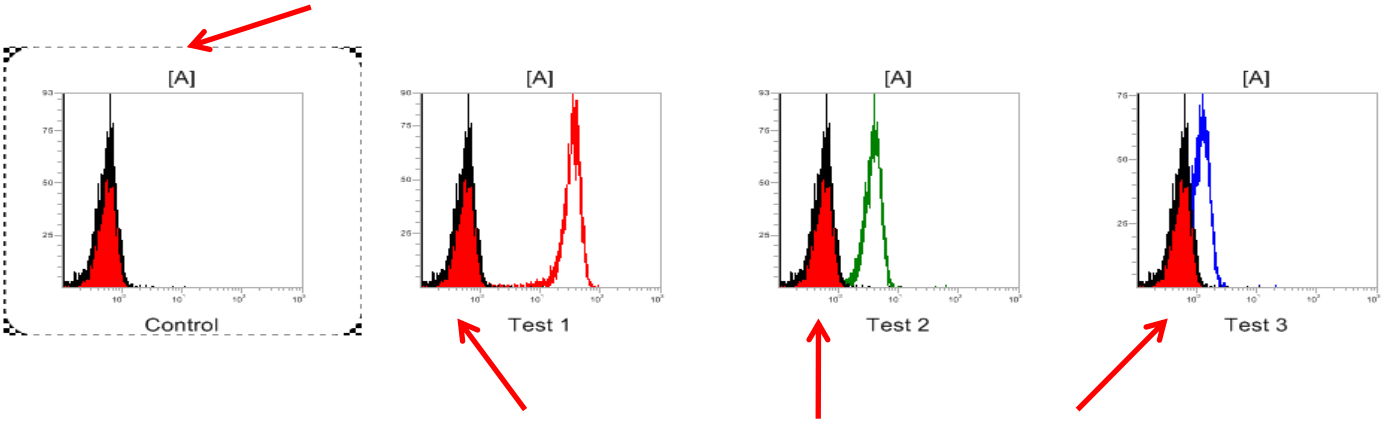
19.4 Controls Group

The options in this group are available for single parameter Overlay Plots only. They allow one plot within a Gallery to be displayed as **Control** on all other plots within the Gallery of the current Overlay Plot.



The **Set Control** button is available when one single parameter plot is selected from a Gallery display of one Overlay Plot. When this option is selected the current plot is set as a Control and displayed on all single parameter gallery plots within the current Overlay Plot.

When a plot is set as a Control the selected plot will display a dashed border as illustrated below:

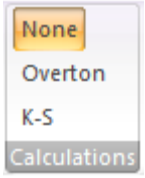


If one Control plot is already set, selecting another plot as a control will replace the currently set control with the new selection on all plots within the gallery.

The **Remove Control** button is available when one or more single parameter plots are selected from a Gallery where a Control has been set. When this option is selected the current control plot overlay will be removed from all plots within the current gallery.

19.5 Calculations Group

The buttons in this group are available when one or more single parameter plots are selected in either the Overlay or Galleries area and the current plot has a Control already set.

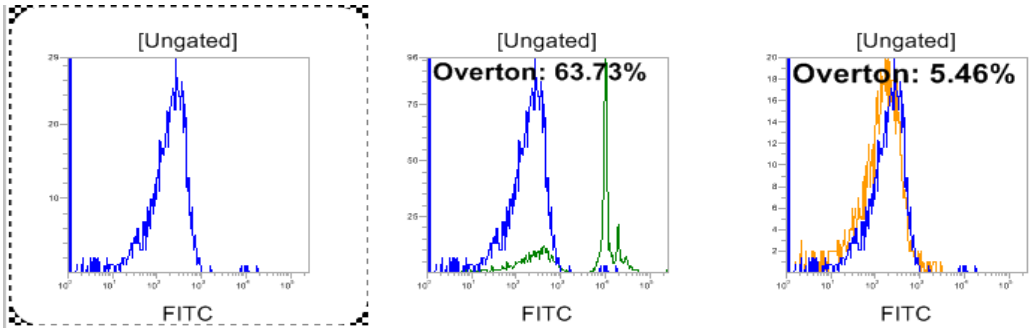


The **None** button is highlighted by default to indicate that no calculation is being displayed for the current plot.

When a Control is set two Calculation options are available to compare test and control plots, you may display results from **Overton** or **K-S** comparison statistics. The selected calculation will be applied to all plots within the selected Overlay Plot; only one calculation method can be displayed at one time.

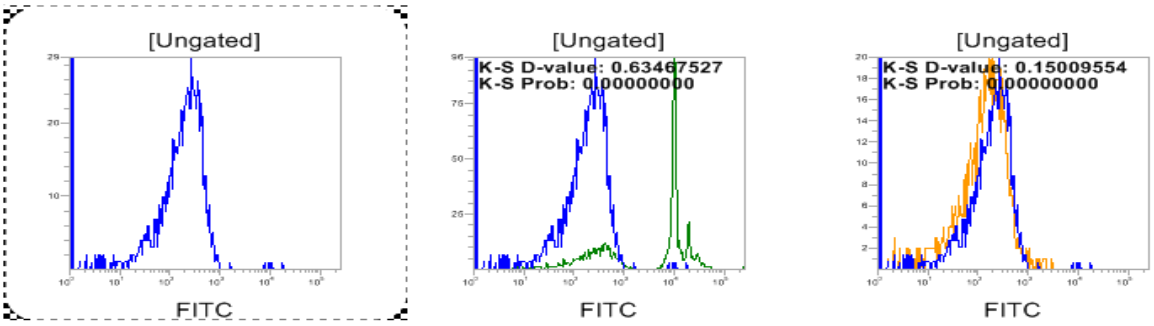
Overton mode shows the positive result after subtraction of the control histogram from the test. The subtraction algorithm is a cumulative subtraction routine based on that published by Roy Overton in Cytometry 9:619-626 (1988).

An example of a control and two samples in Overton Mode is shown below:



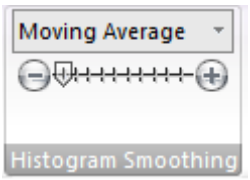
The Kolmogorov–Smirnov test (K–S test) is a nonparametric test method for comparing two samples, the Control and Test plots. The maximum vertical deviation between the two curves is reported as the statistic *D.*

An example of the control and two test plots in K-S mode is shown below:



19.6 Histogram Smoothing Group

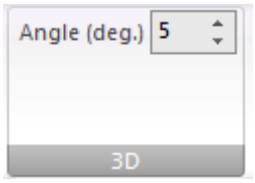
The Histogram Soothing options are available when single parameter plots in a gallery or an Overlay Plot containing single parameter plots are selected. These options allow smoothing to be applied to histogram plots to improve the visual appearance without affecting statistical results.



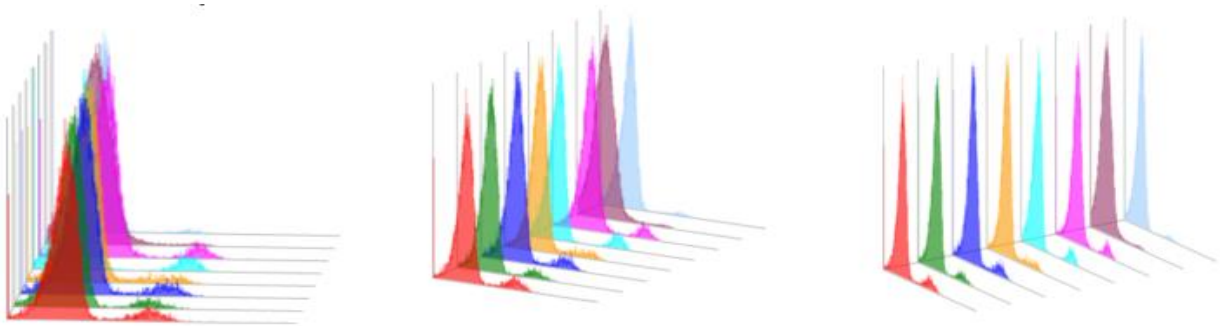
Histogram smoothing options are described in section 8.6

19.7 3D Group

The 3D controls are available when an Overlay Plot in 3D mode is selected:



This control allows the rotation of the angled overlay plot between 5 and 85 degrees as illustrated below:



Section 20

Creating Reports

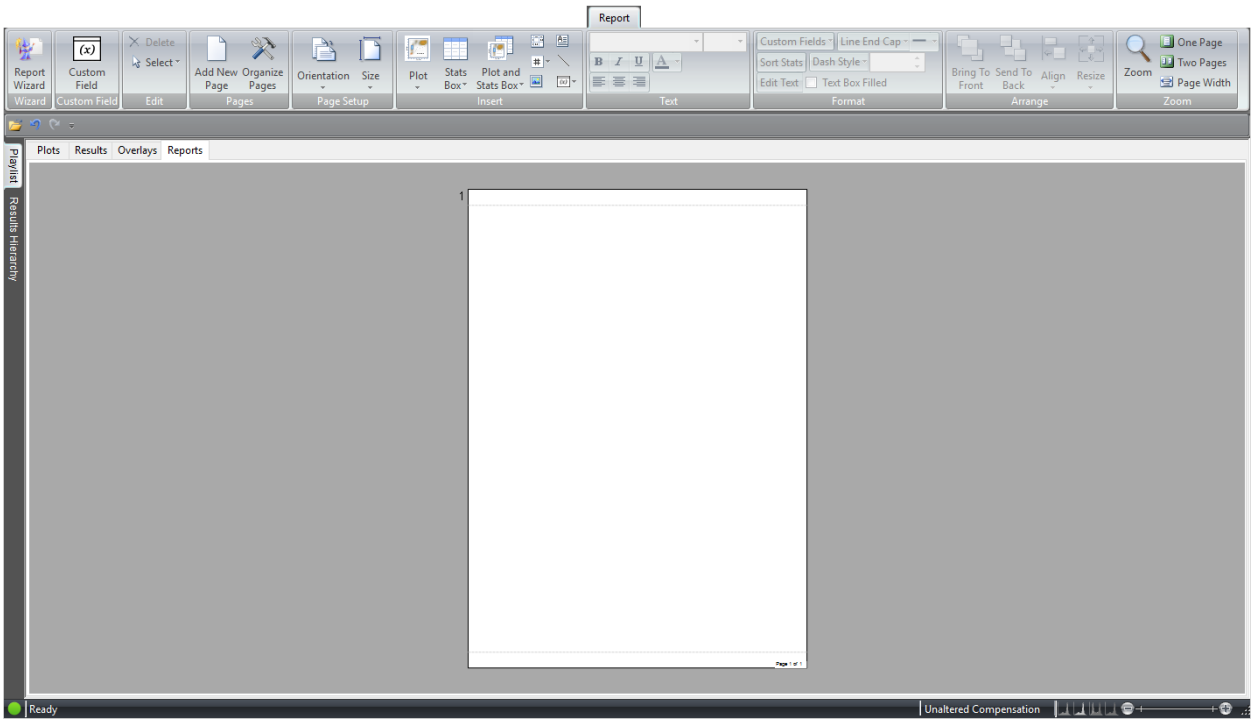
Group and Playlist Report
Insert Objects
Select Objects
Resize Objects
Move Objects
Edit Inserted Text
Delete Objects
Send Objects from Workspace to Report
Headers and Footers
Report Context Menu

20 Creating Reports

In VenturiOne you can create page-based reports from a single playlist item or a group of playlist items. VenturiOne reports can be used to create a customized page-based summary of plots, statistics, custom fields and other information.

Reports are created in the **Reports** tab of the **Workspace** using the controls on the **Reports** tab of the **Ribbon**.

Click on the **Reports** tab in the **Workspace** to display a blank report page as illustrated below:



The **Report** tab of the **Ribbon** automatically becomes active when the **Reports** tab of the **Workspace** is selected.

Reports are made up of inserted objects (plots, stats boxes, comp matrices, fields, images, text boxes and lines). Objects can be inserted in the report via the **Insert** group on the **Report** tab (see section 20.2) or send to the report from the Plots area of the **Workspace** (see section 20.8).

Each report page consists of three separate sections: **Header**, **Body** and **Footer**.

All elements of the **Header** and **Footer** sections are duplicated on all pages of the report.

20.1 Group and Playlist Report

In VenturiOne you can create two types of reports:

- Playlist Report – objects from any item in the playlist can be added
- Group Report – simplifies reporting when using groups of samples

When using groups, you only have to create a report for the first group of samples, this report is automatically used for all other groups in the **Playlist**. If you use the playlist report option, you will need to specify which items to add to the report for each item in the **Playlist**.

You can easily create either a Playlist or a Group report using the **Report Wizard**; see section 22 for details on the **Report Wizard**.

20.1.1 Creating a Group Report

To create a **Group** report you must check the **Use Groups** checkbox on the **Playlist** tab of the **Ribbon** and set up the group size via the **Group Size** spin control (see sections 6.1).

The same set of **Workspaces** should be repeated for each group to ensure that the plots required for the report are present for each sample.

You must set up the report by inserting the required objects from the playlist items from only one group. Do not attempt to mix items from different groups.

If you open an item from a different group the report will be applied to the new group and all inserted plots, stats boxes, fields and compensation matrices in the report will update to display the FCS file(s) from the new group.

If a required plot, stats box or comp matrix is not present in an item's workspace or if group size is incorrect, the report will generate an object with a red exclamation mark for that item.



If a field has been inserted and the value is not present in the file or if a file is not present ERROR will be displayed instead of the value.

The **Group** report can be applied to all groups within the playlist when printing reports as described in section 24.2.2.

20.1.2 Create a Playlist Report

To create a **Playlist,** report the **Use Groups** checkbox on the **Playlist** tab of the **Ribbon** must be unchecked.

When creating a **Playlist** report you can add objects from any item in the playlist. You select the objects required for each playlist item.

Once background calculation has finished, if a required plot, stats box or comp matrix is not present in an item's workspace the report will generate an object with a red exclamation mark for that particular item.

If a field has been inserted and the value is not present in the file or if a file is not present ERROR will be displayed instead of the value.

20.2 Insert Objects

You can select objects to add to the report with the buttons present on the **Insert** Group of the **Report** tab (see 21.6).

Select an object and then move the mouse cursor over a page in the report to display as shown below:



Click a particular page section (i.e. header, footer or body) to insert a default sized object into this section. The object is bounds checked to the section and re-sized and/or re-positioned as necessary.

! Ensure objects do not obscure each other when inserted to a report

To insert a custom sized object onto a reports page, drag out an insertion rectangle to the required size of the object and Release to insert the object at the desired size.

The aspect ratio of the insertion rectangle for a plot is fixed and is always square.

For other object types the aspect ratio of the insertion rectangle is not fixed.

Starting a drag in a particular page section (i.e. header, footer or body) restricts the insertion rectangle to the bounds of that section.

An object cannot be inserted when the no entry sign  is displayed. The cursor remains a no entry sign until the object is inserted in a valid location or the **Esc** key is pressed.

! Make sure **Stats Boxes** contain enough information to clearly identify which files the results come from. You may need to add file name or gate name to the **Results** table to ensure this. You should also make sure that enough space has been allocated for the Stats Box so that the full results are visible.

! When inserting compensation file name, the name of the compensation file present in the **Playlist** will be displayed even if you have cleared compensation, manually modified the compensation or loaded compensation from header.

20.3 Select Objects

You can select a single object by left mouse clicking on it. Multiple objects can be selected by holding the **Ctrl** key and click the desired object. Any type of object can be selected using this method. Multiple selected objects that are within the same section move together as a group.

Objects can be selected on a per page basis by drawing a blue selection rectangle around the desired objects.

The rectangle can only be drawn when the mouse cursor displays the selection arrow (i.e. the cursor is not selecting an object). The rectangle selects everything it touches.

Objects on multiple pages cannot be selected via a selection rectangle.

The selection rectangle does not select objects inserted into the header and footer regions unless the selection rectangle starts in the header and footer regions.

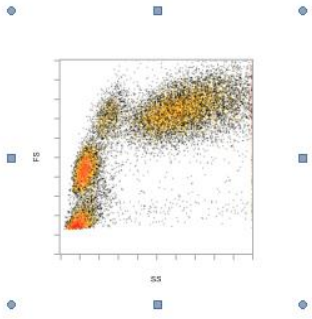
All body section objects within a report, from page 1 to 800, can be selected by holding down the **Ctrl** key and pressing **A**.

All body section objects of the same type within a report, from page 1 to 800, can be selected by holding down **Ctrl**, **Shift** and pressing **A**.

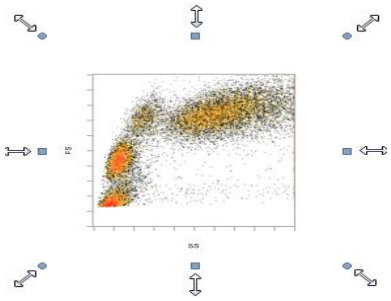
20.4 Resize Objects

20.4.1 Resize Inserted Objects (Excluding Lines)

An object has to be selected for it to display the resize handles as illustrated below:



Moving the mouse pointer over each handle changes the mouse cursor to indicate which way the object will be resized as illustrated below:



The aspect ratio of the plot is fixed and is always square.

When moving corners, the aspect ratio of the stats box, comp matrix, text box and field, is not fixed i.e. it can be stretched horizontally or vertically.

When moving corners of images their aspect ratio is maintained.

When moving the top or bottom center of the stats box, comp matrix, text box, field and image only its height can be re-sized.

When moving the right or left middle of the stats box, comp matrix, text box, field and image only its width can be re-sized.

For all objects holding shift whilst resizing using a corner handle will maintain the aspect ratio.

When resizing an object, it is bounds checked to its current section on the page i.e. header, body or footer and cannot be re-sized outside of these bounds.

20.4.2 Resize and Re-orientate Inserted Lines

Select a Line to display the resize handles as illustrated below:



Moving the mouse pointer over either handle will change the mouse cursor to a crosshair, indicating the handle can be moved in any direction.

Drag either of the handles to resize or change orientation of the Line. The Line can be dragged to any size and orientation around 360 degrees. The Line is limited to the current section on the page i.e. header, body or footer.

Hold the Shift key and drag a Line to fix its position to horizontal and vertical positions only. Release the mouse and let go of the Shift key to relocate the Line to its new horizontal or vertical position.

Release the drag to resize the Line to its new size and/or orientation.

20.5 Move Objects

Objects can be moved between the header, footer and body sections of a page and are subject to bounds checks. If an object (or group of objects) is too big to fit in the new section a no entry sign is displayed. Trying to drop objects when the no entry sign is displayed will move the objects back to their original position on the page and the cursor will change back to an arrow.

Move the mouse cursor over an object in the **Reports** to change the cursor to a move icon as shown below:



The object can be dragged and dropped (moved) to new locations within the pages of a report.

If Objects are selected within different sections, header, footer, body or different page, then the move cursor is not displayed, and objects cannot be moved.

20.6 Edit Inserted Text

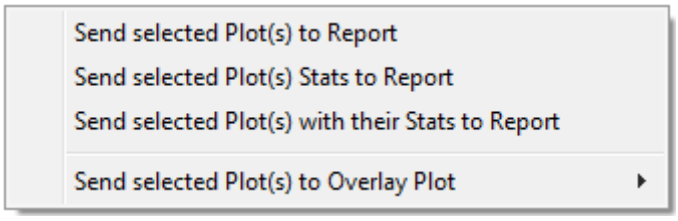
Double click a text box to open the Edit Text Box dialog (21.8.7), this allows the inserted text to be edited.

20.7 Delete Objects

A selected object can be deleted from the report by pressing the **Delete** key or the **Delete** button in the **Edit** group of the **Report** tab.

20.8 Send Objects from Workspace to Report

Right click in the **Plots** area (workspace) displays the following context menu:



Select any of the first three options to send all selected plots and/or stats to the report.

If the last page of the report contains any objects, sent items start on a new blank page in the report. If the last page is blank new objects sent start on this page.

If the addition of the objects causes the 800-page limit to be exceeded a warning message is displayed and objects are not be added.

20.9 Headers and Footers

The header and footer sections are repeated on each page of the report. If an object is moved into the header or footer of a report page it appears on all pages of the report.

20.9.1 Resize Headers

Click and drag the divider of a header up or down to resize the headers of a report.

If the header contains an object, then you cannot drag the divider up past the bottom of that object.

If the body section contains an object close to the header boundary you can still drag and drop the divider down past the object. Upon releasing the drag, the object will be bounds checked, moved down and, if necessary, resized to accommodate the new header size.

The size of the header is applied to all pages in the report.

20.9.2 Resize Footers

Click and drag the divider of a footer up or down to resize the footers of a report.

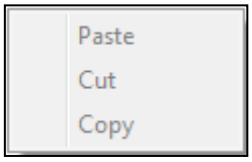
If the footer contains an object, then you cannot drag the divider down past the bottom of that object.

If the body section contains an object close to the footer boundary you can still drag and drop the divider up past the object. Upon releasing the drag, the object will be bounds checked, moved down and, if necessary, resized to accommodate the new footer size.

The size of the footer is applied to all pages in the report.

20.10 Report Context Menu

Right click on the report brings up the following context menu:



If no objects are selected in the report all items in the context menu are disabled.

Click on the **Copy** menu item to copy selected items in the report to the clipboard for pasting to the report.

Click on the **Paste** menu item to paste objects from the clipboard into the report. Objects are pasted cascaded (down and to the left) from their original position on the page.

Click on the **Cut** menu item to cut any selected objects out of the report and place them on the clipboard for pasting to the report.

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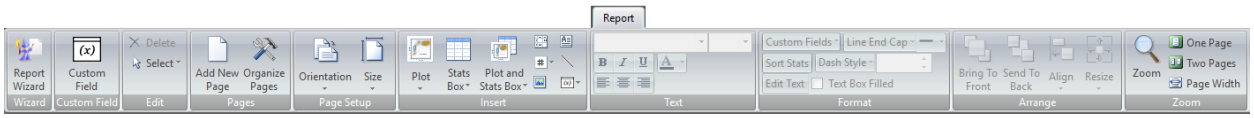
Section 21

Report Tab

Wizard Group
Edit Group
Pages Group
Page Setup Group
Insert Group
Text Group
Format Group
Arrange Group
Zoom Group
Report Wizard
Custom Fields

21 Report Tab

The **Report** tab of the **Ribbon** contains controls that allow you to add and setup report pages, insert objects and text in the report and edit and organize the objects on the report.



When you switch to the **Reports** tab of the **Workspace** the **Ribbon** automatically switches to its **Report** tab.

21.1 Wizard Group

The **Wizard** group contains the **Report Wizard** button:



Selecting the **Report Wizard** button launches the **Report Wizard** which allows you to easily create a report. The **Report Wizard** is described in section 21.11.

The button is disabled when there are no plots in the workspace.

21.2 Custom Field Group

The **Custom Field** group contains the **Custom Field** button.



Selecting this button launches the **Custom Fields** dialog which allows you to create sample fields, calculations and rules. This dialog is described in section 21.12.

21.3 Edit Group

The **Edit** group contains controls that allow you to select and delete objects on the report.



21.3.1 Delete Button

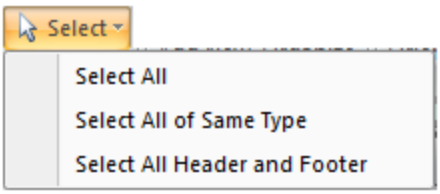
The **Delete** button is only enabled when one or more objects are selected in the report.

Click the **Delete** button to delete all selected objects.

Press the **Delete** key on the keyboard has the same effect as the **Delete** button.

21.3.2 Select Button

Click the **Select** button to display the following drop-down menu:



21.3.2.1 Select All

Click the **Select All** menu item to select all objects from the body sections of all pages in the report; objects in the headers and footers are not selected.

21.3.2.2 Select All of Same Type

The **Select All of Same Type** menu item is only enabled when a single object is selected in the report.

Click the **Select All of Same Type** menu item to select all objects of the same type as the currently selected item from the body sections of all pages in the report.

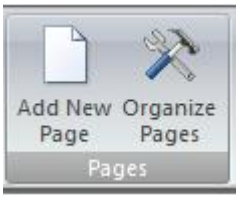
Select a single object in the header or footer with the **Select All of Same Type** menu item to select all corresponding instances of that object in the body sections of all pages in the report. The object originally selected in the header or footer will no longer be selected.

21.3.2.3 Select All Header and Footer

Click on the **Select All Header and Footer** menu item to select all objects in the header and footer sections of all pages in the report.

21.4 Pages Group

The **Pages** group contains controls that allow you to add new pages to the report and to organize the pages of the report.



21.4.1 Add New Page Button

Click the **Add New Page** button to add a new blank page to the end of the report.

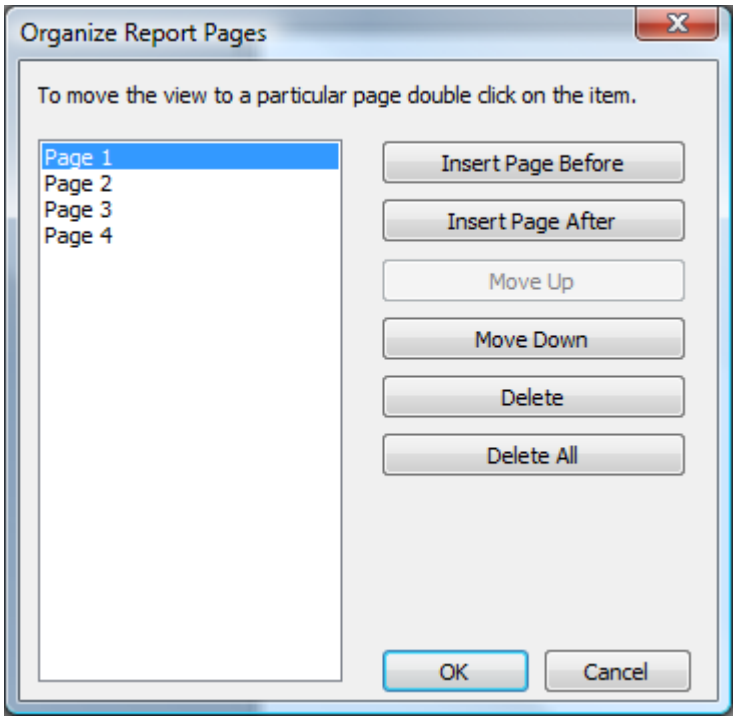
All new pages are assigned a unique number, which is displayed at the top left-hand corner.

All new pages display a **Page X of Y** in the bottom right-hand corner.

Up to 800 pages can be added to the Report. When the maximum number of pages is reached the **Add New Page** button is disabled.

21.4.2 Organize Pages Button

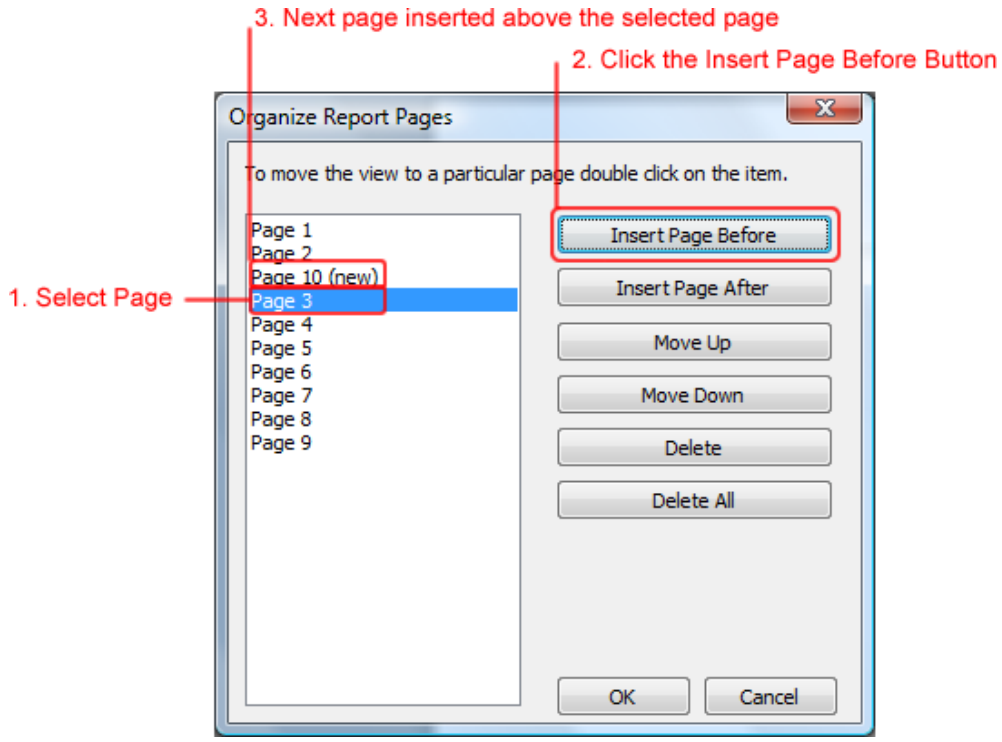
Click the **Organize Pages** button to launch the **Organize Report Pages** dialog. The **Organize Report Pages** dialog allows you to organize the pages of the report you are creating.



The list is populated with all current pages in the report. The pages are numbered to match the page numbers displayed in the report when the dialog was launched.

Double click on any page in the list to shift focus to that page in the Reports tab of the Workspace. This includes existing pages and inserted (new) pages.

Click the **Insert Page Before** button, to insert a new page before the currently selected page in the report as illustrated below:



Click the **Insert Page After** button to insert a new page after/below the currently selected page in the report.

The inserted page is given the next available unique number (between 1 and 800) and has the suffix '**(new)**'. The naming is a temporary name which will be updated when the dialog is close and re-opened.

A maximum of 800 pages can be inserted into each report. When this limit is reached the **Insert Page Before** button is disabled.

The **Move Up** button is enabled when the **Organize Report Pages** dialog contains a minimum of two pages and the currently selected page is not at the top of the list.

Click the **Move Up** button to move the selected page up one position in the list.

The **Move Down** button is enabled when the **Organize Report Pages** dialog contains a minimum of two pages and the currently selected page is not at the bottom of the list.

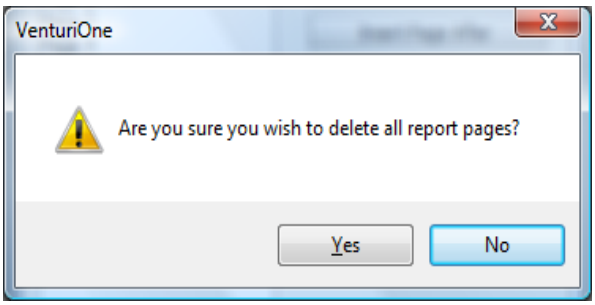
Click the **Move Down** button to move the selected page down one position in the list.

Click the **Delete** button to delete the selected page from the list.

When the list is empty the **Delete** button is disabled.

Click the **Delete All** button to delete all the pages in the list and the Report.

A warning message is displayed as illustrated below:



Click the **No** button if you don't want pages deleted.

Click the **Yes** Button to delete all the pages from the report.

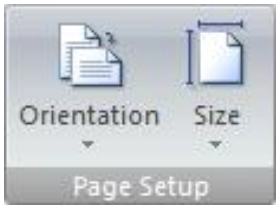
When all pages have been deleted the **Delete All** button is disabled.

Double click on an item in the page list to allow you to preview any changes made. Click the **OK** button to close the **Organize Report Pages** dialog and accept the changes made to the report pages.

Click the **Cancel** button to close the **Organize Report Pages** dialog and cancel any changes made to the Report pages.

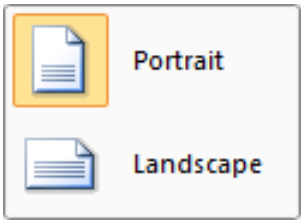
21.5 Page Setup Group

You can use the controls in the **Page Setup** group to change the orientation and size of the pages in the report.



21.5.1 Orientation

Click the **Orientation** button to display a drop-down menu as illustrated below:



Click either **Portrait** or **Landscape** layout to switch the page orientation of the Report.

A change to the **Orientation** changes the page orientation to all pages in the Report, up to the maximum limit of 800.

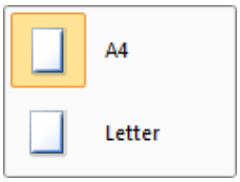
! The option selected in the **Orientation** drop-down always takes precedence over that selected in the **Print Setup** dialog.

When changing the **Orientation** all header, footer, and body objects are subject to a bounds check. If an object lies outside the bounds of the new page, the object is automatically resized to fit the new orientation.

If the orientation is then switched back any resized objects are **not** restored to their original size or position. In order to restore pages exactly as they were you should use the **Undo** option.

21.5.2 Size

Click the **Size** button to display a drop-down menu as illustrated below:



The paper size of the Report can be switched between **A4** and **Letter** size by clicking the desired option.

A change to the size changes the page size for all pages in the report, up to the maximum limit of 800.

When changing size**,** all headers, footers, and body objects are subject to a bounds check. If an object lies outside the bounds of the new page size it is automatically resized to fit the new size. If the size is then switched back any resized objects are **not** restored to their original size or position. In order to restore pages exactly as they were you should use the **Undo** option.

If there is a mismatch between the paper size set in the Print Setup and the Size selected here, the page will be automatically scaled to fit the paper when printing.

21.6 Insert Group

The controls in the **Insert** group allow you to insert objects in the report.



The following report objects can be added to the report page:

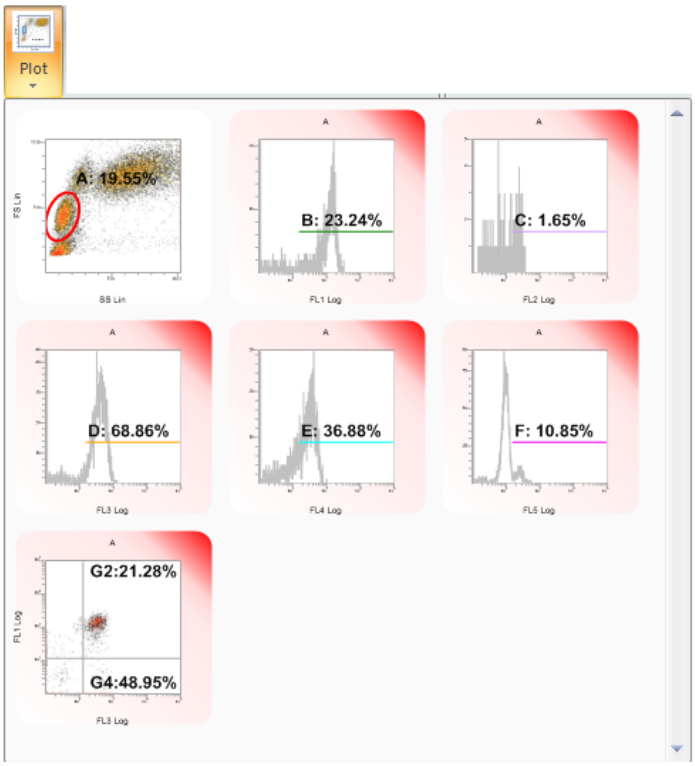
- Plots
- Stats boxes
- Plot and associated Stats boxes
- Compensation matrices
- Selected fields
- Images (from a file)
- Text Boxes
- Lines
- Custom Fields

The controls in this group are only enabled when you are on the **Reports** tab of the Workspace.

21.6.1 Plot Button

The **Plot** button is only enabled when the Workspace contains one or more plots and you are on the **Reports** tab of the **Workspace**.

Click the **Plot** button to display a drop-down gallery of all the plots currently open in the **Workspace** as illustrated below:

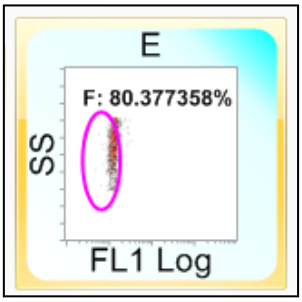


The plots displayed in the drop-down gallery appear in a grid that is 3 plots wide.

When necessary, the gallery view is scrollable, i.e. when a large number of plots are present in the Workspace.

The order in which the plots appear in this list matches the order they appear in the **Workspace** when in **Gallery** view. If the **Workspace** is in **Hierarchy** view the plots will still be listed here in the **Gallery** order.

Hover the mouse cursor over a plot in the gallery to highlight that plot as illustrated below:



Click on a highlighted plot to select it for insertion in the report; the gallery view then closes. Click on the report page at the point where you wish to place the selected plot.

The functionality of inserting plots is covered in section 20.2, resizing plots is covered in section 20.4 and moving plots is covered in section 20.5.

21.6.2 Stats Box Button

The **Stats Box** button is only enabled when the Workspace contains one or more plots.

Click on the **Stats Box** button to display the same drop-down gallery as for the **Plots button.**

Hover the mouse cursor over a plot to highlight it. You can then click on the plot to select the corresponding stats box for insertion in the report. Click on the report page at the point where you wish to place the selected stats box.

The functionality of inserting **Stats Boxes** is covered in section 20.2, resizing **Stats Boxes** is covered in section 20.4 and moving **Stats Boxes** is covered in section 20.5.

21.6.3 Plot and Stats Box Button

The **Plot and Stats Box** button is only enabled when the Workspace contains one or more plots.

Click on the **Plot and Stats Box** button to display the same drop-down gallery as described for the **Plots button**.

Hover the mouse cursor over a plot to highlight. You can then click on the plot to select the plot and the corresponding stats box for insertion in the report. Click on the report page at the point where you wish to place the selected plot.

The functionality of inserting **Plot and Stats Boxes** is covered in section 20.2, re-sizing **Plot and Stats Boxes** is covered in section 20.4 and moving **Plot and Stats Boxes** is covered in section 20.5.

21.6.4 Comp Matrix Button

The **Comp Matrix** button is only enabled when an FCS file is open in the **Workspace**.

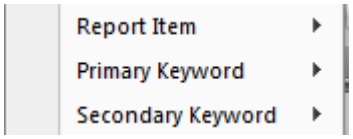
Click on the **Comp Matrix** button to select the matrix for insertion in the report. Click on the report page at the point where you wish to place the matrix.

The functionality of inserting **Comp Matrix** is covered in section 20.2, re-sizing **Comp Matrix** is covered in section 20.4 and moving **Comp Matrix** is covered in section 20.5.

21.6.5 Field Button

The **Field** button is only enabled when an FCS file is open.

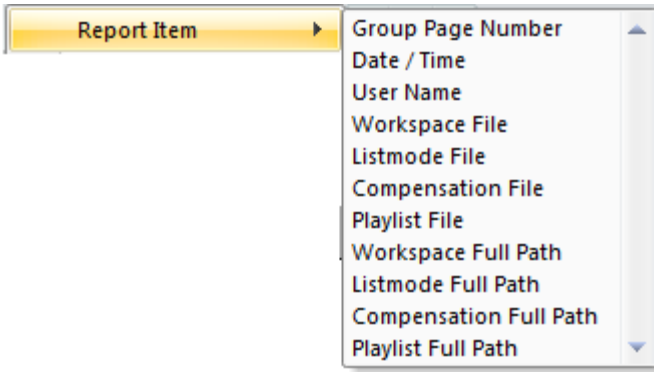
Click the **Field** button to display the following menu:



The functionality of inserting **Fields** is covered in section 20.2, re-sizing **Fields** is covered in section 20.4 and moving **Fields** is covered in section 20.5.

21.6.5.1 Report Item Submenu

Hover the mouse over the **Report Item** to display the following sub-menu:



Click any of the listed Items to add the Items to the report. Click on the report page at the point where you wish to place the item.

The **Group Page Number** field contains information regarding the group number of the currently open playlist item and Page X of Y information, which is determined by the page that the field is inserted onto. For example, **Group 1 Page 1 of 2.**

The **Date / Time** field contains the date and time of the report, which is determined by the date and time VenturiOne was started/run.

The **Username** field contains information regarding the domain and username, which is determined by the user currently logged into the Windows operating system.

The **Workspace File** field contains the workspace filename, which is determined by the currently open workspace file in the **Plots** area. If there is no workspace file currently open, then the inserted field will be blank.

The **Listmode File** field contains the FCS file name, which is determined by the currently open FCS file in the **Plots** area. If there is no FCS file currently open the **Field** button will be disabled.

The **Compensation File** field contains the compensation file name, which is determined by the currently open compensation file. If there is no compensation file currently open, then the inserted field will be blank.

The **Playlist File** field contains the playlist file name, which is determined by the currently open Playlist file. The field is blank for a new, unsaved playlist.

The **Workspace Full Path** field contains the workspace file path and file name, which is determined by the currently open workspace file in the **Plots** area. If there is no workspace file currently open, then the inserted field will be blank.

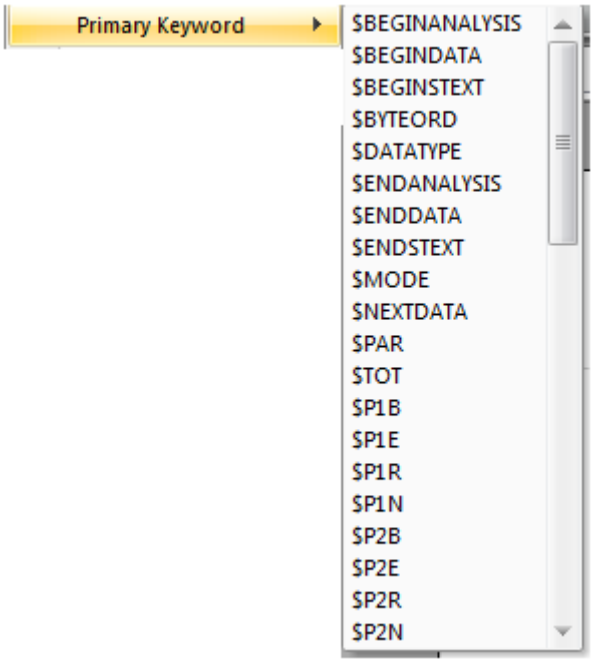
The **Listmode Full Path** field contains the FCS file path and file name, which is determined by the currently open FCS file in the **Plots** area. If there is no FCS file currently open the **Listmode Full Path** field button will be disabled.

The **Compensation Full Path** field contains the compensation file path and file name, which is determined by the currently open compensation file. If there is no compensation file currently open, then the inserted field will be blank.

The **Playlist Full Path** field contains the playlist file path and file name, which is determined by the currently open playlist file. The field is blank for a new, unsaved playlist.

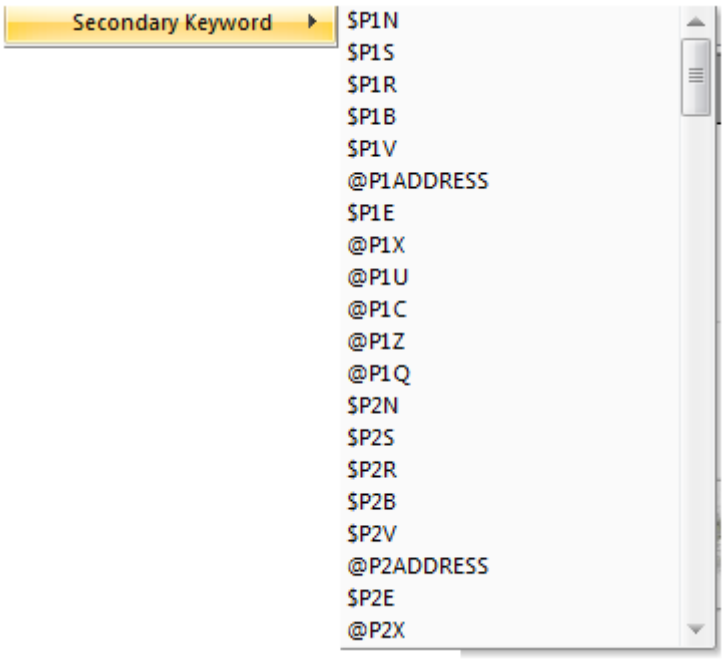
21.6.5.2 Primary Keyword Submenu

The **Primary Keywords** menu item is populated with the primary keywords from the currently open FCS file, as illustrated below:



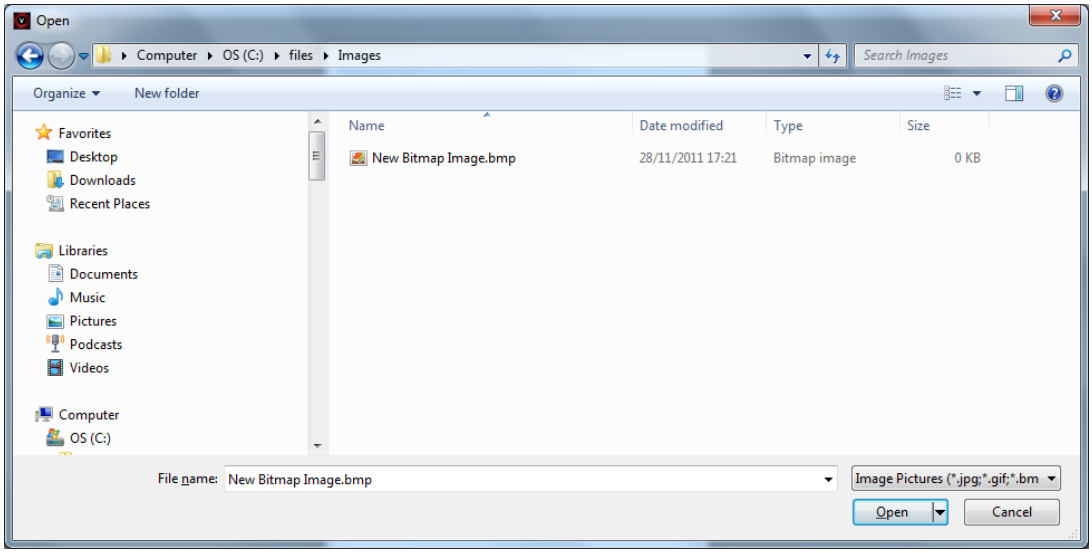
21.6.5.3 Secondary Keyword Submenu

The **Secondary Keywords** menu item is populated with the secondary keywords from the currently open FCS file, as illustrated below:



21.6.6 Image Button

Click the **Image** button to display a file **Open** dialog as illustrated below:



The dialog defaults to the last used folder or **My Documents** if there is no last used folder information.

The **File name:** field is blank by default and '**Image Pictures** (***.jpg; *.gif;*.bmp;*.png**)' appears in the Save as type drop-down menu.

The Save as type drop-down menu can be changed to allow the opening of viable file types.

Only image files with the extension '.jpg'; '.gif'; '.bmp' and '.png' are supported.

You can only select a single image file in this dialog.

Click the **Open** button to insert the selected image file into the report.

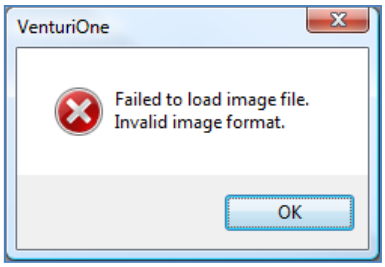
If the inserted image lies outside the bounds of the page it is automatically resized.

Images are inserted into the body section of a page by default. They can, however, be moved into the header or footer.

Double clicking on an image file in the dialog has the same functionality as selecting image file and clicking the **Open** button.

Click the **Cancel** button, on the **Open** dialog, to close the dialog without inserting an image.

If, when inserting an image, the file type is not supported, the following message is displayed:



21.6.7 Text Box Button

Click on the **Text Box** button to select a text box for insertion. Click on the report page at the point where you wish to place the text box.

Double click on the text box to display the Edit Text dialog and enter the required text. You may need to resize the text box.

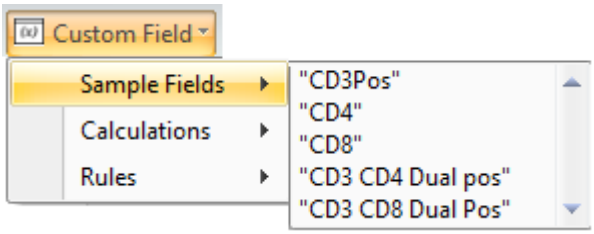
The functionality of inserting **Text Boxes** is covered in section 20.2, re-sizing **Text Boxes** is covered in section 20.4 and moving **Text Boxes** is covered in section 20.5.

21.6.8 Line Button

Click on the **Line** button to select a line for insertion. Click on the report page at the point where you wish to place the line.

The functionality of inserting **Lines** is covered in section 20.2, re-sizing **Lines** is covered in section 20.4 and moving **Lines** is covered in section 20.5.

21.6.9 Custom Field Button



Click on the **Custom Field** button to select a field for insertion. On mouseover the field type displays the available sample fields, calculations or rules, click on the required field.

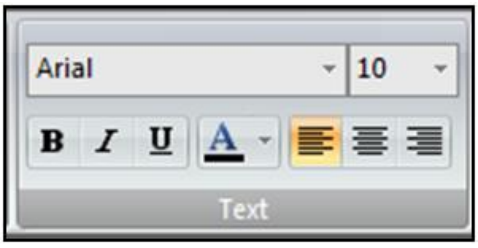
The contents of a **Custom Field** can be customized using the **Custom Fields** button in the **Format** group as described in section 21.8.1

Click on the report page at the point where you wish to place the custom field.

The functionality of inserting fields is covered in section 20.2, re-sizing is covered in section 20.4 and moving is covered in section 20.5.

21.7 Text Group

The **Text** group contains controls for editing and organizing of text:



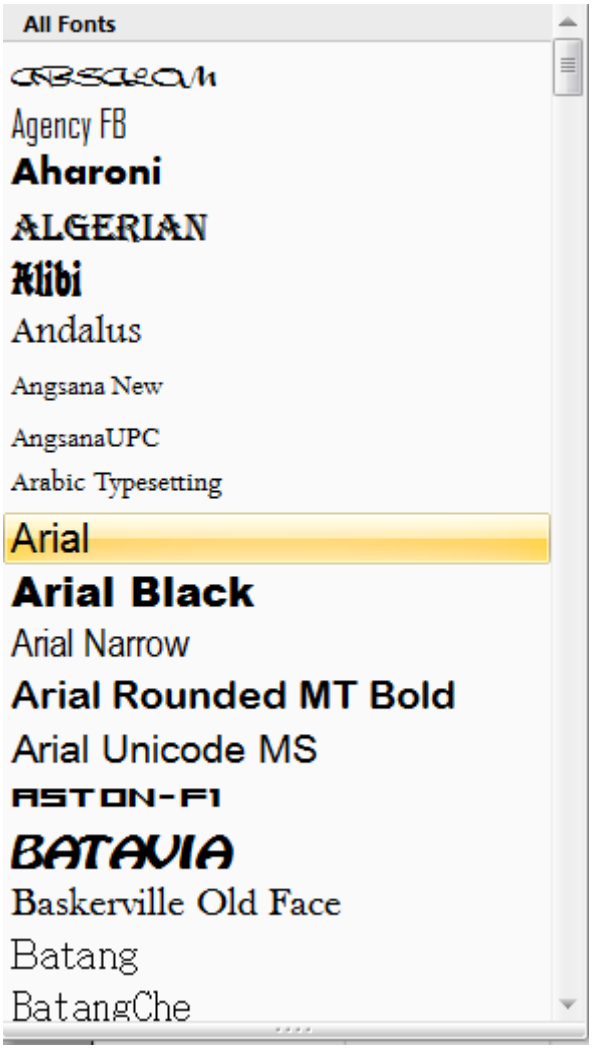
The buttons in the Text group, except the alignment buttons**,** are enabled if one or more of the following objects are selected in the report:

- Stats Box
- Comp Matrix
- Field
- Text Box

The alignment buttons are enabled if at least one Text Box or Field is selected.

21.7.1 Font Face

Click on the **Font Face** button to display a drop-down menu containing a list of available font faces as illustrated below:



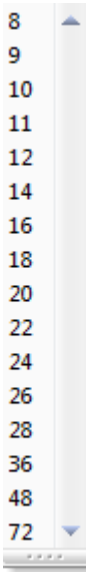
The default font is ‘Arial’.

The list of available fonts may vary as it is populated by the default fonts found on your computer.

Selecting a new font face affects any selected text objects.

21.7.2 Font Size

Click on the **Font Size** button to display a drop-down menu containing a list of 16 available font sizes as illustrated below:



The default font size is ‘10’.

Selecting a new font size will affect all selected text objects.

21.7.3 Bold

Click on the **Bold** button to toggle its selection on or off.

When **Bold** is selected the font of all selected text objects becomes bold.

21.7.4 Italic

Click on the **Italic** button to toggle its selection on or off.

When **Italic** is selected the font of all selected text objects in the report will change to italic.

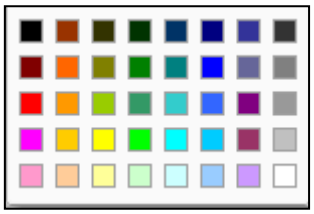
21.7.5 Underline

Click on the **Underline** button to toggle its selection on or off. When **Underline** is selected the font of any selected text objects will be underlined.

21.7.6 Text Color

The default text color is black.

Click on the **Text Color** drop-down to display a menu of 40 available colors as shown below:



Select a color from the drop-down to close the menu and update any selected text objects in the report.

The **Text Color** button displays the last selected color from the drop-down.

21.7.7 Align Text Left

Select the **Align Text Left** button to align the text in all selected text boxes to the left.

21.7.8 Center

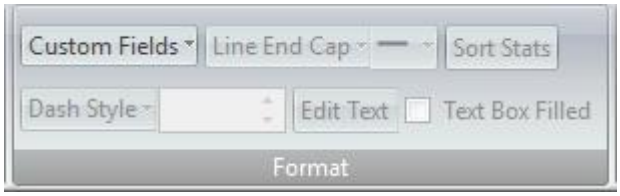
Select the **Center** button to center the text in all selected text boxes.

21.7.9 Align Text Right

Select the **Align Text Right** button to align the text in all selected text boxes to the right.

21.8 Format Group

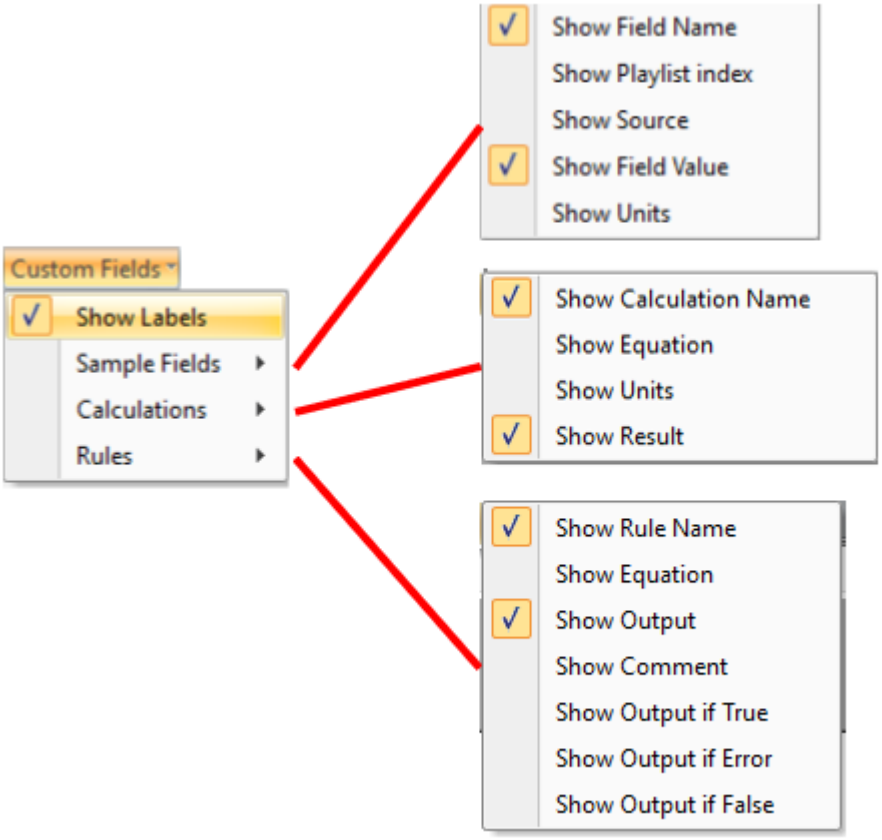
The **Format** group contains controls that allow you to format items in the report:



21.8.1 Custom Field

The **Custom Fields** drop down list is only enabled when one or more custom field objects are selected in the report.

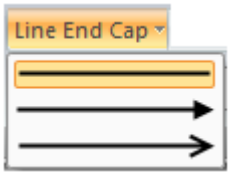
This option enables you to format the contents of the selected custom field(s) by choosing which items appear for each field.



21.8.2 Line End Cap Combo Box

The **Line End Cap** combo box is only enabled when one or more line objects are selected in the report.

Clicking on the **Line End Cap** combo box arrow will display the following drop-down menu:



Click on the **uncapped** line menu item to display no end cap on all selected line objects:



Click on the **solid arrowhead** menu item to display that end cap on all selected line objects:



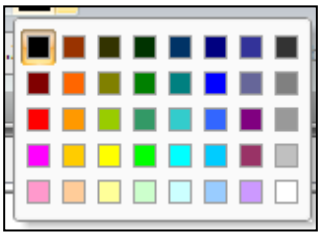
Click on the **line arrowhead** menu item to display that end cap on all selected line objects:



21.8.3 Line  Color Button

The **Line Color** button is only enabled when one or more line objects are selected in the report.

Click on the **Line Color** button to display the following drop-down menu:



The default color for inserted lines is black.

Select a new line color affects all selected line objects in the report so that they appear the new color.

The **Line Color** button displays the color of the selected line object. In the following example the selected Line is colored red:

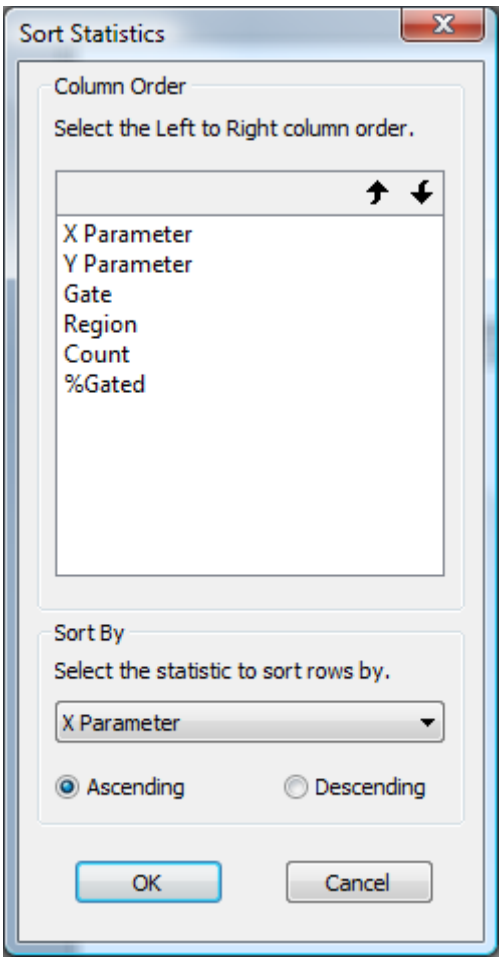


If two or more line objects are selected, which are different colors then the button will appear black.

21.8.4 Sort Stats

The **Sort Stats** button is only enabled when a stats box is selected in reports. It is also enabled when multiple stats boxes are selected provided the selected stats boxes must contain exactly the same statistics.

Click on the Sort Stats button to display the **Sort Statistics** dialog**:**



The statistics displayed in the report stats box are presented in the dialog in a list format.

The statistics in the dialog (from top to bottom) is the order that the results appear in the stats box in report (from left to right).

You can move a selected statistic name up and down the list by using the **Up** arrow and the **Down** arrow . Only one statistic can be selected at a time.

The **Sort By** group allows you to select a column heading to sort by and whether you want **Ascending** or **Descending** sort order.

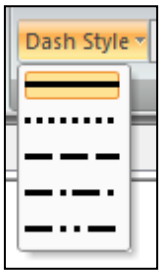
Click on the **OK** button to close the dialog and accept any changes made in the dialog.

Click on the **Cancel** button to close the dialog without applying any changes made in it.

21.8.5 Dash Style Combo Box

The **Dash Style** combo box is only enabled when one or more line objects are selected in the report. Selecting anything other than a line object will disable this button.

Click on the **Dash Style** combo box arrow to display the following drop-down menu:



Click on a dash style menu item affects all selected line objects in the report so that they display the selected dash style.

21.8.6 Line Width Spin Control

The **Line Width** spin control is only enabled when one or more line objects are selected in the report.

The default line width for inserted lines is 1.00pt. The minimum line width allowed is 0.25pts; the maximum line width allowed is 50 pts.

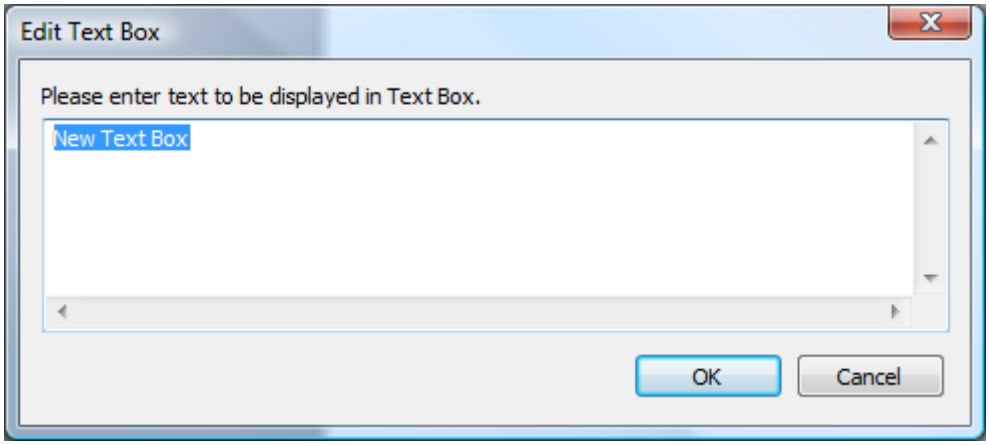
You can use the up and down arrows in the spin control to increase and decrease the line width.

You can also type in a width. If the typed in width is not within the acceptable range it will be rejected by the software.

21.8.7 Edit Text Button

The **Edit Text** button is only enabled when a single text box is selected in the report.

Click on the **Edit Text** button to display the **Edit Text Box** dialog:



For default inserted text boxes, the text will read ‘New Text Box’.

Enter the required text in the edit field. The maximum number of characters you can enter is 8000.

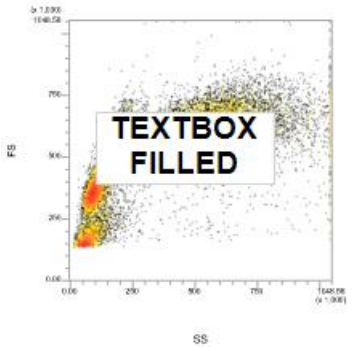
Click the **OK** button to accept any text changes made and close the dialog. The new text will now appear in the selected textbox in the report.

Click the **Cancel** button to reject any text changes made and close the dialog. The text in the selected textbox in the report will not be updated.

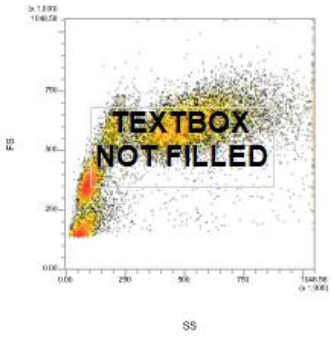
21.8.8 Textbox Filled Check Box

The **Textbox Filled** checkbox is only enabled when one or more textboxes or fields are selected in the report.

When the **Textbox Filled** checkbox is checked any selected textbox or fields in the report will appear filled as shown below:

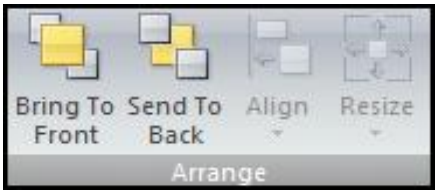


When the **Textbox Filled** checkbox is un-checked any selected textbox or fields in the report appear not filled as shown below:



21.9 Arrange Group

The options presented in the **Arrange** group allow Report objects to be moved, aligned and resized.



21.9.1 Bring to Front

The **Bring to Front** button is only enabled when one or more objects are selected on the same page and section (header, footer, body). The selected objects can be of the same or different types.

Click on the **Bring to Front** button moves all selected objects to the front of the view, making them appear on top of non-selected objects.

21.9.2 Send to Back

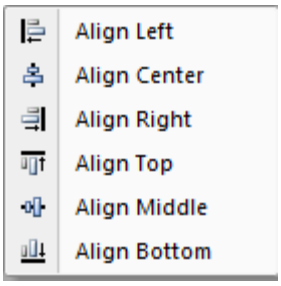
The **Send to Back** button is enabled when one or more objects are selected on the same page and section. The selected objects can be of the same or different types.

Click on the **Send to Back** button moves selected objects to the back of the view, making them appear behind non-selected objects.

21.9.3 Align

The **Align** button is enabled when two or more objects on the same page and section are selected. The selected objects can be of the same or different types.

Click on the **Align** button to display a drop-down list of available alignment options, which are shown below:



Click **Align Left** to determine the leftmost point of the selected objects and align them all to that point.

Click **Align Center** to determine the leftmost point and the rightmost point of the selected objects and align them to the center of these two points.

Click **Align Right** to determine the rightmost point of the selected objects and align them all to that point.

Click **Align Top** to determine the topmost point of the selected objects and align them all to that point.

Click **Align middle** to determine the topmost point and the bottommost point of the selected objects and align them to the middle of the two points.

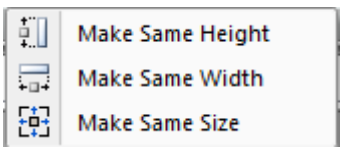
Click **Align Bottom** to determine the lowest point of the selected objects and align them all to that point.

When aligning objects, they are subject to a bounds check. If an object lies outside the bounds of the page after it has been aligned it is automatically re-positioned to fit on the page.

21.9.4 Resize

The **Resize** button is enabled when two or more objects on the same page and section are selected. The selected objects can be of the same or different types.

Click on the **Resize** button to display a drop-down list of available resize options as shown below:



Click on the **Make Same Height** option to resize all selected objects in the report to the same height as the first selected object.

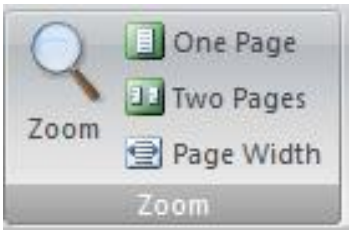
Click on the **Make Same Width** option to resize all selected objects in the report to the same width as the first selected object.

Click on the **Make Same Size** option to resize all selected objects in the report to the same size (height and width) as the first selected object.

When plots are selected in the objects to resize, their aspect ratio are always maintained. Use **Make Same Size** option, the plots are sized to the smallest dimension (height or width) of the first selected object.

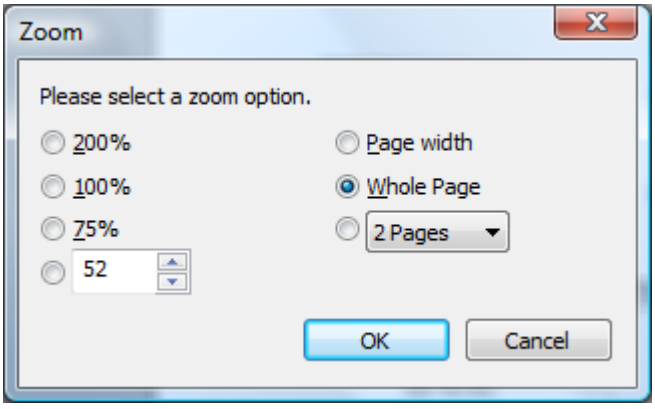
21.10 Zoom Group

The options in the **Zoom** group allow you to zoom in and out on the page using pre-defined and custom percentages.



21.10.1 Zoom

Click the **Zoom** option to open the **Zoom** dialog box as illustrated below:

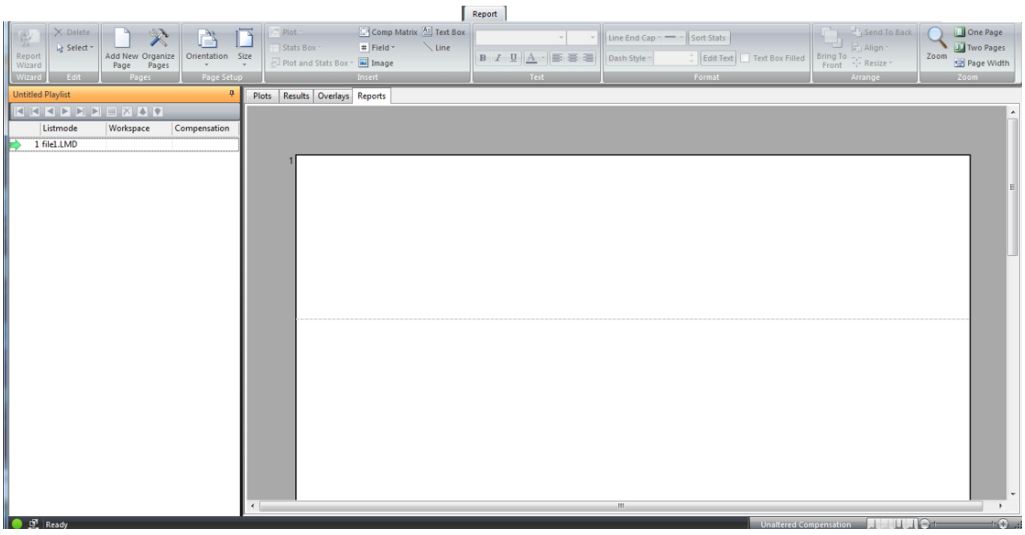


The radio button selected reflects the current zoom setting in the report.

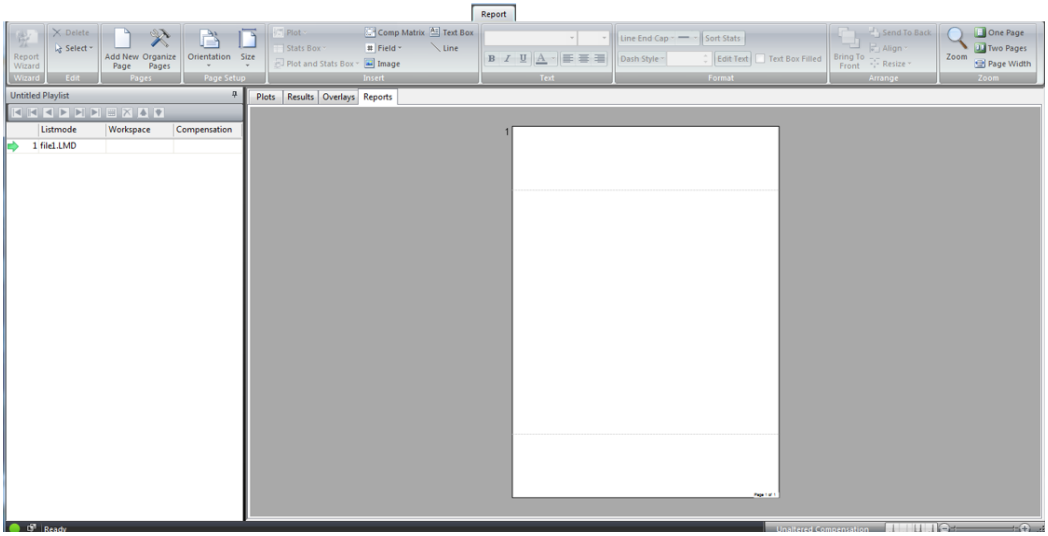
Select one of the percentage zoom options and click **OK** to zoom the display to the selected value.

The Custom Zoom spin control can be used to increase the zoom up to a maximum of 200%. It can also be used to decrease the zoom down to a minimum of 25%. You can also type in a number. If the typed in number is not allowed an error message will be displayed.

Select the **Page Width** radio button and click **OK** to zoom the display to one page, whereby the width of the page fills the screen as illustrated below:

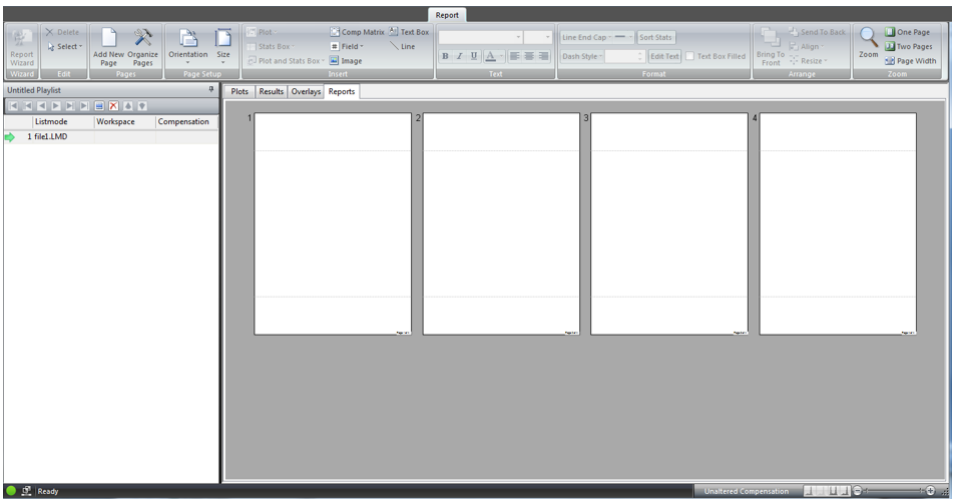


Select the **Whole Page** radio button and click **OK** to zoom the display to one page so that the entire page is visible on screen as illustrated below:



Click on the **Custom Page** drop-down button to display a list of the number of pages to be displayed. You can display **2 Pages**, **3 Pages** or **4 Pages** options.

For example, selecting **4 Pages** from the list and clicking **OK** will change the display to 4 pages wide as illustrated below:



21.11 Report Wizard

In VenturiOne you can easily create reports using the **Report Wizard.** To launch the **Report Wizard,** go to the **Reports** tab of the **Ribbon** and click the **Report Wizard** button**.** You must have at least one plot in the current **Workspace** for the button to be active.

The current report **Page Size** and **Orientation** will be used when creating a report via the wizard.

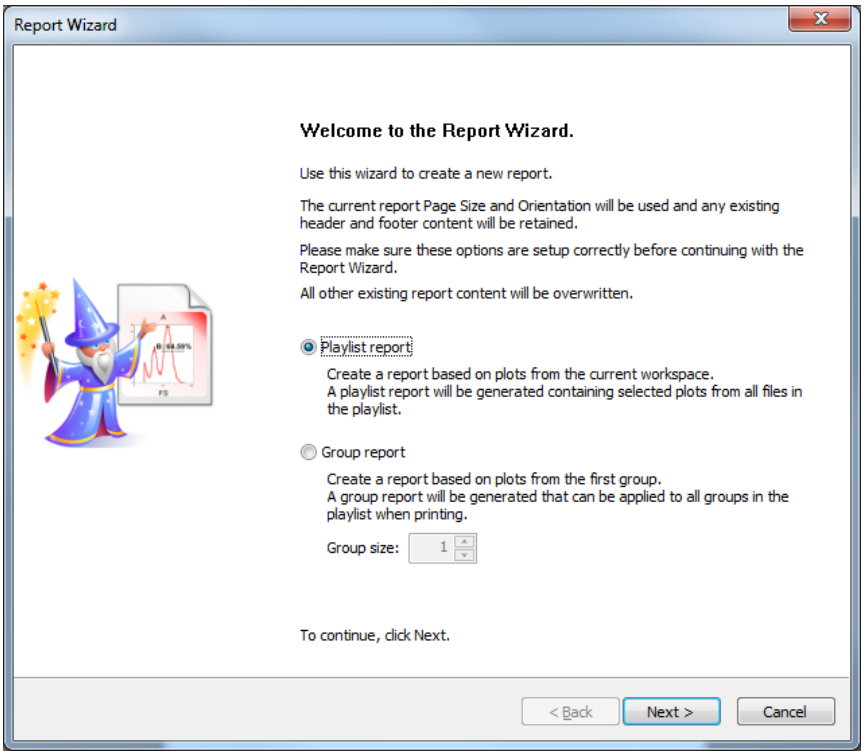
Any existing header and footer content will be retained and used in the report created via the wizard.

The wizard can be used to create either a Playlist or a Group report. See section 20.1 for description of Playlist and Group reports.

The wizard retains settings until you open or create a new playlist.

21.11.1 Welcome Page

The first page of the wizard is the **Welcome** page and is displayed when the Wizard is launched:



The Welcome page introduces you to the wizard's functionality. It also allows you to choose whether you would like the wizard to create a Playlist report or a Group report. See section 20.1 for details on Playlist and Group reports.

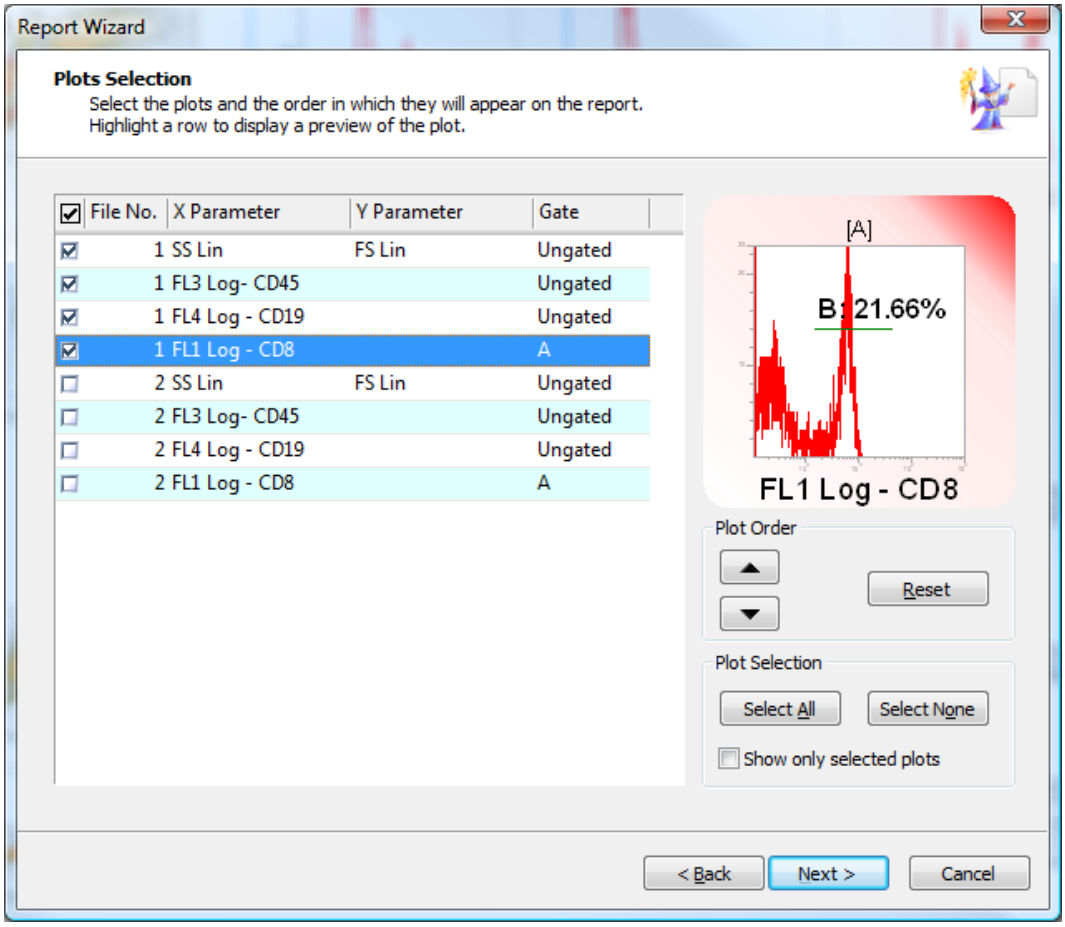
To create a Playlist report, select the **Playlist report** radio button.

To create a Group report, select the **Group report** radio button and then use the **Group size** spin control to set the size of the group. To set the group size you can either use the up and down arrows of the **Group size** spin control or type a number in the edit field of the control.

When finished with the **Welcome** page click the **Next** button to proceed to the **Plot Selection** page of the wizard.

21.11.2 Plot Selection Page

The **Plot Selection** page shown below enables you to pick the required plots for the report that will be created by the wizard.



When **Playlist report** has been selected on the **Welcome** page, the **Plots list** displays a list of the plots of the current playlist item **Workspace**.

When **Group report** has been selected the **Plots, list** displays a list of all plots from all the **workspaces** in the first group in the playlist.

For each plot the **Plot list** displays the item number for the workspace containing the plot, the X and Y parameters and the Gate.

To add a plot to the report, check the checkbox for the plot.

During a session of using the same playlist when re-running the wizard, previously checked plots will be remembered. Changing the playlist or closing the software loses these settings.

If a single plot in the **Plot list** is highlighted a preview of that plot is displayed.

The plots will appear in the report created by the wizard in the order they appear in the **Plot list.**

You can use the **Move Up**  and **Move Down**  buttons to move selected plots up and down in the list. To reset the plot order, use the **Reset** button.

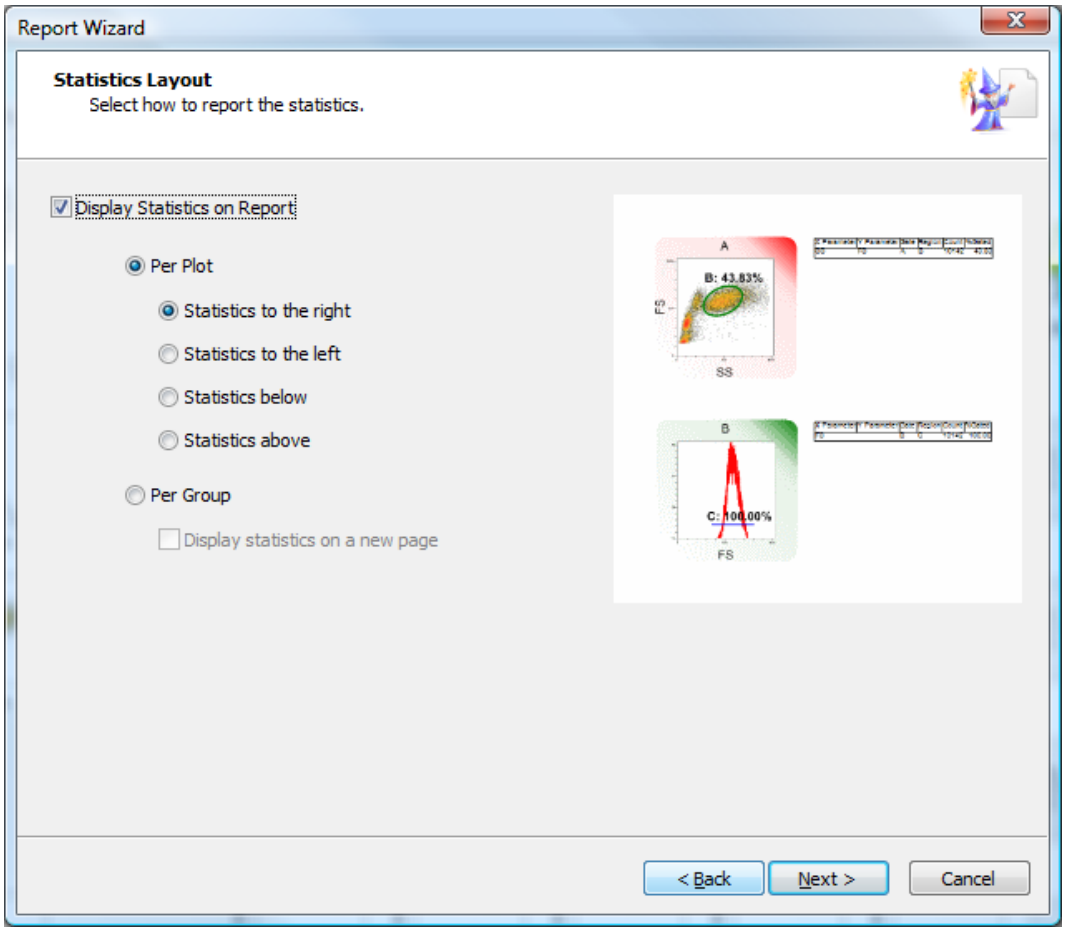
You can use the **Select All** and **Select None** buttons to easily select or deselect all plots.

If you would like the Plot list to display only the plots which you have selected for the report check the **Show only selected plots** checkbox.

Select the **Next** button to proceed to the **Statistics Layout** page.

21.11.3 Statistics Layout Page

The **Statistics Layout** page shown below enables you to select the required statistics for the report and their layout on the report.



If you would like statistics to be displayed on the generated report check the **Display Statistics on Report** checkbox.

Select the **Per Plot** radio button if you would like statistics displayed next to the plot they pertain to. The four child radio buttons: **Statistics to the right**, **Statistics to the left, Statistics below** and **Statistics above** become enabled. Select the desired option for the display of statistics.

When creating a **Playlist** report the **Per Playlist** radio button is present on the dialog. Select it if you would like all statistics displayed together at the end of the playlist report.

When creating a **Group** report the **Per Group** radio button is present on the dialog. Select it if you would like all statistics displayed together at the end of each group report.

Check the **Display statistics on a new page** check box if you would like the statistics to be on a new page at the end of the report.

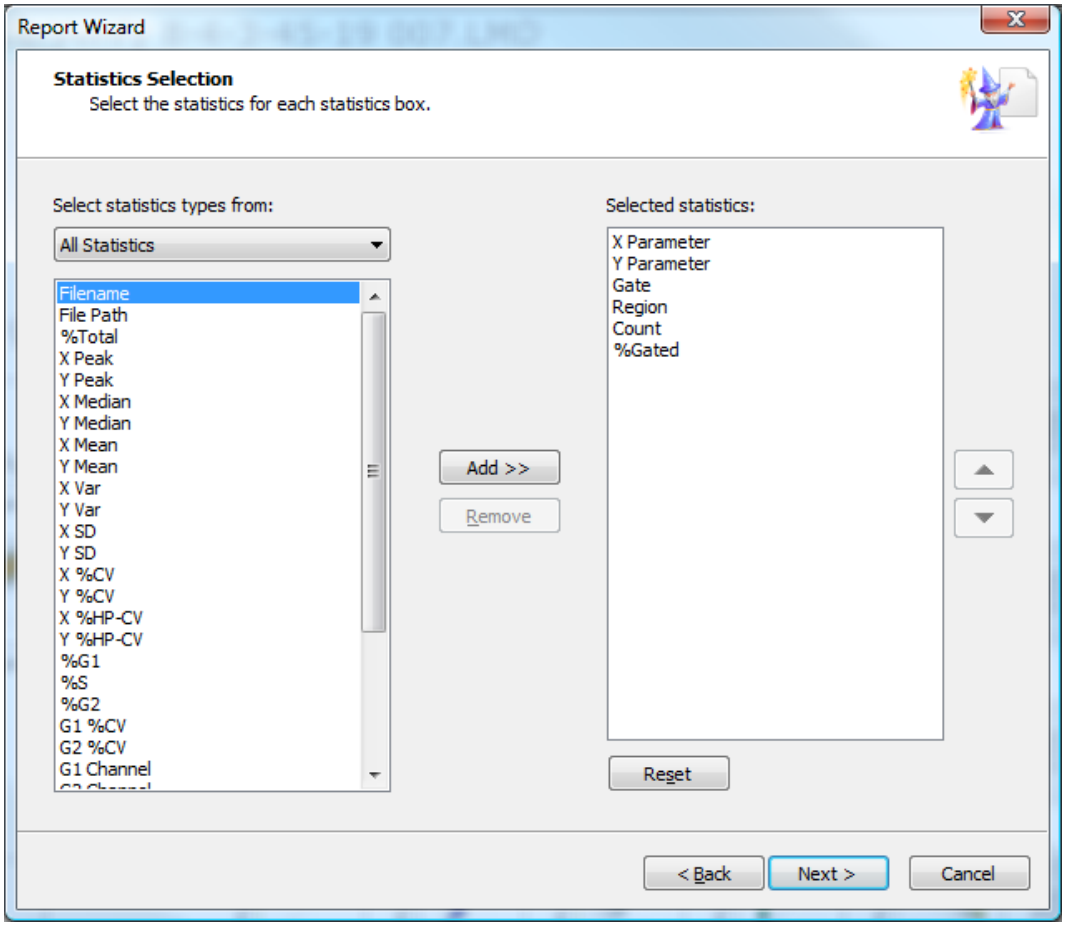
A preview of the layout of the statistics on the page is displayed allowing you to visualize your report

Click the **Next** button to proceed to the next page of the wizard.

21.11.4 Statistics Selection Page

The **Statistics Selection** page enables you to select the required statistics and the order in which they are displayed on the report.

This **Statistics Selection** page is only available if the **Display Statistics on Report** checkbox was checked on the previous page.



By default, all statistics are available for selection; you can use the **Select statistics types from** combo box to view a reduced group of statistics.

By default, the **Selected statistics** list is populated only with the statistics that are selected in the Results tab of the Workspace.

To add statistics to the **Selected Statistics** list, select the desired statistics and press the **Add** button.

The statistics in the **Selected Statistics** list are displayed on the generated report in the order they appear in the list.

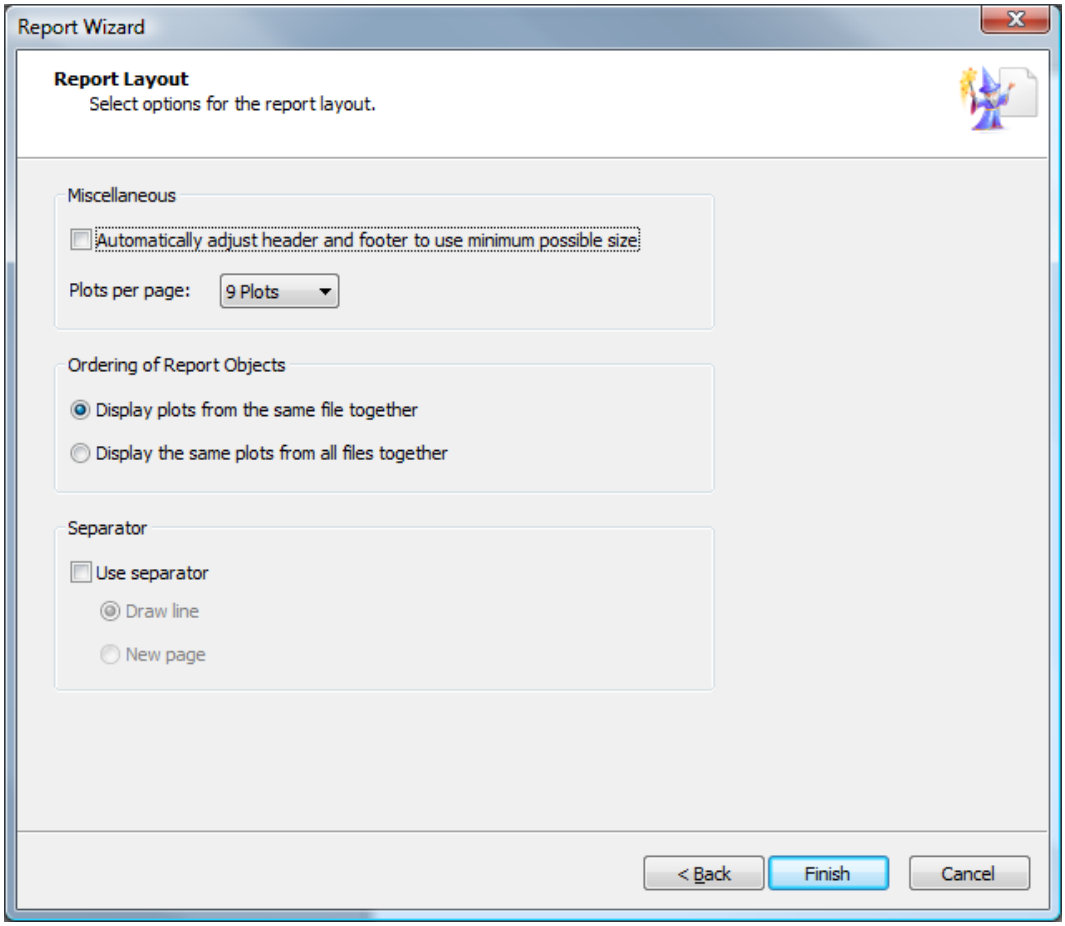
You can use the **Move Up**  and **Move Down**  buttons to change the order of the statistics.

To remove statistics from the **Selected Statistics** list select them and then press the **Remove** button.

You can reset the selected statistics to their state when the page was first displayed by pressing the **Reset** button.

21.11.5 Report Layout Page

The **Report Layout** page enables you to select the required report layout.



If you check the **Automatically adjust header and footer** check box, the header and footer of the generated report is set to use minimum possible size depending on their contents.

The **Plots per page** drop-down list allows you to specify how many plots per page in the report.

When not reporting statistics or when statistics are aggregated at the end of the report (playlist or group), you can have 1, 4, 9 or 20 plots per page.

When reporting statistics, the options are 1, 2 or 3 plots per page.

The **Ordering of Report Objects** group enables you to specify how the plots are ordered on the report. Select the **Display plots from the same file together** if you would like plots from the same file to be kept together in the report. If you would like the same plots from all files displayed together select **Display the same plots from all files together.**

When **Display plots from the same file together** is selected, each section has all the plots belonging to the same file.

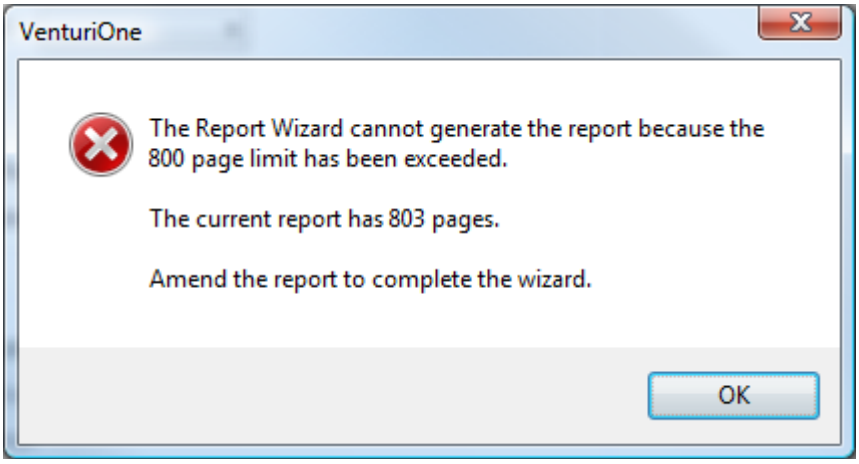
When **Display the same plots from all files together** is selected each section has all the plots with the same parameters.

If you would like to separate sections in the generated report with a line or on a new page, check the **Use separator** checkbox in the **Separator** group.

Select **Draw line** if you would like a line to separate sections. If you would like each section to start on a new page, select **New page**.

To complete the wizard, click the **Finish** button. The wizard closes and the report is generated.

If the report requires more than 800 pages you are warned via the following message box.

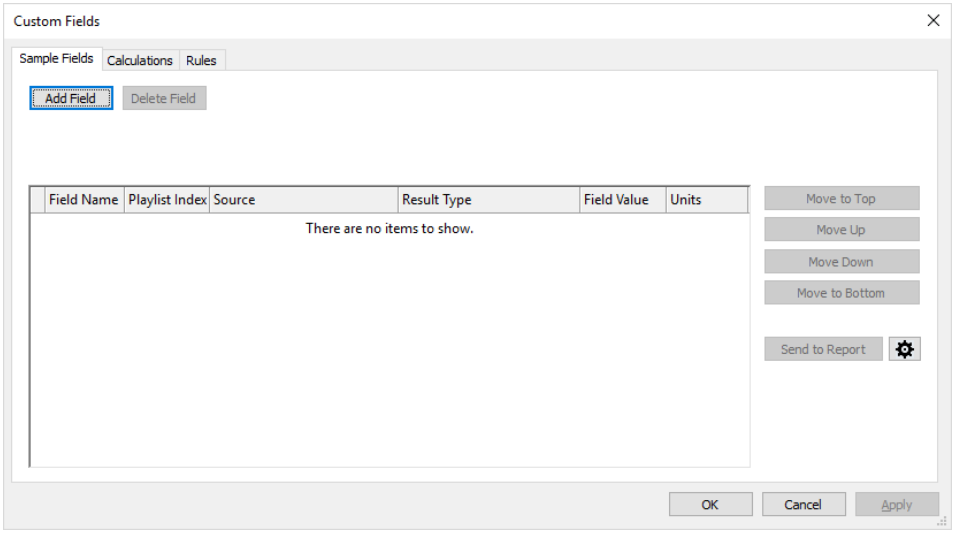


Select OK to close the message. The **Report Wizard** remains open to enable you to make changes to the required report.

21.12 Custom Fields

The **Custom Fields** dialog allows you to create sample fields, calculations and rules which can then be added to a report.

Sample Fields are individual specified results, FCS header item or compensation values
Calculations are simple calculations based on sample fields, calculations or constants
Rules are customizable text fields that can be specified based on values found in sample fields or calculations or rules.



Common Table Controls:

Move to Top: Selecting this option moves the selected item to the top of the list, if more than one item is selected, they move together in order.

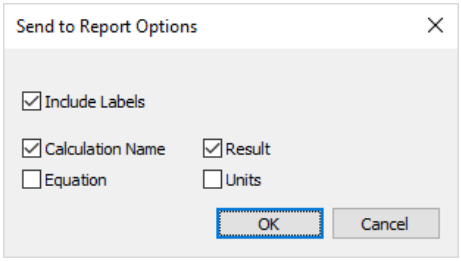
Move Up: Selecting this option moves the selected item up one row in the list, if more than one item is selected, they move together in order.

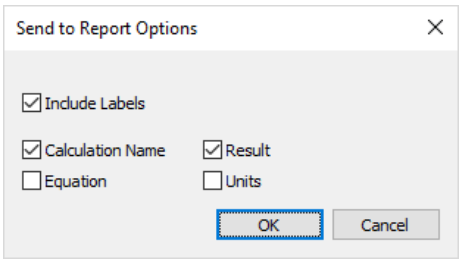
Move Down: Selecting this option moves the selected item down one row in the list, if more than one item is selected, they move together in order.

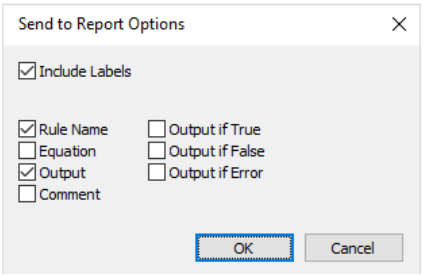
Move To Bottom: Selecting this option moves the selected item to the bottom of the list, if more than one item is selected, they move together in order, the last selected item will be the bottom item in the list.

Send To Report: Sends the selected item(s) to a new page on the report.

Configure Send Options: Allows configuration of what fields will be sent to the report when the Send To Report button is pressed. The options displayed will depend on the selected current tab.

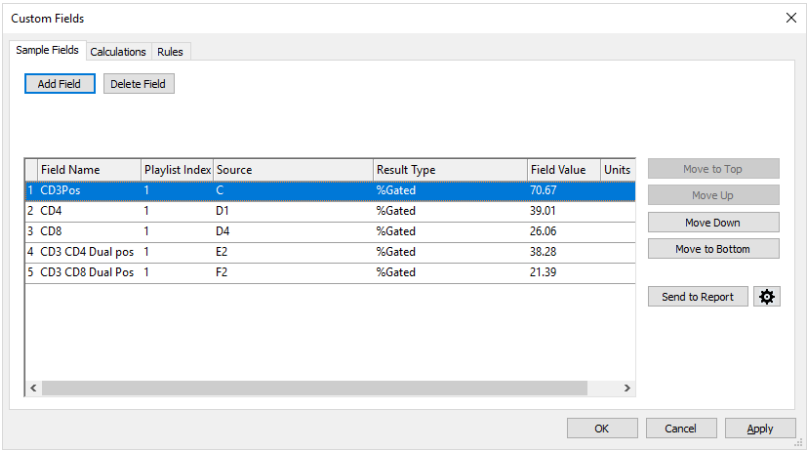






21.12.1 Sample Fields Tab

The sample Fields tab allows you to specify items of interest that can then also be used in calculations or rules.



The **Add Field** button adds a new line to the sample field table.
The **Delete Field** button removes selected line(s).

For each line in the sample field table the following columns are displayed.

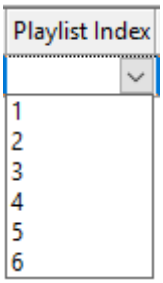
Line Number
Each new line is given the next available number in sequence

Field Name
Each new field added is assigned a default name which can be changed. Any name must be unique across all tabs of the dialog.

Click on the name to edit the name.

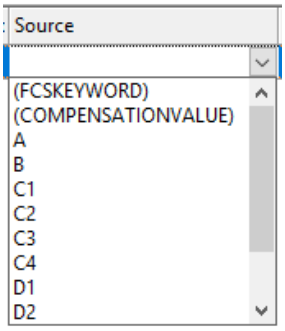
Playlist Index
This is a dropdown list from which you can pick the file that contains the item of interest.

Click on the field then pick the required item from the list. If you have a long playlist you may need to scroll down to reach the number you are after.



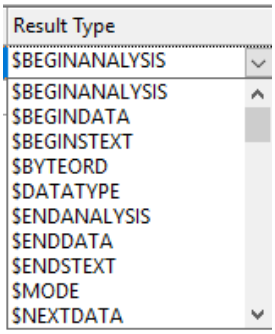
Source
The Source list allows you to select an **FCS** keyword, a compensation value or a region.

Click on the field then select **(FCSKEYWORD)** if an FCS keyword is required, select **(COMPENSATIONVALUE)** if a compensation value is required or select the region name which contains a result of interest.

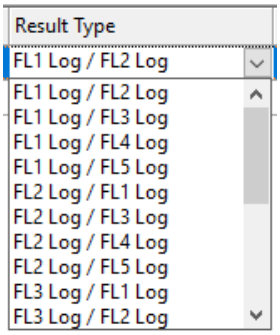


Result Type

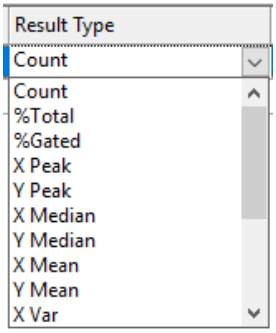
The Result Type column will display different options depending on which Source type is selected. If FCS keyword is the source, then the Result Type displays a list of the FCS keywords present in the selected file. Select the required keyword.



If Compensation Value is the source, the result column will display a list of all available compensation combinations present in the FCS file. Select the required combination.

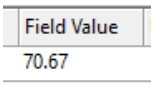


If a region is selected as the source the result column will display a list of all available results. Select the required result.



Field Value

This shows the current value of the specified custom field.



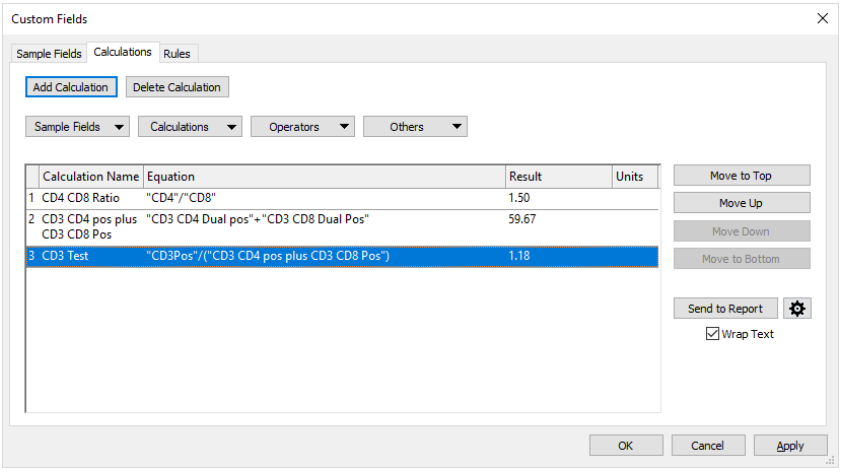
Units

This is a text field into which any text can optionally be entered to indicate the units of the specified field.



21.12.2 Calculations Tab

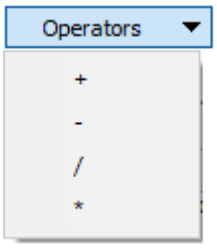
The Calculations tab allows you to create calculations from sample fields that can be used in other calculations or rules.



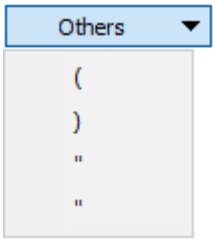
The **Add Calculation** button adds a new line to the calculation table.
The **Delete Calculation** button removes selected line(s).

The tab contains a series of drop-down lists that allow you to pick items from the list when creating an equation

Sample Fields: Lists the currently available Sample Fields
Calculations: Lists the currently available Calculations
Operators: Lists the Operators that can be used in calculation



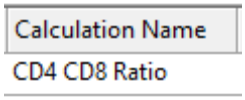
Others: Lists additional characters used in creation of calculations parenthesis, and quotation marks.



For each line in the calculations table the following columns are displayed.

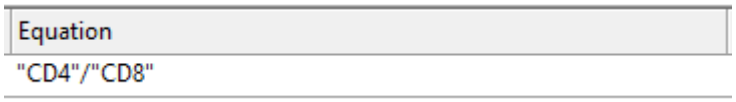
Line Number
Each new line is given the next available number in sequence

Calculation Name
Each new calculation added is assigned a default name which can be changed. Any name must be unique across all tabs of the dialog.



Click on the name to edit the name.

Equation
The equation field is used to create the required calculation



Click in the equation fields to manually edit or pick from the available options in the drop-down lists.

An Equation can contain a custom field name or another calculation name, this field name must be within double quotation marks. If you pick a custom field or calculation from the drop-down lists the quotation marks are added automatically.

Parenthesis can be used in calculations to ensure the correct order of evaluation.

The correct syntax of example of calculations are:

“customfield1” / “customfield2”

“customfield1” / 2

“customfield1” / (“customfield2” + “customfield3”)

Result

This shows the current value of the specified calculation.



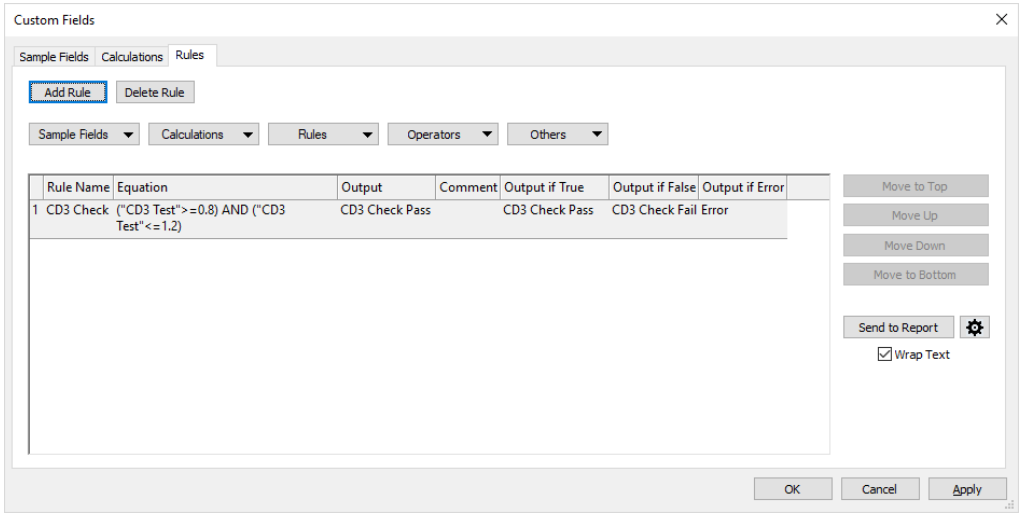
Units

This is a text field into which any text can optionally be entered to indicate the units of the specified field.



21.12.3 Rules Tab

The Rules tab allows you to create rules based on Sample Fields, Calculations or other Rules.



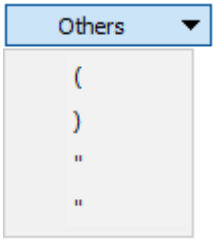
The **Add Rule** button adds a new line to the rule table.
The **Delete Rule** button removes selected line(s).

The tab contains a series of drop-down lists that allow you to pick items from the list when creating a rule

Sample Fields: Lists the currently available Sample Fields
Calculations: Lists the currently available Calculations
Rules: Lists the currently available Rules
Operators: Lists the Operators that can be used in calculation



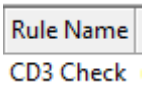
Others: Lists additional characters used in creation of calculations parenthesis, and quotation marks.



For each line in the calculations table the following columns are displayed.

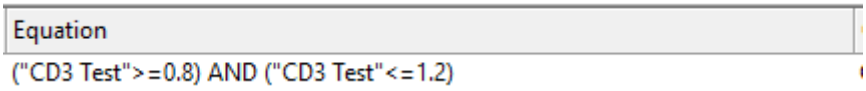
Line Number
Each new line is given the next available number in sequence

Rule Name
Each new rule added is assigned a default name which can be changed. Any name must be unique across all tabs of the dialog.



Click on the name to edit the name.

Equation
The equation field is used to create the required rule



Click in the equation fields to manually edit or pick from the available options in the drop-down lists.

An equation can contain a custom field name, calculation name or another rule name, this field name must be within double quotation marks. If you pick a custom field, calculation or rule from the drop-down lists the quotation marks are added automatically.

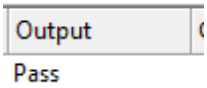
Parenthesis can be used in calculations to ensure the correct order of evaluation.

The correct syntax of example of rules are:

“calculation1” > 5
“calculation2” < “calculation3”
(“calculation1” >2.5) AND (“calculation1” <10)

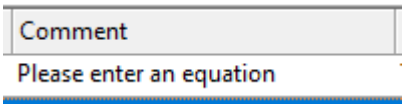
Output

This shows the output of the rule.

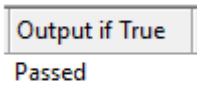


Comment

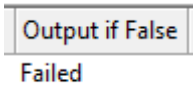
If you enter a blank or an invalid equation a warning will be displayed here



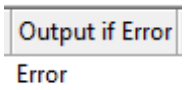
Output if True
This is a text field that contains the text to display if the rule conditions are met.



Output if False
This is a text field that contains the text to display if the rule conditions are not met.



Output if Error
This is a text field that contains the text to display if the rule conditions are in error, for example, if a value is out of range or not available.



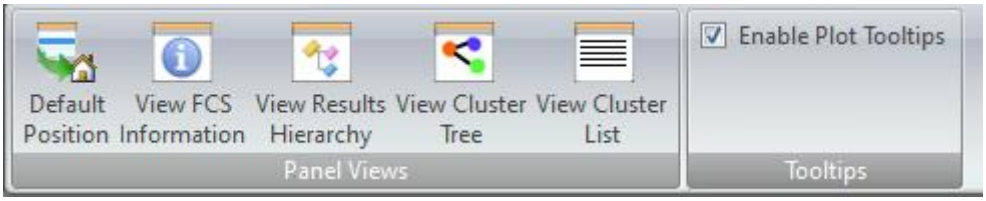
Section 22

Views Tab

Panel View Group

22 Views Tab

The **Views** tab of the **Ribbon** contains controls that allow you to display, hide or reset the position of the **FCS Information**, **Results Hierarchy, Cluster Tree, Cluster List** and **Playlist panels.**



22.1 Panel Views Group



22.1.1 Default Position Button

Selecting this button resets the default state and position of the **Playlist**, **FCS Information, Results Hierarchy, Cluster Tree and Cluster List** panels.

22.1.2 View FCS Information

This is a toggle button, when enabled the **View FCS Information** panel is displayed

22.1.3 View Results Hierarchy

This is a toggle button, when enabled the **Results Hierarchy Information** panel is displayed

22.1.4 Cluster Tree

This is a toggle button, when enabled the **Cluster Tree** panel is displayed

22.1.5 Cluster List

This is a toggle button, when enabled the **Cluster List** panel is displayed.

22.2 Tooltips

22.2.1 Enable Plot Tooltips

Unchecking this option prevents the display of tooltips within the Pots area of the workspace.

Section 24

VenturiOne Discovery

Cluster Settings
Tree Layout
Cluster Groups
Backgate Clusters

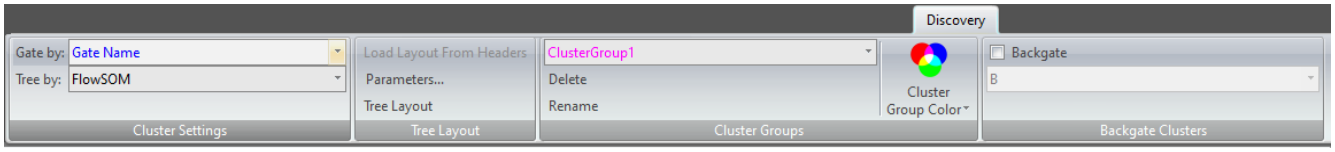
23 Discovery Tab

The **Discovery** tab of the **Ribbon** contains controls that allow you to pick a cluster parameter to display in the **Cluster Tree** display, pick a gate for the Cluster Tree display, control the tree layout, create **Cluster Groups** for display on the Cluster Tree and track populations from a gate on the standard plots on to the Cluster Tree by selecting a **Backgate.**

In order to function correctly the FCS files must contain an embedded cluster parameter (such as FlowSOM).

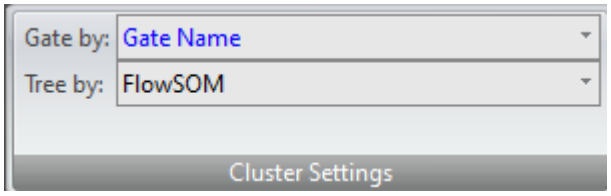
If your file does not contain such cluster parameters, you can create them using the Applied Cytometry CytoSwarm application.

For details of the CytoSwarm application see https://www.appliedcytometry.com/software/cytoswarm/



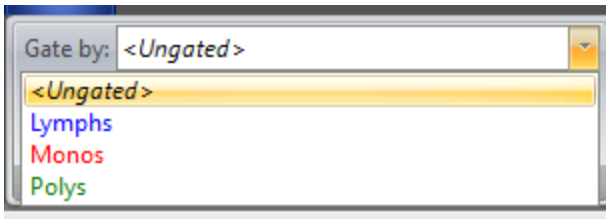
23.1 Cluster Settings

The Cluster Settings allow selection of the gating of the Cluster Tree plot and the Parameter to be used for display on the Cluster Tree plot.



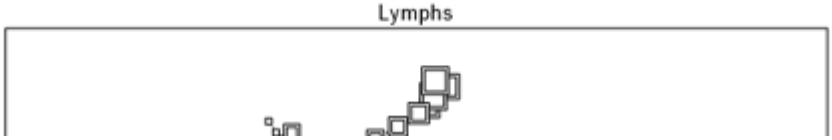
23.1.1 Gate by

This option is enabled when a cluster parameter has been selected in the **Tree by** control. Here you can select a gate from the current workspace to gate the **Cluster Tree**.

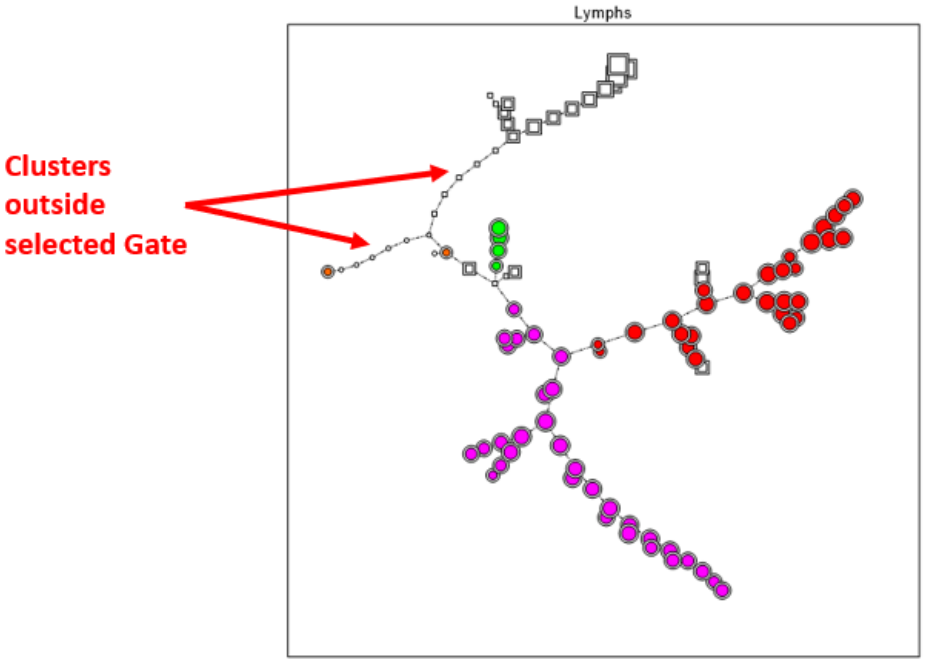


Select the **<ungated>** option to remove any gating from the Cluster Tree.

The name of the selected gate appears in the title of the cluster plot



Clusters not in the selected gate appear as small uncolored squares.

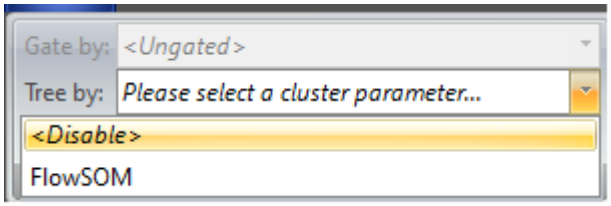


23.1.2 Tree by

This is a drop-down list of potential Cluster parameters. The list may contain non cluster parameters as these cannot be automatically detected.

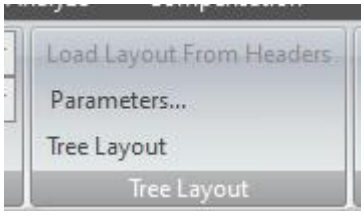
Select a suitable cluster parameter (such as FlowSOM) from the list.

If no cluster parameters are listed the FCS file does not contain a recognized cluster parameter.



The selected cluster parameter will be displayed in the Cluster Tree plot.

23.2 Tree Layout



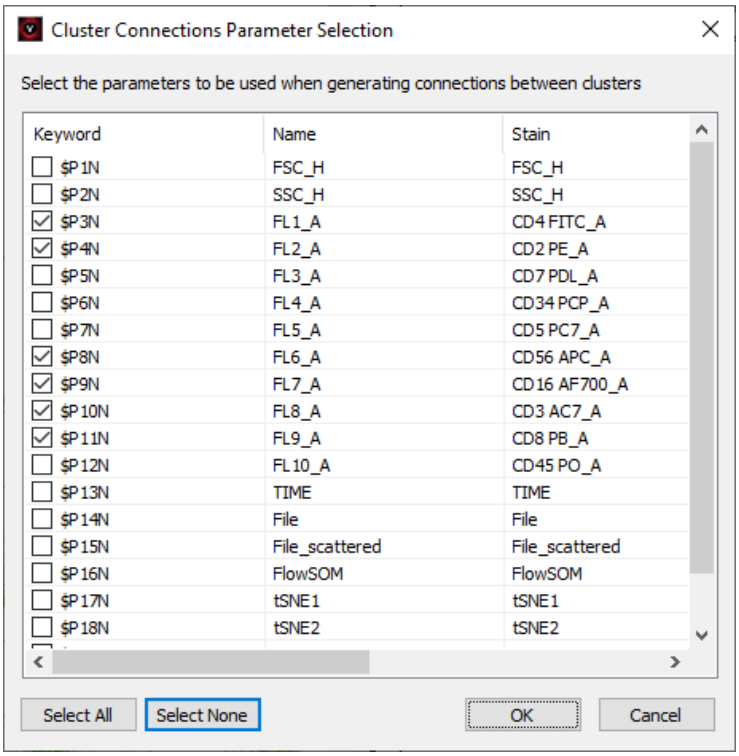
23.2.1 Load Layout From Headers

Depending on the algorithm used, the FCS file may contain the cluster information and associated cluster links that can be used to recreate the algorithm calculated cluster tree.

If this information is present in FCS header, the **Load Layout From Headers** will be enabled. If any modifications to the tree layout are made pressing the **Load Layout From Headers** button will reload the layout from the FCS file header.

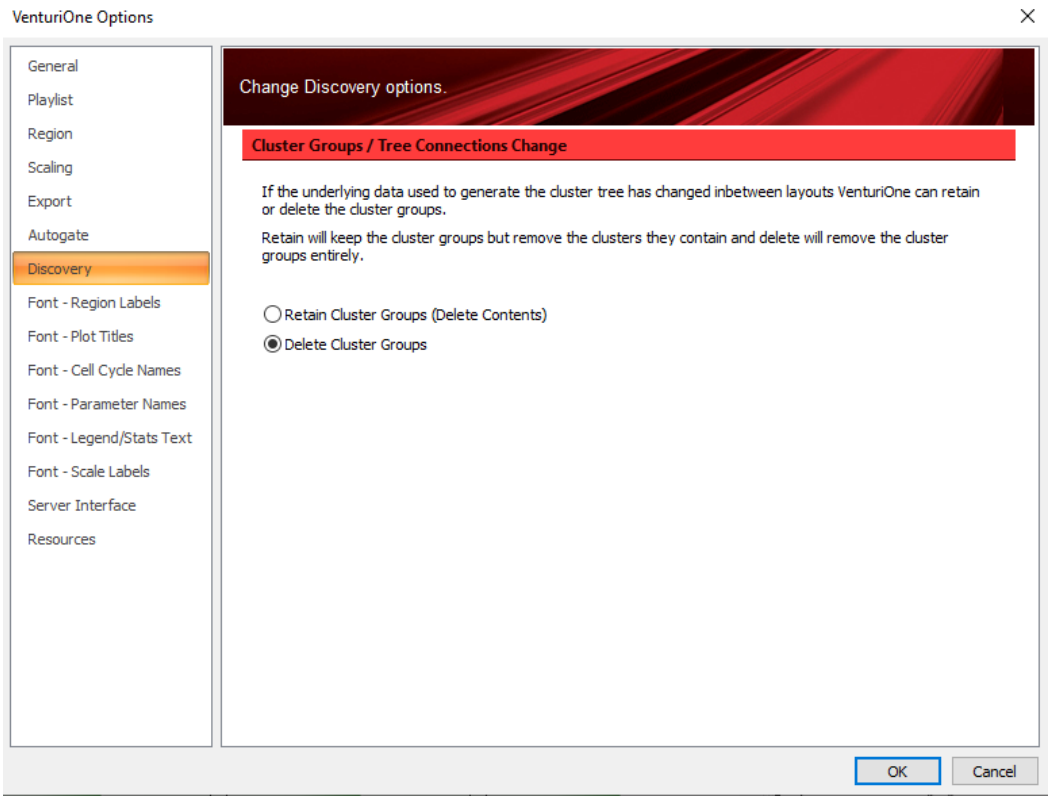
23.2.2 Parameters…

If the FCS header of the current file does not contain layout information the Cluster Tree layout will be calculated by VenturiOne. This dialog allows you to select which parameters will be used to generate the link between clusters.



The median for each cluster is compared on each of the selected parameters to generate the minimum spanning tree for display.

In the VenturiOne options you can select to retain or delete any defined cluster groups when recalculating the Cluster links. By default, cluster groups will be retained but the clusters associated with the group will be reset.

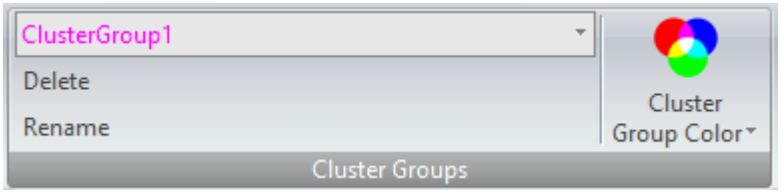


23.2.3 Tree Layout

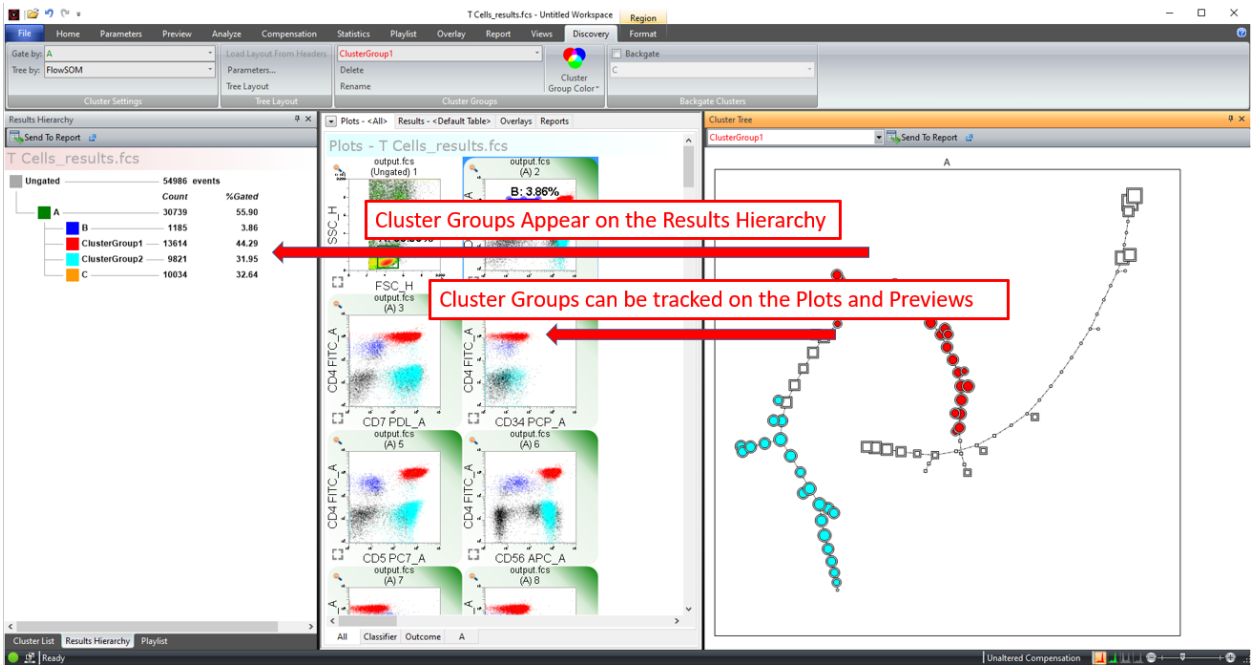
Pressing this button will create a new Cluster Tree based on the currently available clusters and cluster links. It creates a new layout for the existing information, all cluster groups and the selection of clusters associated with a group will be retained.

23.3 Cluster Groups

Cluster Groups can be created and modified using options in the Cluster Groups section of the Discovery tab.

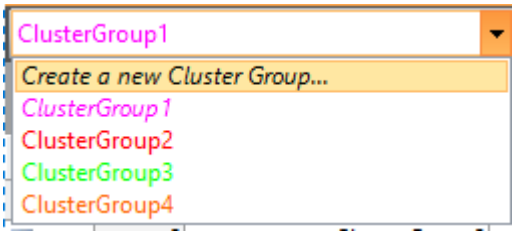


Cluster Groups can be tracked by color or by gating using plots and Previews, Cluster Group statistics are displayed in the Results Hierarchy and the Results tab of the workspace



23.3.1 Cluster Group Creation

The Cluster Group drop down list allows you to select a cluster group to view or modify. Alternatively click the **Create a new Cluster Group** option to create a new cluster group.



Clicking on a cluster within the cluster tree display adds that cluster to the currently selected cluster group. Clicking on an already assigned cluster will remove the cluster from any cluster group.

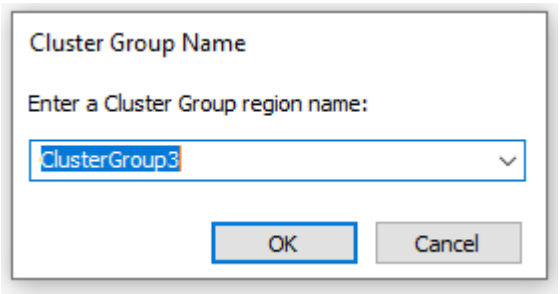
This option will be disabled when the Cluster Plot is in back gating mode. See section 23.4

23.3.2 Delete

Click the delete button to delete the currently selected cluster group.

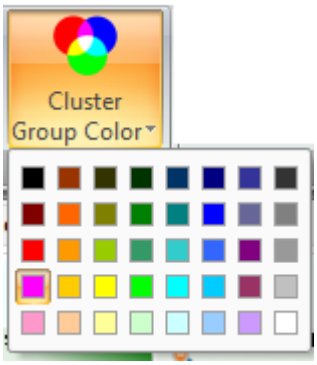
23.3.3 Rename

Click this button to open the edit cluster name dialog, allowing to rename the selected cluster.



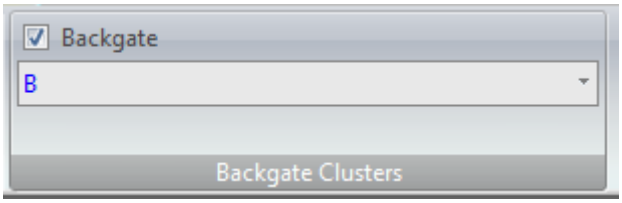
23.3.4 Cluster Group Color

Click this button to open the color picker dialog, allowing to select a new color for the selected cluster.

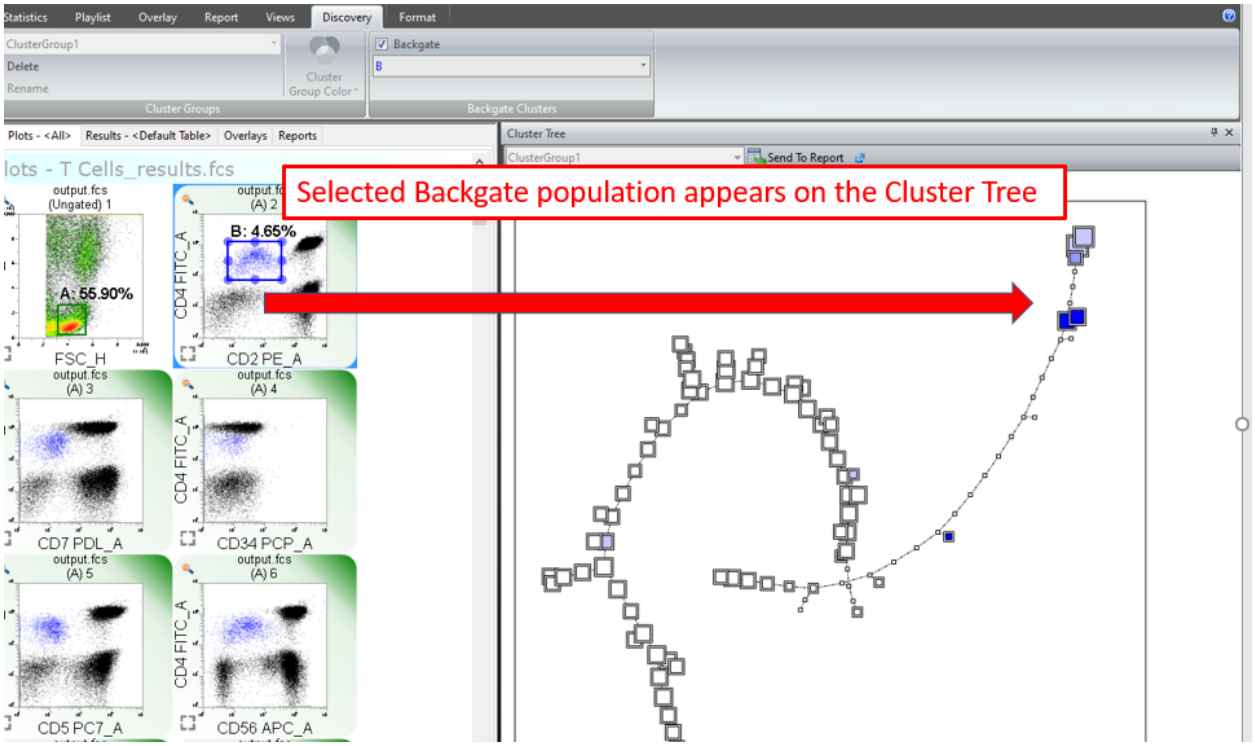


23.4 Backgate Clusters

The Backgate option allows you to select a population from the plots area to display on the cluster tree.



Select the backgate checkbox to enter backgate mode and select a gate from the dropdown list to display events within that gate on the cluster list. Only one gate can be displayed at a time.



VENTURIONE

Section 24

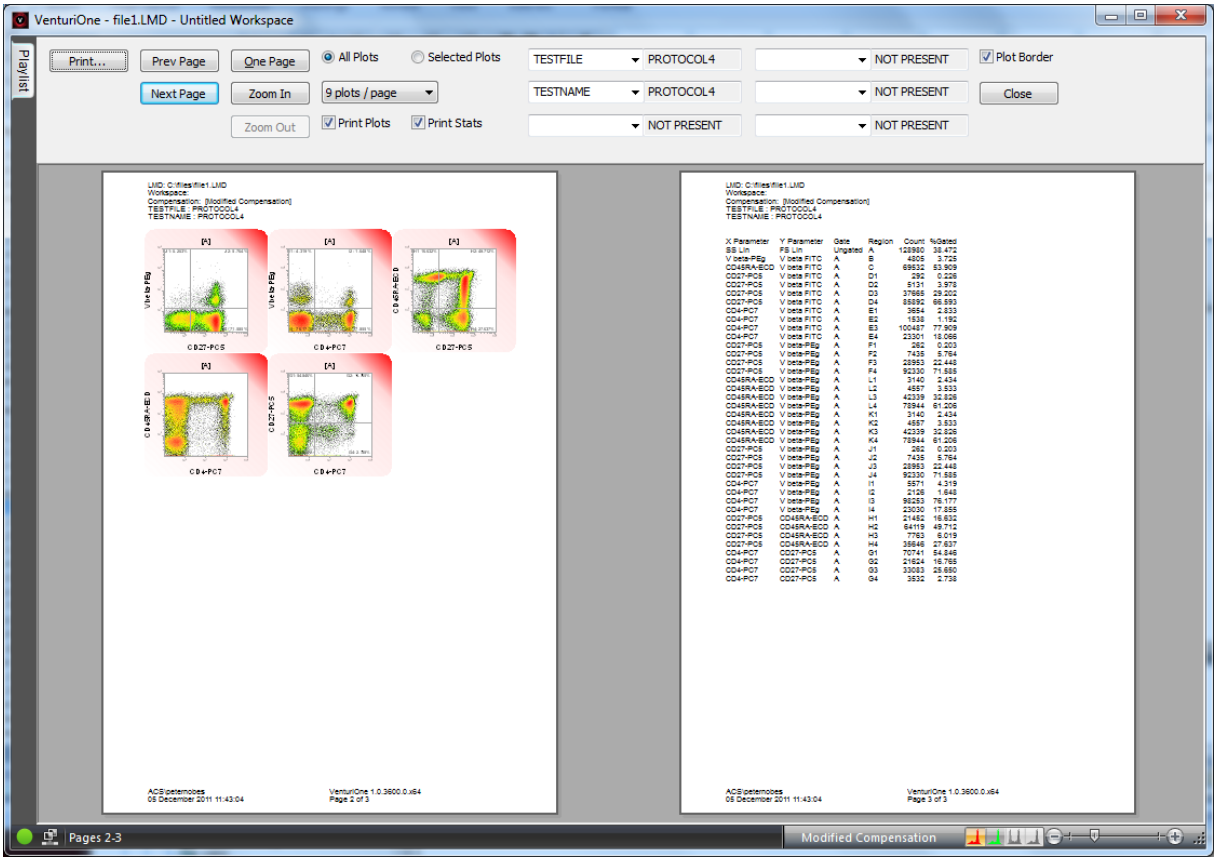
Print Options

Print Preview
Print
Print Setup

24 Print Options

24.1 Print Preview

The **Print Preview** display allows the user to preview how the plots and statistics will be printed. To switch to **Print Preview** select the **Print Preview** option from the **File Menu** (see 4.4.2):



By default, page 1 is shown.

The available **Print Preview** options depend on the **View mode** selected in the **Analyze** tab (**Gallery** or **Hierarchy**)

For **Gallery** view the **Print Preview** tab is illustrated below:



For **Hierarchy** view the **Print Preview** tab is illustrated below:



24.1.1 Print

Click the **Print** button to display the **Print** dialog described in section 24.2.

24.1.2 Page Selection

If multiple pages are displayed in the **Print Preview**, use the **Next Page** and **Prev Page** buttons, to select a specific page.

You can use the **One Page** and **Two Pages** buttons to select the number of pages displayed on the **Print Preview**.

24.1.3 Zoom In/Out Facility

A zoom-in/out facility exists for the **Print Preview** pages. Click the **Zoom In** and **Zoom Out** buttons to magnify and reduce the page size accordingly.

Three levels of magnification are available.

You can also cycle through the available magnification levels by clicking on the preview window when the magnifying glass cursor  is displayed.

24.1.4 Select Plots to Print

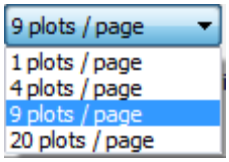
By default, all the plots displayed in the **Plots** area are present in the **Print Preview** and the **All Plots** option is selected. To display only those plots that are highlighted in the **Plots** area of the **Workspace** choose the **Selected Plots** option.

If **Hierarchy** mode is selected in the **Analyze** tab these options are not available and all plots are always selected for printing.

24.1.5 Number of Plots per Page

If **Gallery** mode is selected in the **Analyze** tab you can select the number of plots to print on each page.

To do this open the drop-down list and select the required option:



This determines the number and size of plots and their layout on the page.

This option is not available when **Hierarchy** mode is selected in the **Analyze** tab.

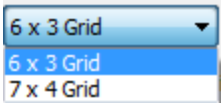
24.1.6 Hierarchy Mode Display Grid Selection

If **Hierarchy** mode is selected in the **Analyze** tab you can select the grid size for optimal printing of the **Hierarchy** view. The options available will differ between **Portrait** and **Landscape** page formatting.

For **Portrait** format the choices are as follows:



For **Landscape** format the choices are as follows:



See section 24.1.10 for details on printing when **Hierarchy** mode is selected.

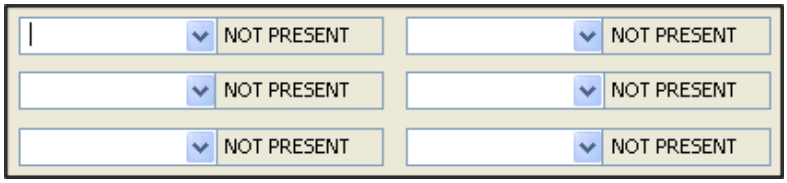
24.1.7 Print Plots and Statistics

You can select to print only plots or only statistics by selecting only the **Print Plots** or **Print Stats** options.

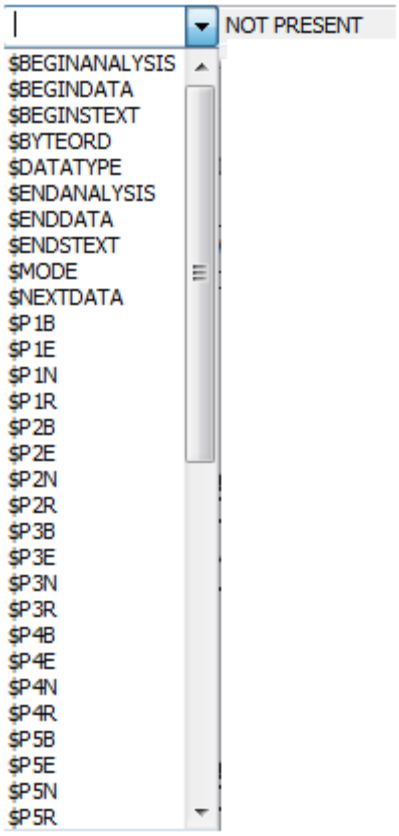
By default, both options are selected. The plots are printed first, and the statistics are printed after the final plot.

24.1.8 Insert FCS Keyword Headers

Up to six FCS keywords can be included for printing of each page. Select from the options displayed in the drop-down lists:



Click a drop-down arrow to display the list of available FCS keywords, as illustrated below:



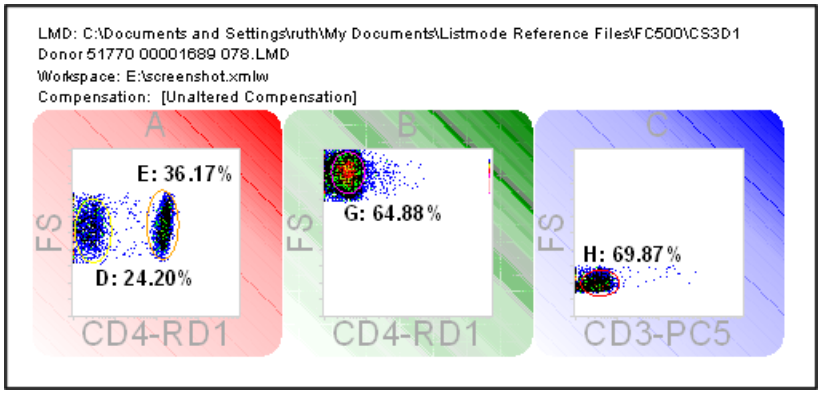
You can also type the desired keyword into the edit field.

If the selected FCS keyword is not present in the FCS file, **NOT PRESENT** will be displayed.

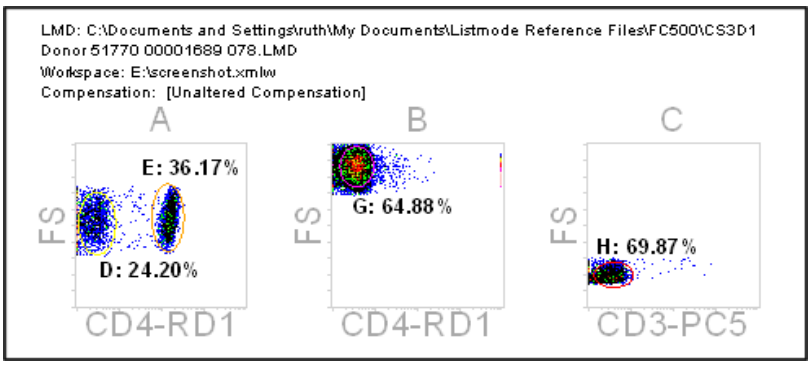
24.1.9 Print Plot Borders

The borders surrounding gated plots are colored according to the assigned gate color. If you do not wish to print the colored border, uncheck the **Plot Border** option.

Example of plots printed with border:



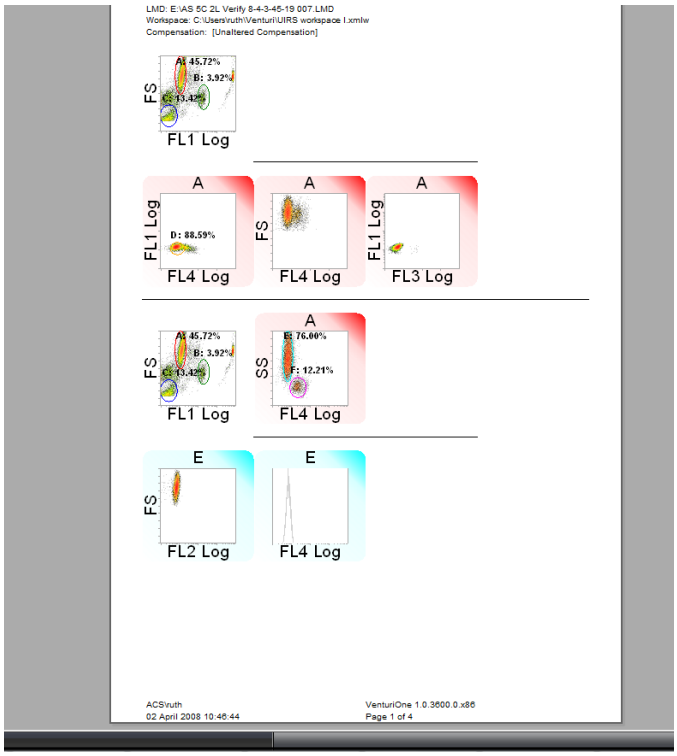
Example of plot printed without border:



24.1.10 Print Hierarchy View

When plots are in **Hierarchy** view the printout of the plots indicates the layout of the plots in the hierarchy.

The **Parent** and **Child** plots of the **Hierarchy** are separated by a half-width divider line and the new branches of the **Hierarchy** are represented by full-width divider lines as illustrated in the following example:

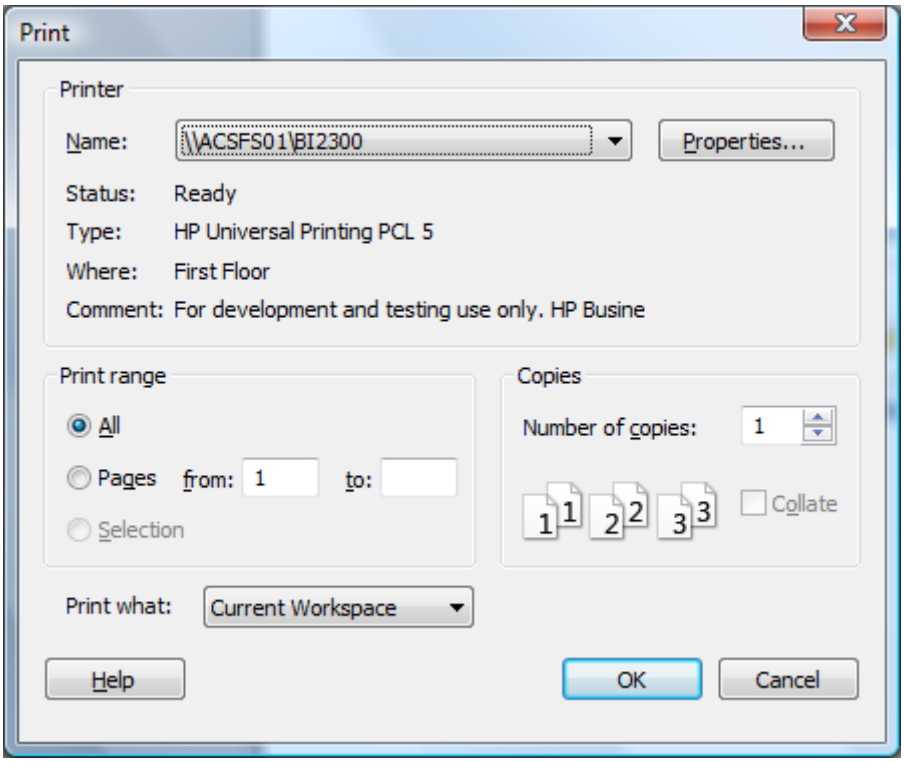


Rules of the Printing Strategy

- The software always tries to print the Parent and Child plots on the same page.
- If there are too many plots to fit on one page, the software wraps the data onto the subsequent page. The Parent headers are displayed on the top of each printed page.
- If there are too many Parent plots to fit onto one page the software wraps the parent plots onto additional pages as required. Child plots are displayed after the parent plots. In this case parent plots are not reprinted on each page of child plots.

24.2 Print

To print plots, statistics or reports use the **Print** option on the **File Menu** (see section 4.4.1)



From this dialog you can select the printer to use for the printout and through the **Properties** button you can access the properties for the selected printer.

The **Print range** options on the dialog allow you to select the range of pages to be printed and the **Copies** option allows you to specify how many copies will be printed.

The selections in the **Print what** drop-down list allow you to select whether to print the plots and statistics for the current workspace, print the current report only or all reports when using group reports.

24.2.1 Print Current Workspace

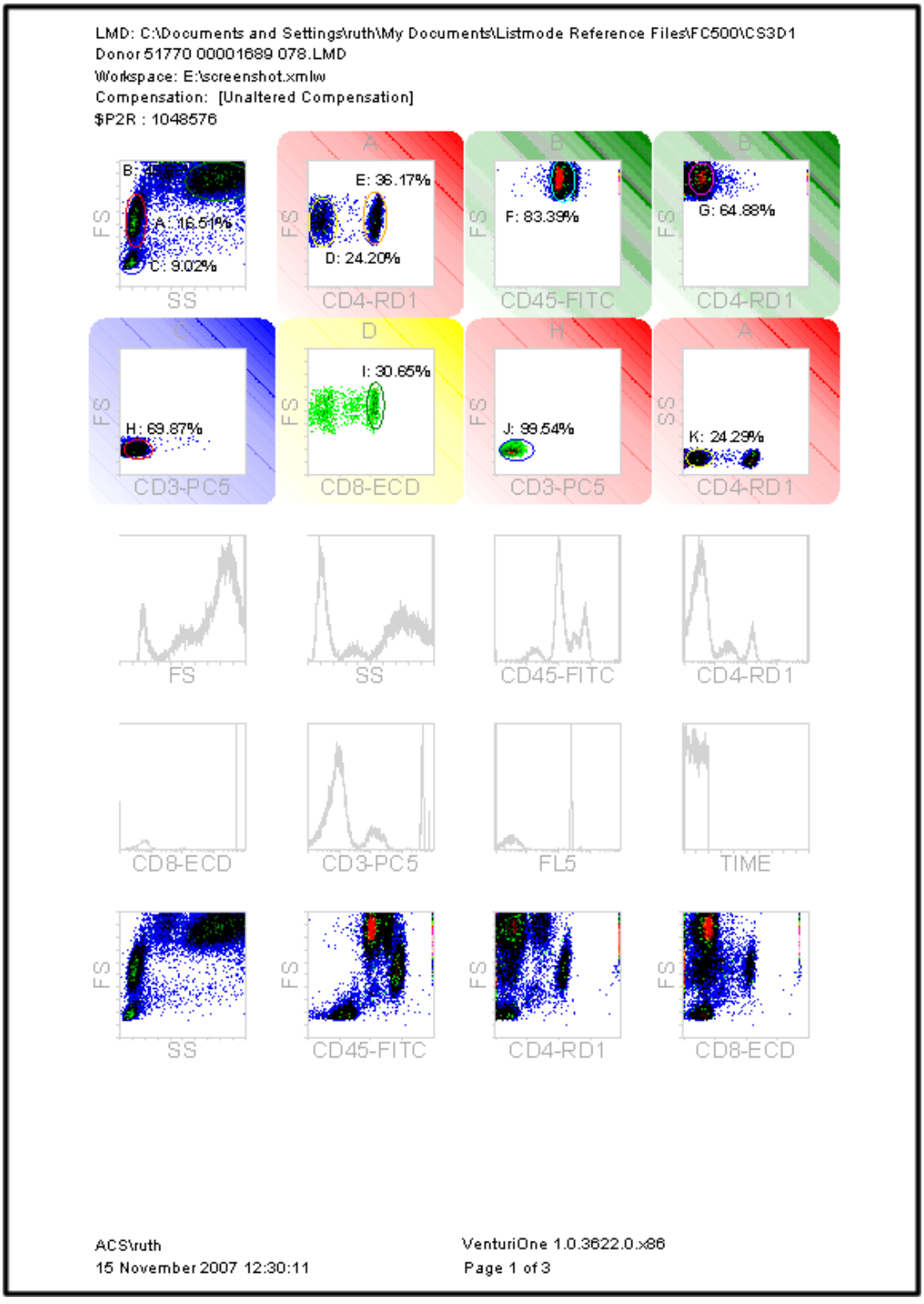
If **Current Workspace** is selected in the **Print** dialog the plots and statistics are printed according to the options selected in the Print Preview.

Each page of the printout contains header and footer information.

The page header contains the FCS file name, the current **Workspace** name, the compensation file status and any FCS Header information specified from the **Print Preview** screen.

The page footer contains the current Windows username, VenturiOne software version, the time printing was initiated and the page number.

Plots are printed before the statistics and are formatted according to the selection made in the Print Preview screen. An example of the plot printout is shown below:



If the option to **Print Stats** has been selected in the **Print Preview** screen, results from the current file are printed after any plots. Only the columns displayed in the results table are printed, as shown below:

LMD: C:\Venturi test files\AS 5C 2L Verify 8-4-3-45-19 007.LMD
Workspace:
Compensation: [Unaltered Compensation]

Gate	Region	Count	%Gated
Ungated	A	4970	18.18
A	B1	1248	25.11
A	B2	8	0.16
A	B3	1427	28.71
A	B4	2287	46.02
A	C1	184	3.70
A	C2	1180	23.74
A	C3	1125	22.64
A	C4	2481	49.92

If all the columns cannot fit on one printed page a warning message is displayed, and the printout is truncated. In this case you should adjust the page size the page orientation or reduce the number of statistics chosen for printing.

If the statistics have been grouped within the results table, the group column header is printed on a single line positioned above each group as illustrated below:

Region: A										
X Param	Y Param	Gate	% Total	% Gated	X Median	Y Median	X Mean	Y Mean	X HP-CV	Y HP-CV
SS	FS	Ungated	20.52	20.52	683.00	539.00	630.19	535.21	5.76	5.59
SS	FS	Ungated	12.89	12.89	135.00	293.00	135.73	299.36	18.29	9.34
Region: B										
X Param	Y Param	Gate	% Total	% Gated	X Median	Y Median	X Mean	Y Mean	X HP-CV	Y HP-CV
SS	FS	Ungated	18.90	18.90	147.00	293.00	150.67	285.74	21.38	8.75
SS	FS	Ungated	55.11	55.11	865.00	578.00	849.57	577.26	0.00	7.41
Region: C										
X Param	Y Param	Gate	% Total	% Gated	X Median	Y Median	X Mean	Y Mean	X HP-CV	Y HP-CV
V beta FITC	FS	A	1.69	8.22	1.00	494.00	1.59	502.25	6.57	0.57
SS	FS	Ungated	15.12	15.12	151.00	300.00	154.58	302.26	19.84	8.58
Region: D										
X Param	Y Param	Gate	% Total	% Gated	X Median	Y Median	X Mean	Y Mean	X HP-CV	Y HP-CV
CD45RA-ECD	SS	Ungated	0.00	0.00	2.00	768.00	2.24	781.00	0.00	0.00
SS	FS	Ungated	21.82	21.82	815.00	583.00	812.29	587.01	7.67	5.48
Region: E										
X Param	Y Param	Gate	% Total	% Gated	X Median	Y Median	X Mean	Y Mean	X HP-CV	Y HP-CV
CD45RA-ECD	SS	Ungated	33.13	33.13	0.00	739.00	0.98	692.22	37.31	8.10

24.2.2 Print Reports

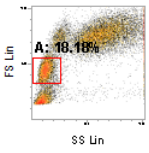
If you have a report created, the **Current Report** option in the **Print what** drop-down list prints the current report.

If you are using groups within the playlist selecting **All Group Reports** from the **Print what** drop-down list prints all reports for all groups in the playlist.

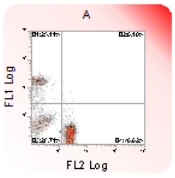
Any header and footer information requested in the report appears on each page.

Example Report Header



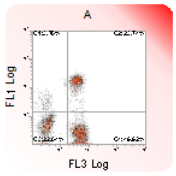


Region	Count	% Gated
A	4970	18.18

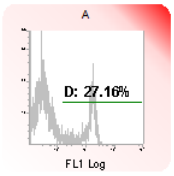


Region	Count	% Gated
B1	1248	25.11
B2	8	0.16
B3	1427	28.71
B4	2287	46.02

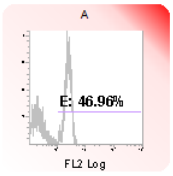
Date Created 29-Jun-03



Region	Count	% Gated
C1	184	3.70
C2	1180	23.74
C3	1125	22.64
C4	2481	49.92



Region	Count	% Gated
D	1350	27.16



Region	Count	% Gated
E	2334	46.96

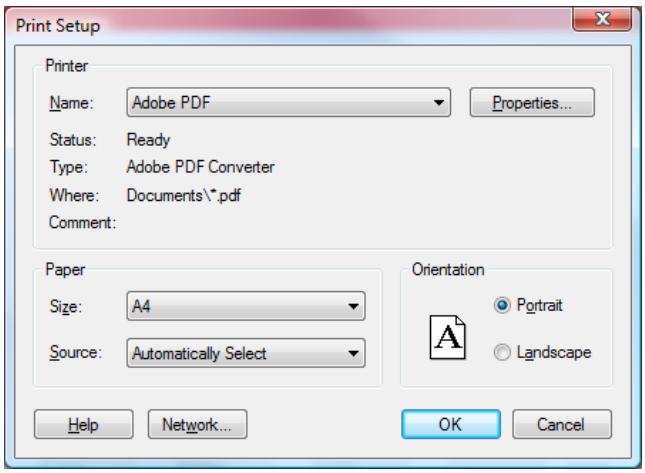
AS 5C 2L Verify 8-4-3-45-19 007.LMD

15 October 2009 12:16:03

Page 1 of 2

24.3 Print Setup

The **Print Setup dialog** is launched from the **Print Setup** option on the **File Menu** (see section 4.4.3):



This dialog allows you to select the required default setup for your printer. You can select which printer to use by default and the page formatting here.

Section 25

VenturiOne Options

VenturiOne Options Dialog

25 VenturiOne Options

In VenturiOne you can modify the default settings for many items within the VenturiOne Options dialog.

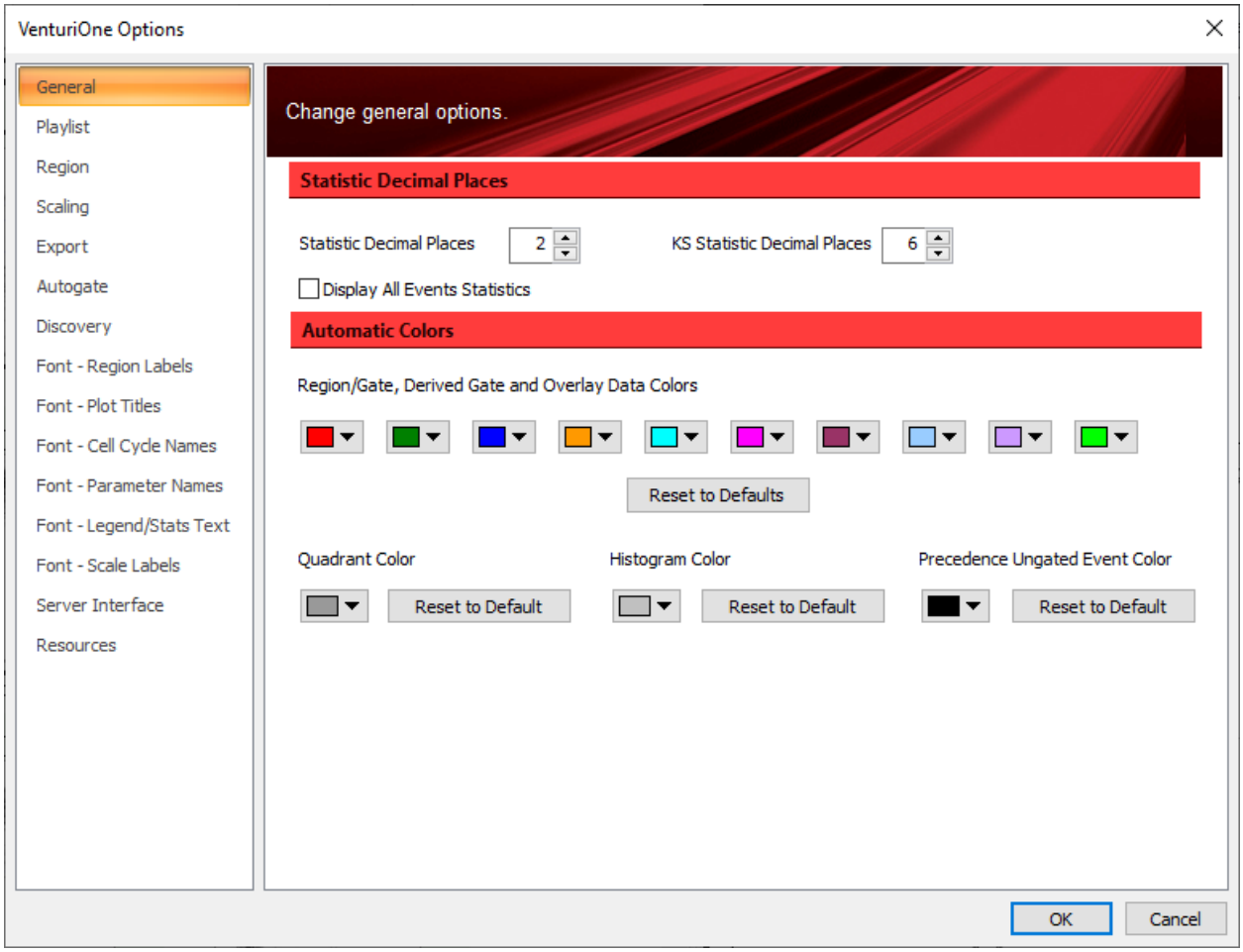
25.1 VenturiOne Options Dialog

The **VenturiOne Options** dialog allows you to set various default options for the software. It is launched from the **VenturiOne Options** button on the main menu; see section 4.8.

The **VenturiOne Options** dialog has several pages accessed by selecting the options in the list on the left of the dialog. The button for the currently selected page is highlighted in the list.

25.1.1 General Page

The **General** page of the **VenturiOne Options** dialog is displayed when the **General** option is selected:



On the **General** page you can specify how statistics displayed on plots are to be rounded and the default colors used for regions, gates, overlay plot histograms and Histogram plots.

25.1.1.1 Statistic Decimal Places

By default, all statistics displayed on the plots and results table are rounded up to 2 decimal places. To modify it type in a new value in the **Statistic Decimal Places** field. The acceptable range is between 0 and 10 decimal places.



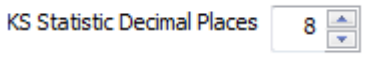
Or you can select a number using the arrows of the spin control.

25.1.1.2 KS Statistic Decimal Places

This control allows you to set the number of decimal places to which KS statistics displayed on Overlay gallery plots and results are rounded.

The default is 6 decimal places.

You can type in a new value in the KS Statistic Decimal Places field to modify. The acceptable range is between 0 and 10 decimal places.



25.1.1.3 Display “All Event” Statistics

With this option checked an “**All Events”** statistic is displayed in the results table for each gated plot. The “All Events” statistic can be identified by the fact that the region name in the results table is displayed in the following format:

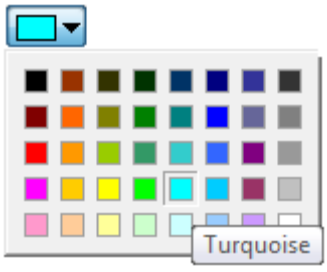
(gatename)<plot number> e.g. (A)2

25.1.1.4 Automatic Colors

The **Automatic Colors** group displays the ten-color index, this controls the default order in which colors are used when creating regions, gates and overlay plots.

To modify a color used in this default index, select a default color and choose a new color from the region color drop-down button. The color assigned to the existing regions is not changed.

An example of default region color modification is illustrated below:

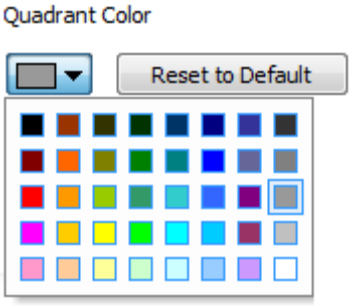


25.1.1.5 Reset to Default Button

Click the **Reset Default** button to return the region colors to their default settings.

25.1.1.6 Quadrant Color

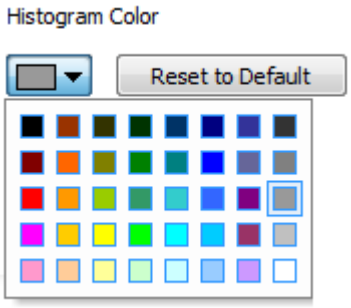
By default, the quadrant regions displayed in the **Plots** area are colored Gray-25%. You can change this default from the **Quadrant Color** drop-down list. A new default color can be selected from the color menu.



Click the **Reset to Default** button to return the default color to Gray-25%

25.1.1.7 Histogram Color

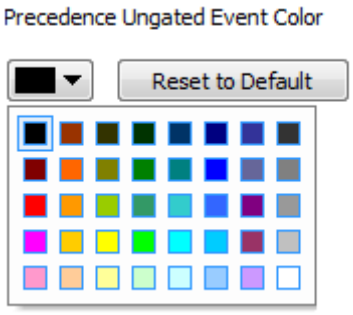
By default, the histograms displayed in the **Plots** area are colored Gray-25%. You can change this default from the **Default Histogram Color** drop-down list. A new default color can be selected from the color menu.



Click the **Reset to Default** button to return the default color to Gray-25%

25.1.1.8 Precedence Ungated Event Color

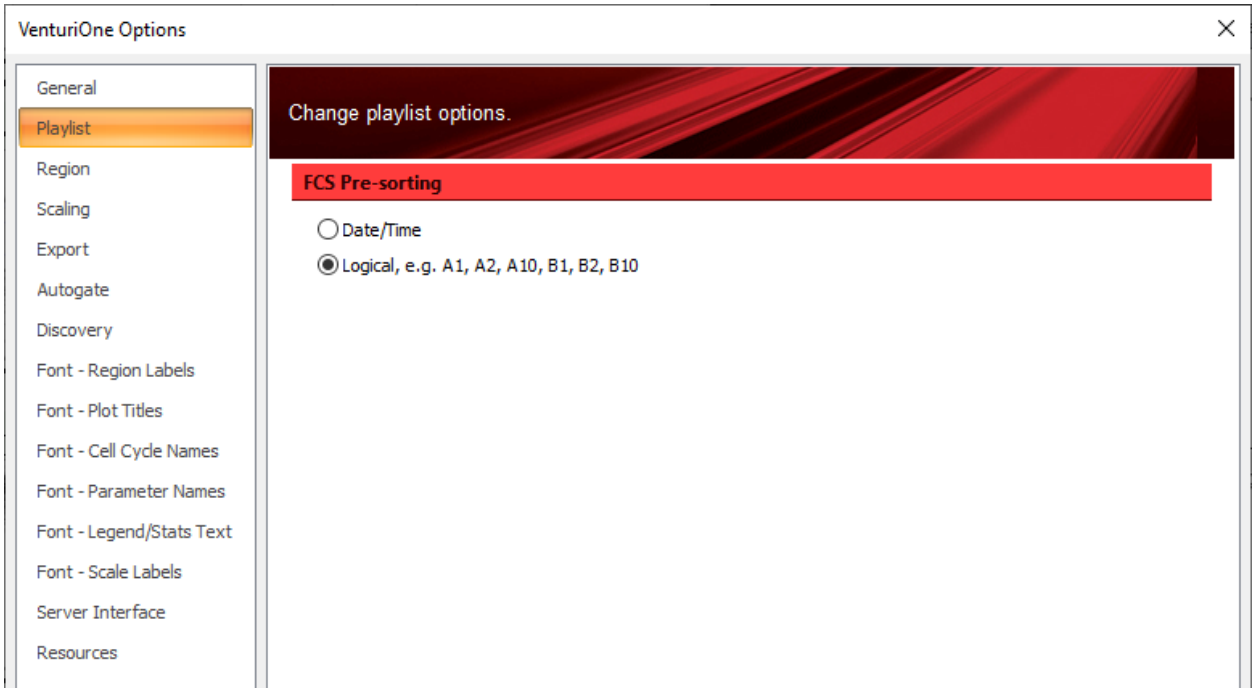
Change the default color for ungated events on precedence plots using this option. A new default color can be selected from the color menu, as illustrated below:



Click the **Reset to Default** button to return the default ungated color to black.

25.1.2 Playlist Page

When adding items to a playlist, the sorting options selected in the VenturiOne Options, Playlist page will control the order in which files are added.



The Listmode Pre-sorting group contains two mutually exclusive radio buttons called 'Date/Time' and 'Logical, e.g. A1, A2, A10, B1, B2, B10'.

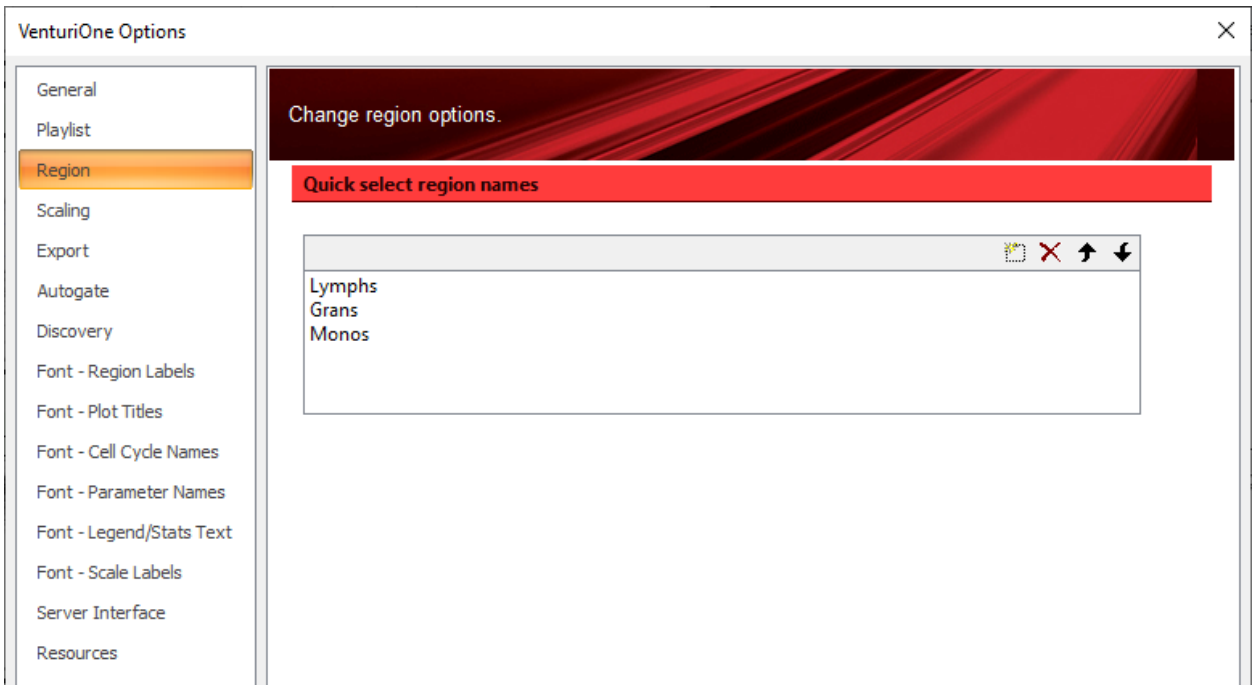
When the Date/Time radio button is selected and multiple Listmode files are being added to a Playlist at the same time, the new Listmode files are appended using a date/time sort order (ascending).

When the Logical radio button is selected and multiple Listmode files are being added to a Playlist, the new Listmode files are appended using a Logical sort order (ascending).

The Logical radio button is selected by default.

25.1.3 Region Page

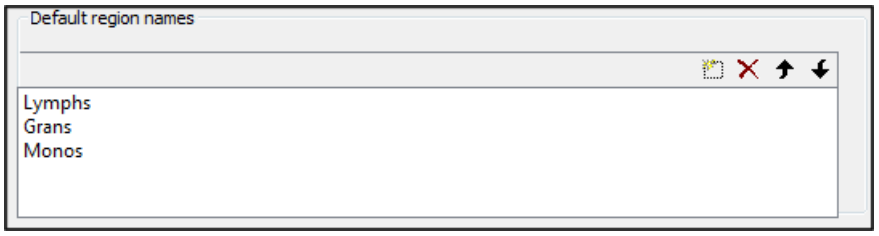
The **Region** page is displayed when the **Region** option is selected:



On the **Region** page you can specify the available default region names.

25.1.3.1 Default Region Names

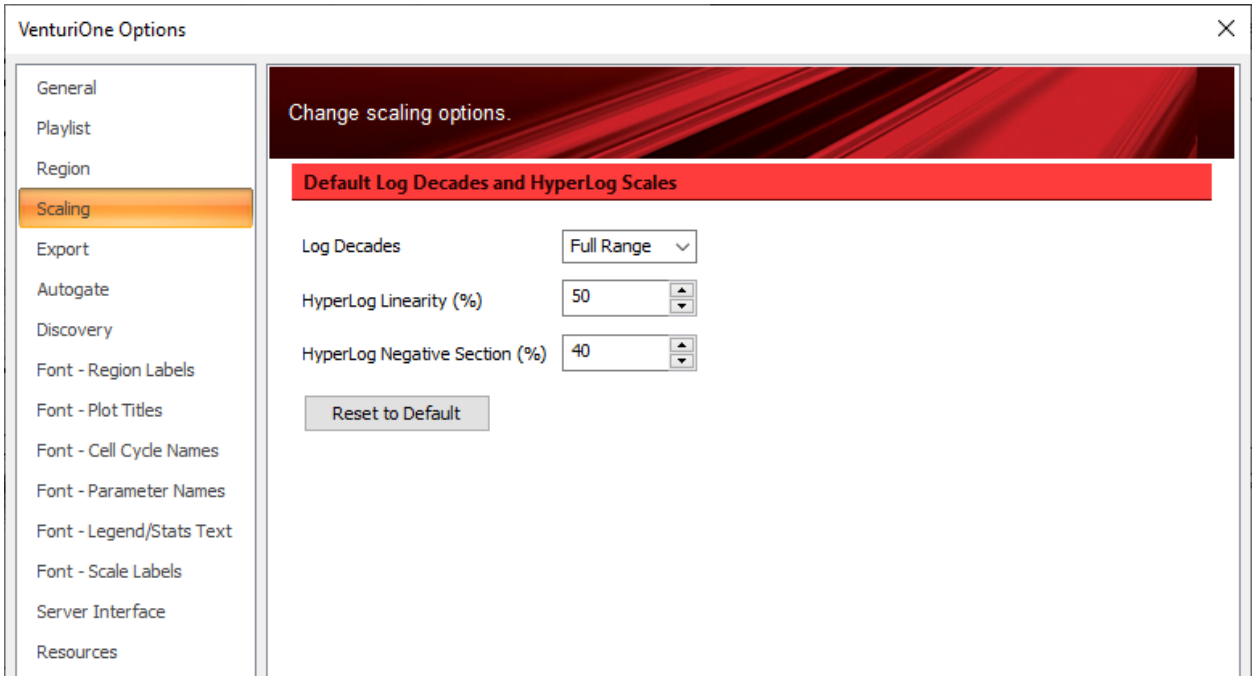
Region Names can be assigned to regions created in the Analysis tab. By default, the software offers three region names that can be designated to regions: Lymphs, Grans, Monos.



Double click on a default region name to edit. To add new region names, select the **New** button. To delete, select the name then press the **Delete** button. Regions can be re-ordered using the arrow buttons.

25.1.4 Scaling Page

The **Scaling** page is displayed when the **Scaling** option is selected:

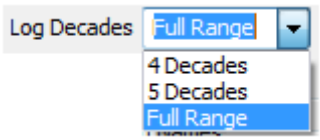


On the **Scaling** page you can specify the default options used for Log and HyperLog scaling. The setting here is used to set the default values for new workspaces, they have no effect on existing workspaces. To change the value in an existing workspace, use the settings found in the scaling properties dialog (10.6).

25.1.4.1 Log Decades

The value set here determines the number of decades shown when logarithmic data is displayed and is used for scaling all relevant plots and statistics.

The drop-down menu contains **4 Decades**, **5 Decades** and **Full Range** as illustrated below:



You can select a value from the list or type in a value.

When **Full Range** is selected the data for all Logarithmic scaled parameters in the Workspace defaults to the **Full Range** of data in the FCS file. This is the default selection.

The accepted range for Log Decades is between 0 and 10.00

The number that you enter here should match the number of decades provided by your instrument, if you enter a value that is higher than the maximum range in the FCS file, the data will be offset from its correct position on the scale.

The number of decades selection has no effect on low resolution files with less than 12bit data resolution.

25.1.4.2 HyperLog Linearity (%) and HyperLog Negative Section (%)

These options allow you to select the default values for scaling of HyperLog parameters. The accepted range is between 0 and 100%; values can be manually entered or adjusted using the spin controls.

The values entered here will be the default values displayed in the Default Scaling tab of the Scales Properties dialog (see section 10.6.1).

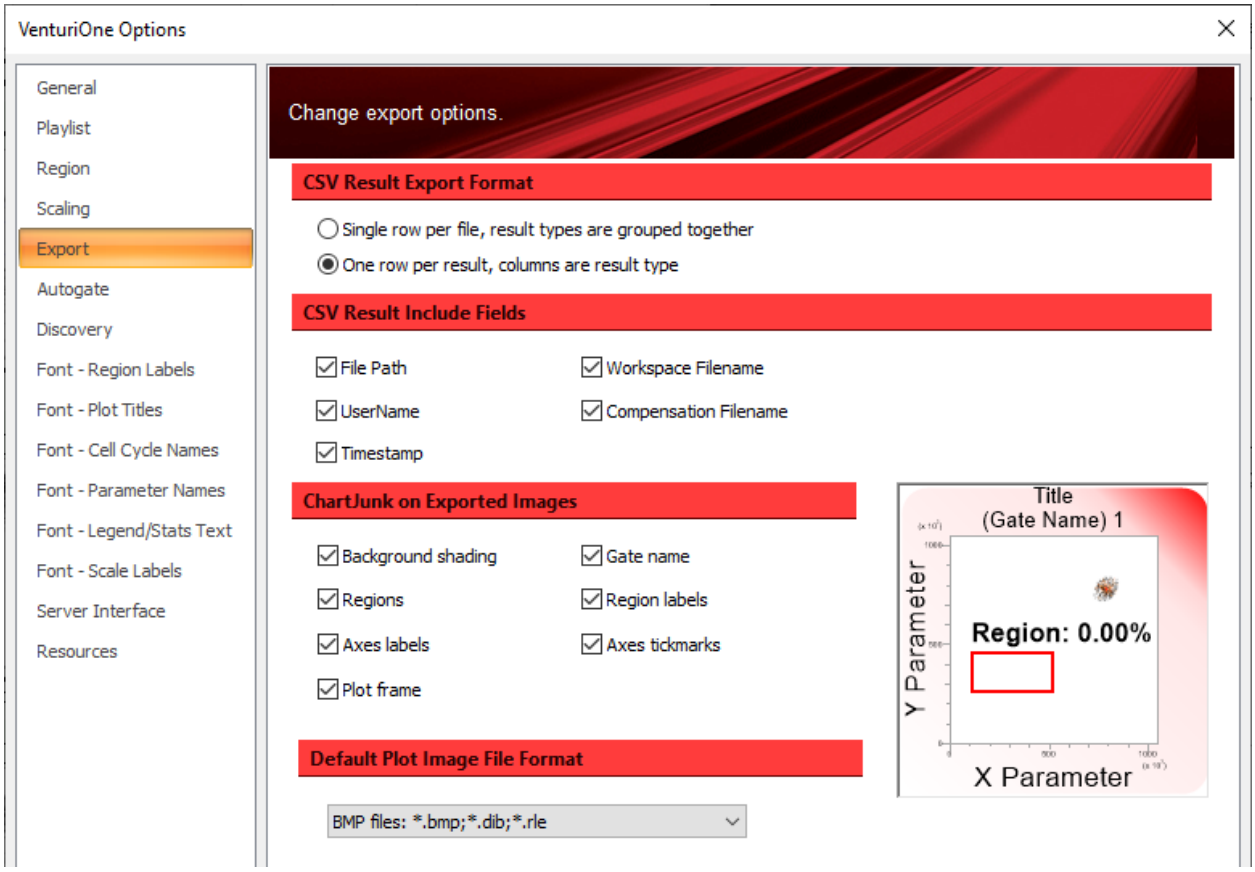
The **HyperLog** group is disabled for low resolution data (i.e. less than 12-bits).

25.1.4.3 Reset to Default Button

Click the **Reset to Default** button to return the scaling options to their default settings.

25.1.5 Export Page

The **Export** page is displayed when the **Export** option is selected:



On the **Export** page you can specify how results are to be exported to CSV files. You can also specify default options used when images are exported.

25.1.5.1 Result Export Format Group

The options in the **Result Export Format** group allow you to select the way in which data is exported to a CSV file.

Select the **Single row per file, result types are grouped together** option to display all the results from the results table, grouped together and exported in a single line. If multiple files are exported by selecting Export All Statistics to CSV, a new line is created for each file.

! When using Microsoft Excel 2003 the maximum number of columns is limited to 256, if the export format in VenturiOne is set to **Single row per file, result types are grouped together** it is possible to exceed this limit. In this case Excel 2003 will truncate the table at 256 columns. This issue does not occur with Excel 2007. If you need to generate tables with more than 256 columns you should upgrade to Excel 2007.

Select the **One row per result, columns are result type** option to display all the results from the results table, exported in the order they appear in the table.

25.1.5.2 CSV Result Include Fields

By default, the File Path, Username, Timestamp, Workspace Filename and Compensation Filename fields are exported to CSV file along with the results present in the results table. Deselect any items not required on the export.

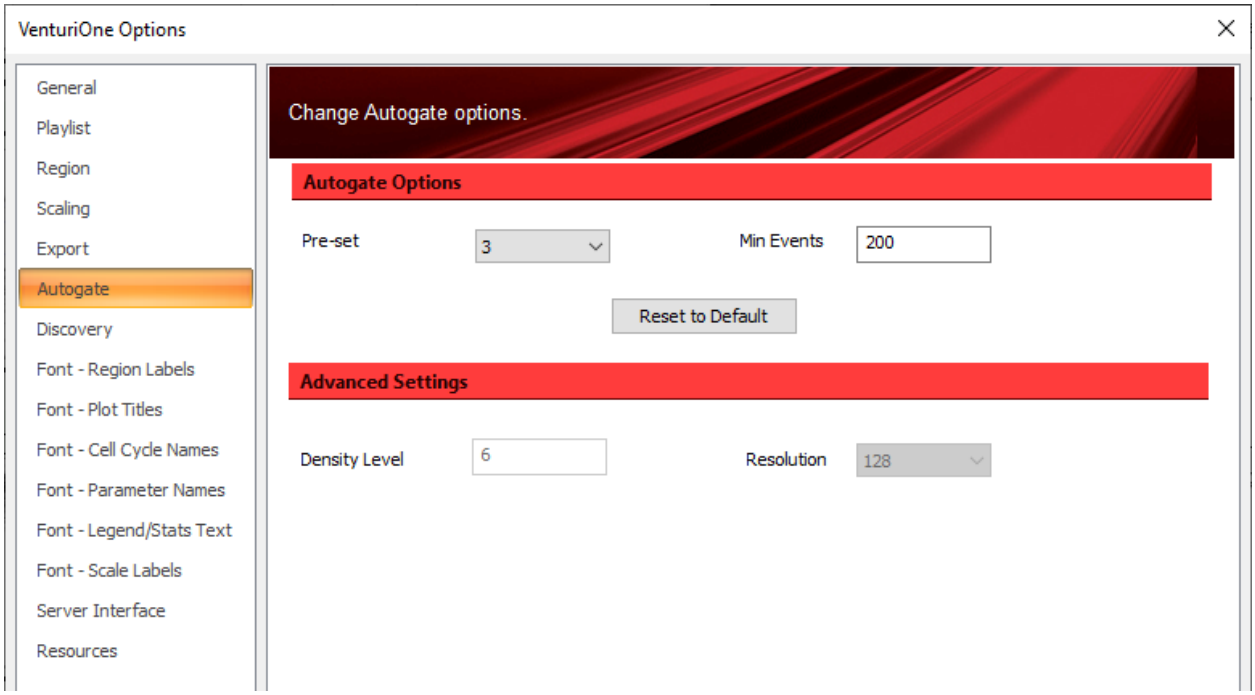
25.1.5.3 ChartJunk on Exported Images

The options in this group allow you to select the detail displayed on plot images when copied and pasted to other applications (e.g. MS PowerPoint). Uncheck any item that is not required for pasted plot images.

25.1.5.4 Default Plot Image File Format

This option sets the default file format for the **Save Plot(s) as…** menu item. Options include BMP, JPEG, GIF, TIFF and PNG. The default setting is BMP.

25.1.6 Change Autogate Options



On the Change Autogate Options dialog you can set the default values for auto-gating.

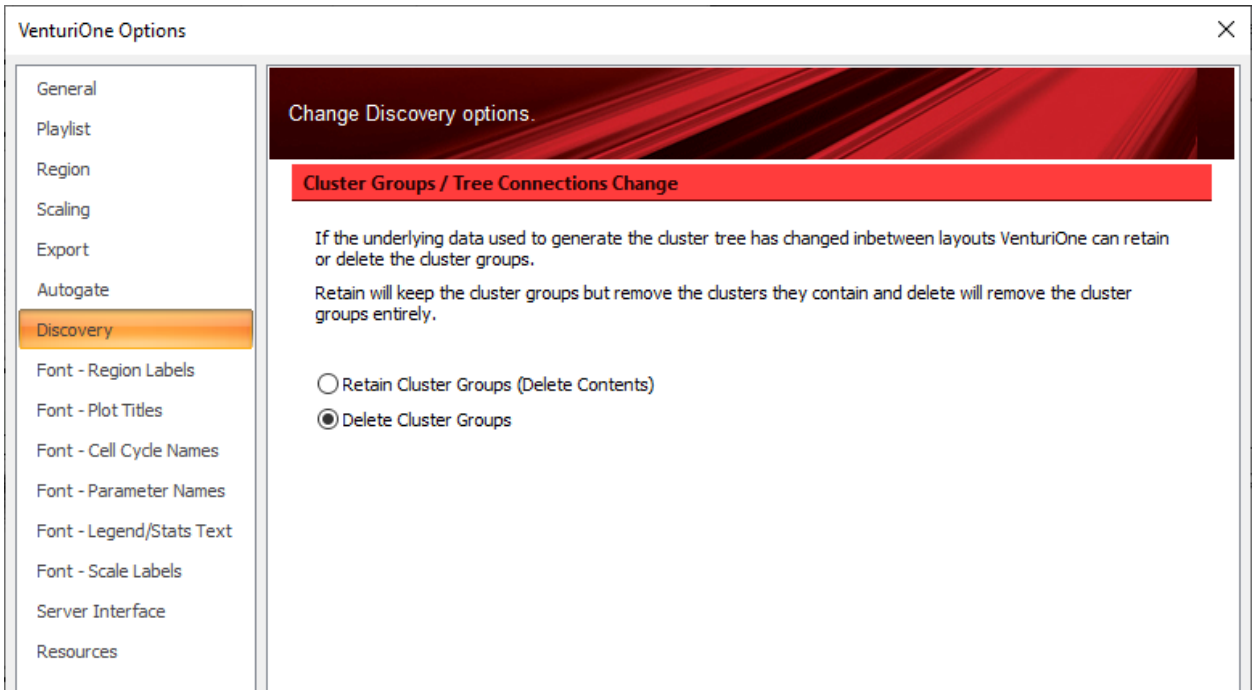
The preferred default Pre-set level and minimum number of events can be set here. The values can also be reset to the Default value

Under the Advanced Settings, the required default custom Density level and autogate Resolution can be selected.

25.1.7 Discovery

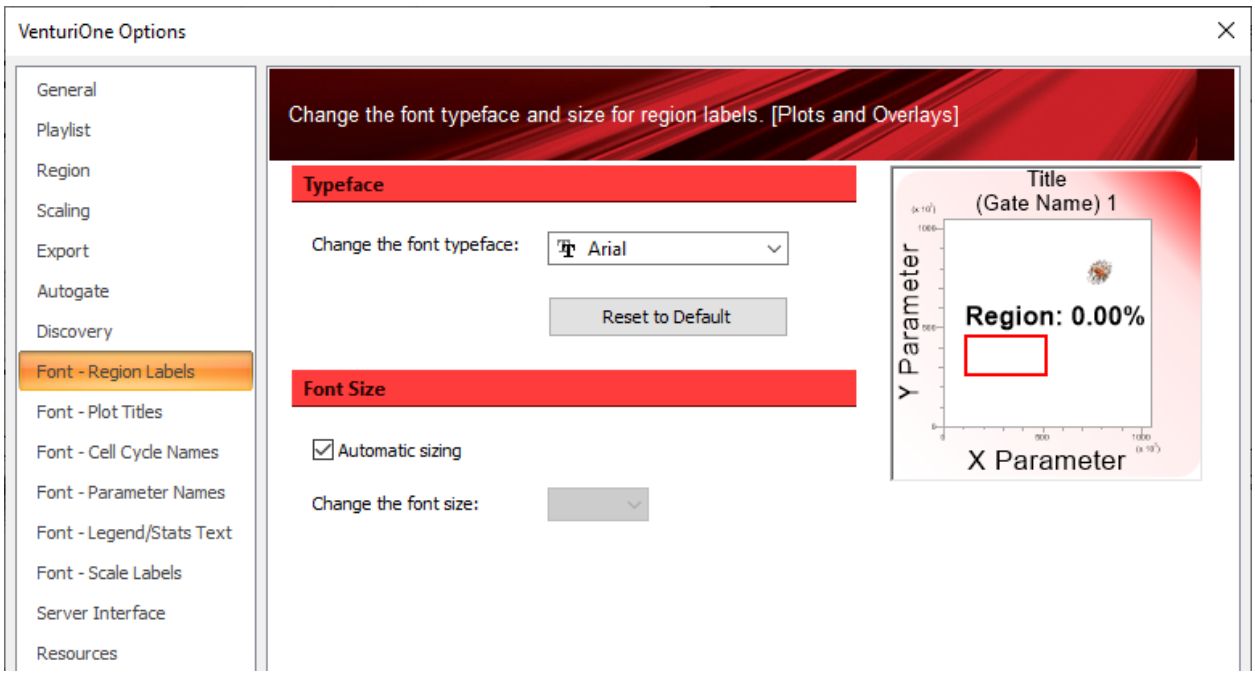
If you modify parameters used to create the cluster tree (see section 23.2.2), any Cluster Groups will be invalid, and the clusters associated with any group will be removed.

The options here allow you to select whether the Cluster Groups are also deleted or if the Cluster Groups are retained.

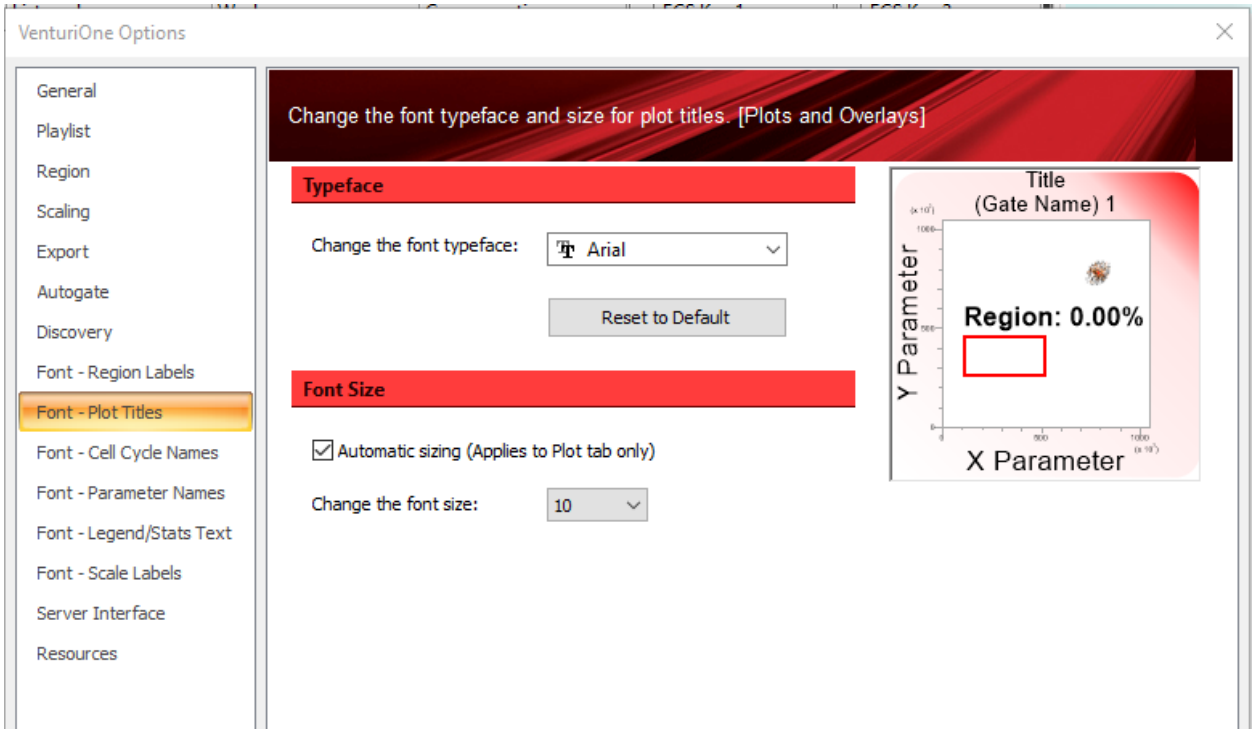


25.1.8 VenturiOne Options Font Pages

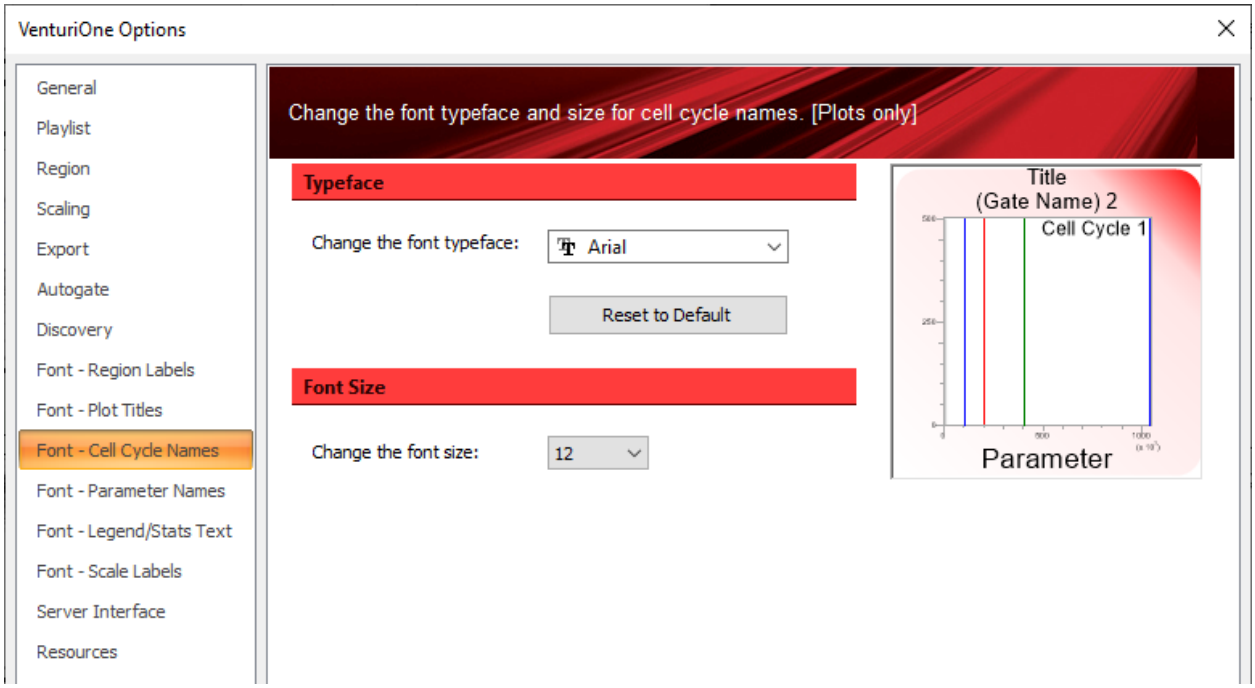
There are five font pages, four of which have the same controls; these pages are pictured below.



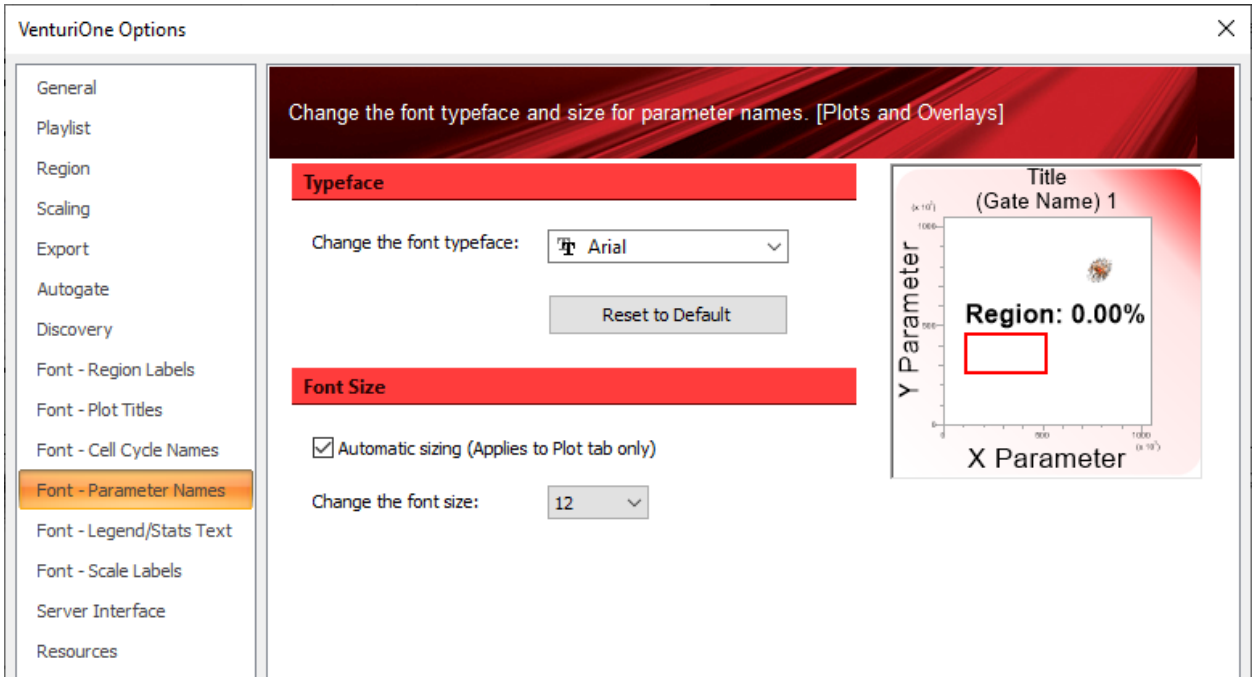
The options specified on the **Font – Region Labels** page are used as default font typeface and size for text of region labels. You can change the font typeface and size for text of region labels in the **Edit Fonts** dialog; see section 12.5.6.



The options specified on the **Font – Plot Titles** page are used as default font typeface and size for text of plot titles. You can change the font typeface and size for text of plot titles in the **Edit Fonts** dialog; see section 12.5.6.



The options specified on the **Font – Cell Cycle Names** page are used as default font typeface and size for text of cell cycle names. You can change the font typeface and size for text of cell cycle names in the **Edit Fonts** dialog; see section 12.5.6.



The options specified on the **Font – Parameter Names** page are used as default font typeface and size for text of parameter names. You can change the font typeface and size for text of parameter names in the **Edit Fonts** dialog; see section 12.5.6.

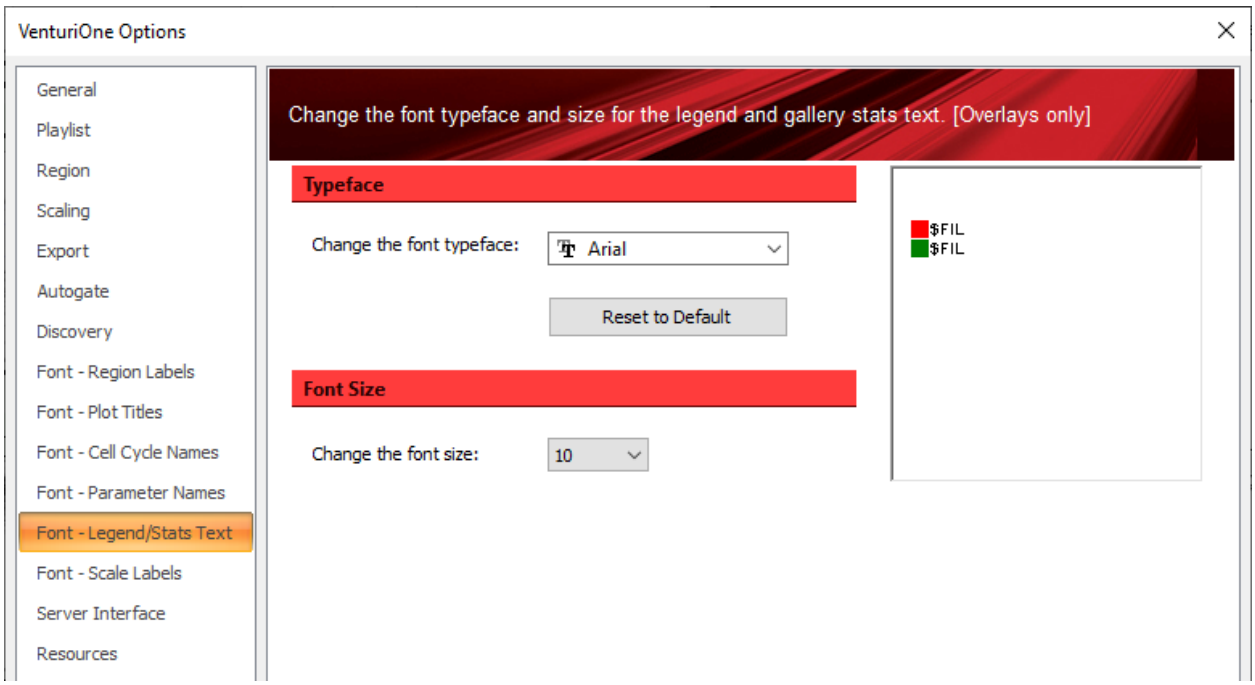
The **Change the font typeface** drop-down list contains all font typefaces available on the system. You can select a typeface from the drop-down list or type in the field auto-complete (also known as predictive text) is applied.

! If you select a non-True Type font or Monotype Corsiva, they are displayed as Arial

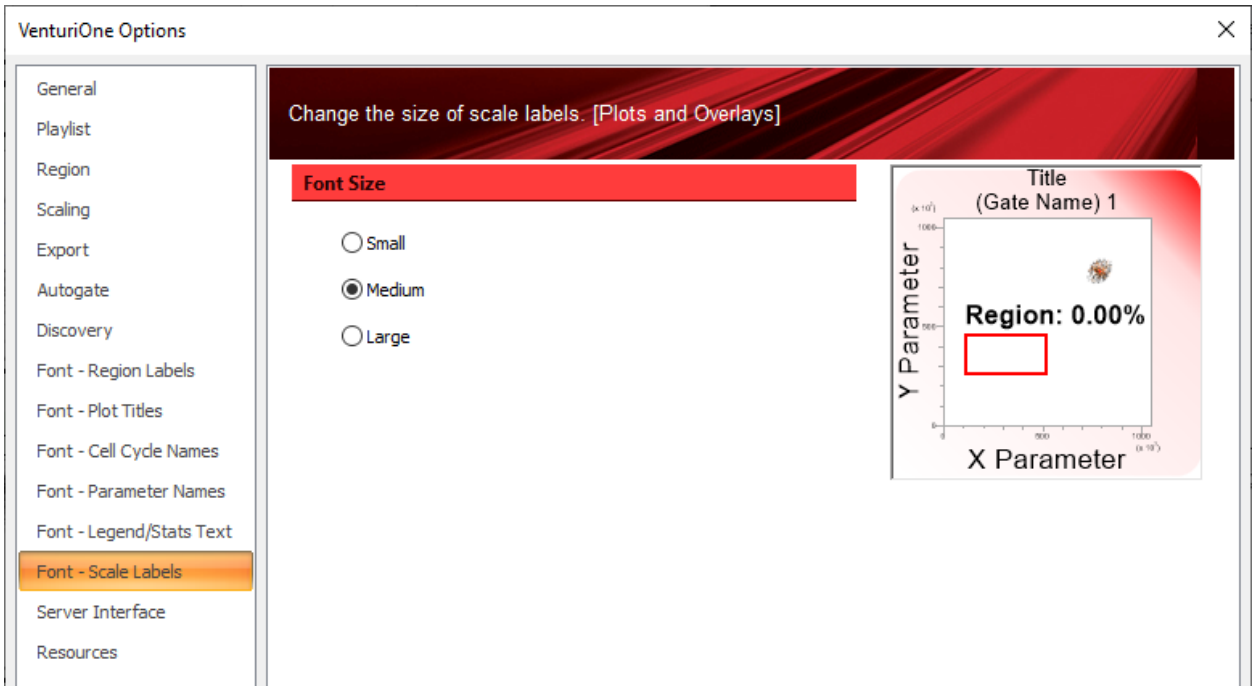
The **Reset to Default** button resets the typeface for the specific text item to its original default.

When the **Automatic sizing** check box is selected the size of the font is determined automatically by the software. Note that **Automatic sizing** option is not available on the **Cell Cycle Names** page.

De-select the **Automatic sizing** check box if you would like to specify the size for the specific text item. The **Change the font size** control becomes enabled. You can the select an available size from the list or type in the field auto-complete (also known as predictive text) is applied.



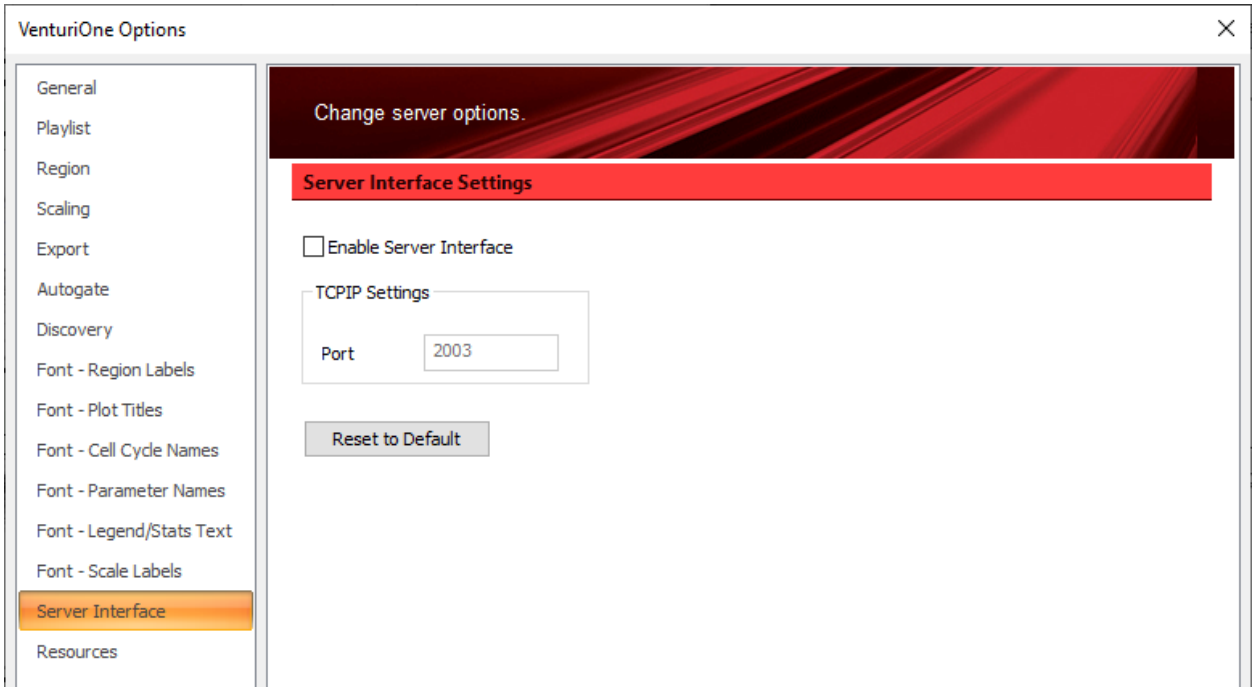
The options specified on the **Font – Legend/Stats Text** page are used as default font typeface and size for text of the Overlay Plot Legend label test. You can change the font typeface and size for Overlay legends in the **Edit Fonts** dialog; see section 18.5.5.



The options specified on the **Font – Scale Labels** page are used as default font typeface and size for text of scale labels. You can change the font typeface and size for text of scale labels in the **Edit Fonts** dialog; see section 12.5.7.

For the font size for scale labels there are only three choices: small, medium and large. To specify the default size, select the desired radio button.

25.1.9 Server Interface Options



The Server interface options are required to connect Commander software to the installed VenturiOne software.

Check the Enable Server interface option to allow commander to remotely connect to this copy of VenturiOne software.

When the Server Interface is enabled the TCP/IP Settings Port option is enabled – This defaults to Port 2003 and this should not be changed.

The Reset to default button resets the port value to its default of 2003.

When the server interface is enabled, a connection icon is displayed to show the status.

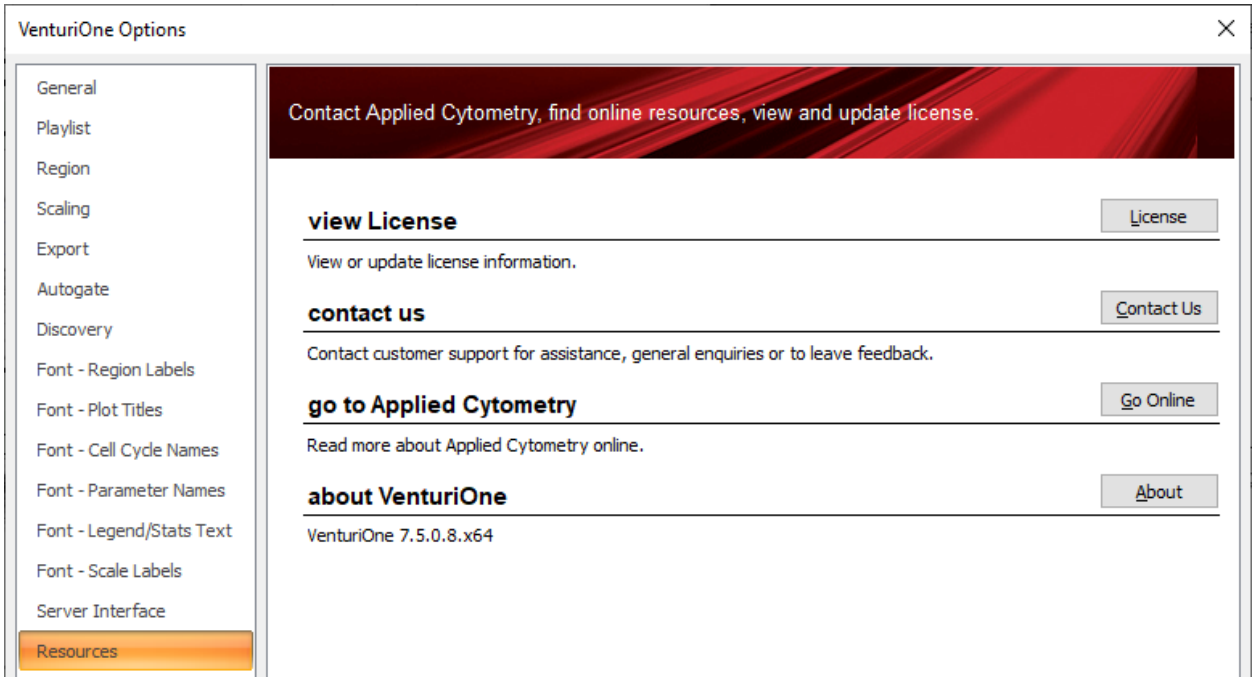
 A “link disabled” icon is displayed when the VenturiOne software is not linked to the Commander software.

 A “link enabled” icon is displayed when the VenturiOne software is linked to a copy of Commander software.

VenturiOne cannot be linked to more than one Commander at any one time.

If a second copy of commander attempts to connect, that connection will be rejected.

25.1.10 Resources Page



25.1.10.1 view License

Click the **License** button to launch the **Licensing Options** dialog described in section 2.5. This allows you to access the VenturiOne license information and update your user license.

25.1.10.2 contact us

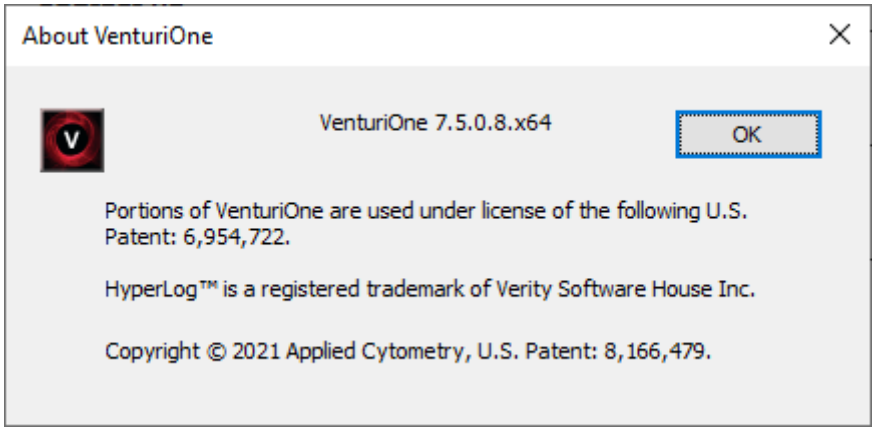
Click the **Contact Us** button to launch the Applied Cytometry General Enquiry web page.

25.1.10.3 go to Applied Cytometry

Click the **Go Online** button to launch the Applied Cytometry General home web page.

25.1.10.4 about VenturiOne

Click the **About** button to launch the **About VenturiOne** dialog to view version information:



The dialog displays program information, version number and copyright details.

November 2021