Standard Edition -

Diablo EZReporter Software

Advanced Post-Run Reporting and Analysis for Chromatography Data Systems

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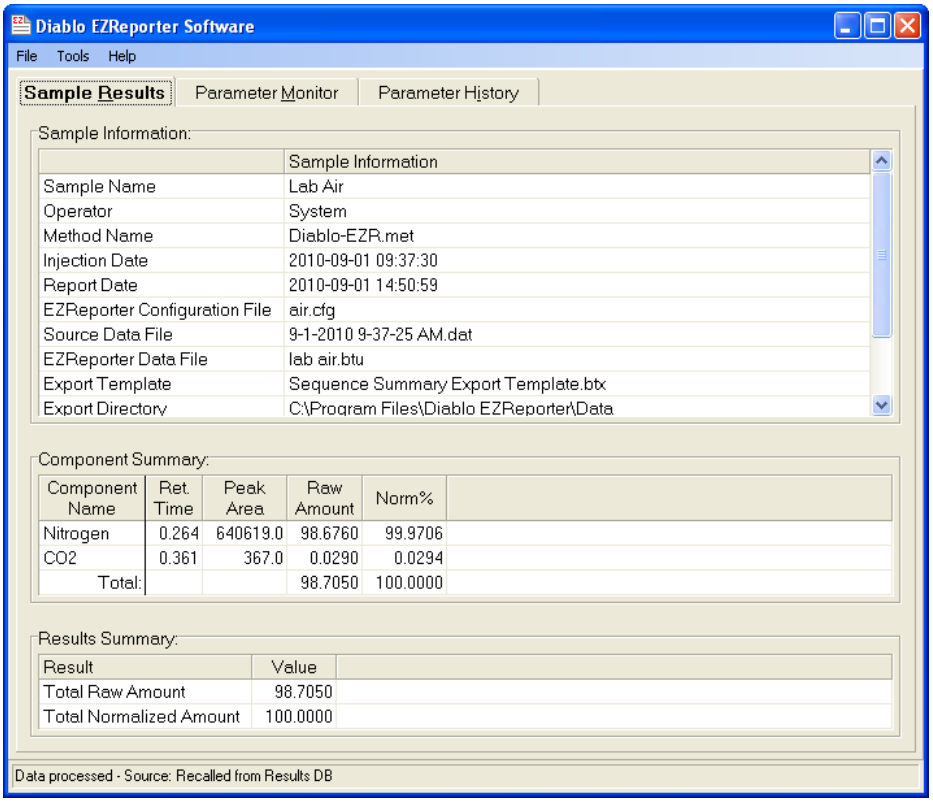

Diablo Analytical EZReporter Software

Standard Edition Reference Manual

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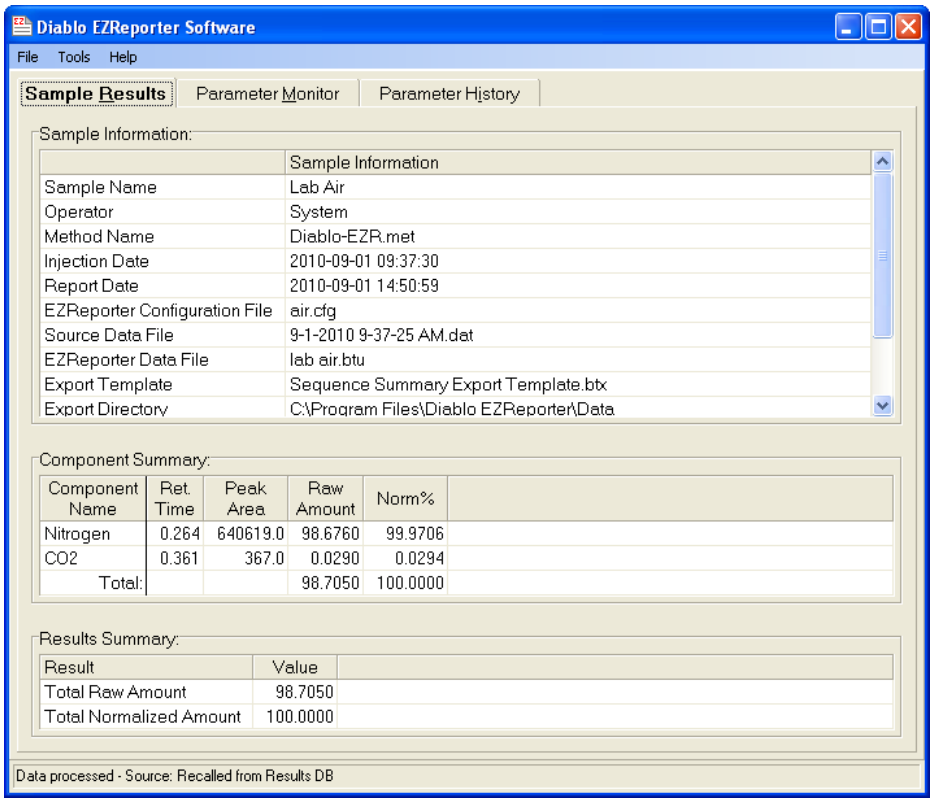
Introduction

EZReporter Software Overview

Advanced Post-run Reporting and Analysis for Chromatography Data Systems.

EZReporter is a flexible, advanced post-run analysis and reporting solution for a number of supported chromatography data systems.



The Diablo Analytical EZReporter Software

The EZReporter software includes a base reporting module and three optional modules: a Natural Gas Analysis (NGA) calculation and reporting module, a Results Database module, and an Analog & Digital Output module used with the National

Instruments Compact FieldPoint hardware. These modules are combined in several different "Editions" of the EZReporter software.

EZReporter Edition	Modules Included
Standard Edition	Base Module Only
Natural Gas Analysis Edition	Base and Natural Gas Analysis Modules
Results Database Edition	Base and Results Database Modules
NGA Database Edition	Base, NGA, and Results Database Modules
Analog and Digital Output Edition	Base and Analog & Digital Output Module

The Base Module is required for all Editions of the software. You can also license and activate individual Modules at a later time if your needs change. The features included in each module are summarized below.

Base Software Module

The Base software module can be licensed by itself or you can add one or both of the optional modules. The features present in the base module include:

- **Process Results Automatically from supported chromatography data systems**
- **Multi-Channel Reporting**: Results from multiple detector channels can be combined into a single report with both raw and normalized amounts displayed.
- **Easily Updated and Customized**: The component list is completely customizable. Components can be added to or deleted from the component list.
- **Data Export**: Results can be exported to a text file for transfer to a Laboratory Information Management System (LIMS), Process Control System, or even Microsoft Excel. The format of the text file can be easily customized using EZReporter's flexible Export Templates.
- **Monitor Specific Results**: You can set up both component and calculated results as monitored parameters that are displayed in a separate monitoring window.
- **High and Low Alarms:** You can set both high and low alarm limits for monitored parameters.
- **Trend/History Plots**: You can plot the historical value of any of the monitored parameters. The trend plot can be printed, copied to the Windows clipboard, and the historical data can be exported to a comma-delimited text file.
- **Include Results from Other Analyzers:** The component list can be configured so that results from other analyzers can be entered manually for specified components and included in the reports.

Optional Natural Gas Analysis Module

The optional Natural Gas Analysis (NGA) module is designed to perform Natural Gas / Refinery Gas / Natural gas Liquids (NGL) heating value and related calculations. The results from these calculations are available for reporting, monitoring, trend plotting, and exporting through the base module. The features present in the NGA module include:

- **Standard GPA/ASTM/ISO Calculations**: Calculates Dry/Saturated/Wet Gross and Net Heating Value, Real Relative Density, Gas Compressibility factor, GPM value, Wobbe Index, and a large number of other results using GPA 2172-09, 2177-03, 2186-02, ASTM D2598-02 (vapor pressure and relative density), and ISO 6976 standard calculations.
- **Physical Properties can be Easily Customized**: The component list is completely customizable. Components can be added to or deleted from the component list, and calculation factors (Heating Value, Molar Mass Ratio, Summation Factor, and GPM Volume Factor, etc.) can be updated by the user as needed.
- **Standard Physical Property Tables**: Standard component physical property tables are provided for:
  - the GPA 2145-03 and GPA 2145-09 Standards
  - the GPSA Engineering Data Book (12th Edition, 2004)
  - the ASTM D3588-98 (2003) standard
  - the GPA TP-17 Standard
  - the ASTM D2598-02 (2007) standard (vapor pressure and relative density)
  - the ISO 6976 Standard

Optional Results Database Module

The optional Results Database module allows you to capture results and save them in a local SQLite database. A few of the capabilities of the Results Database are listed below.

- **Local "Zero Configuration" Database**: Sample results including sample information, individual component results, and calculated natural gas analysis (NGA) results can be added automatically to a local results database.
- **Search for Results**: You can search the results database for historical results by Sample Name or Results ID. Results can be filtered further by Injection or Report Date and Results or Export Status.
- **Batch Processing**: You can batch reprocess multiple results from the database. Reprocessing options include printing reports, exporting results, and trend-plotting results.
- **Statistical Analysis**: Statistics including average, standard deviation, %RSD, maximum, and minimum are calculated and displayed when performing sample name searches**.**
- **Compare Results**: A results comparison window can be used to compare the component normalized mole% values between two samples using either the GPA 2261 repeatability or reproducibility limits (or any other limits entered by the user).
- **Track Result Status**: Each result in the database has a "Status" field that can be set to "None", "Accept", or "Reject" status. The status field can then be used in searches or batch reprocessing to filter which results are selected.
- **Import Results**: You can import results into the Results Database from comma- or tab-delimited text files.

Optional Analog and Digital Output Module

The EZReporter Analog and Digital Output Module allows you to generate analog/signal outputs and digital/alarm outputs based on Monitored Parameter results using National Instruments Compact FieldPoint I/O hardware. See the Analog and Digital Output Module Quick Start Guide for information on the Compact FieldPoint hardware requirements and the capabilities of this optional module.

Notes for BTU Calculator Users

The Diablo EZReporter Software is the next-generation of the Diablo BTU Calculator Software. The EZReporter Natural Gas Analysis (NGA) Edition is the direct replacement for the BTU Calculator software. Existing licenses of the BTU Calculator can be upgraded to the EZReporter NGA Edition.

System Requirements

The software is designed for operation under the Microsoft Windows 7 Professional and Windows XP Professional operating systems. See the EZReporter Quick Start Guide for your chromatography data system for any special requirements.

Important:

Important: It is the customer's responsibility to set up the Gas Chromatograph and chromatography data system so that calibrated peak results are produced from the analysis.

Installing the Software

To install the software, simply run the installation program that was downloaded from our web site or provided on the installation CD-ROM. Follow the directions presented by the installation program. The installation program will install the Diablo EZReporter in trial mode on new systems, or will update licensed installations to the latest version of the software.

Important:

Important: You must be logged in to an account with Administrator privileges in order to install the software.

Important: Any users who will be running the software under a non-administrator account must have full read/write permissions to the EZReporter directories and files. The installation program grants these rights to the "Everyone" user group. However, if the "Everyone" user group is disabled on the network, then you will have to grant these permissions manually.

Installation Paths and Folders

The EZReporter software is installed to the folder,

"C:\Program Files\Diablo EZReporter" (Win XP and Win 7-32 bit)

"C:\Program Files (x86)\Diablo EZReporter" (Win 7-64 bit)

EZReporter configuration and template files are saved in the "Settings" folder,

"C:\Program Files\Diablo EZReporter\Settings" (Win XP and Win 7-32 bit)

"C:\Program Files (x86)\Diablo EZReporter\Settings" (Win 7-64 bit)

EZReporter data files are saved by default in the "Data" folder,

"C:\Program Files\Diablo EZReporter\Data" (Win XP and Win 7-32 bit)

"C:\Program Files (x86)\Diablo EZReporter\Data" (Win 7-64 bit)

Upgrading from the Diablo BTU Calculator Software

The EZReporter Natural Gas Analysis (NGA) Edition replaces the BTU Calculator software and can read existing BTU Calculator configuration and data files directly.

The EZReporter installer doesn't touch an existing BTU Calculator installation - the two programs can be installed and run on the same computer.

Automatic Import of Configuration and Template Files

The first time you start EZReporter, the software will attempt to import any custom (non-default) configuration or export template files from the BTU Calculator installation folder. It will also edit the imported configuration files so that the default data directory and/or export directory no longer point to their old location in the BTU Calculator folder structure (if that is where they were set). The original files are not modified by the import procedure.

Configuration and template files are now kept in the "Settings" folder under the EZReporter installation folder in order to reduce clutter in the main installation folder and make it easier to find these files.

Changes to Chromatography Data System Methods

You may need to update your chromatography data system methods in order to have them use EZReporter instead of the BTU Calculator for automatic processing. See the EZReporter Quick Start Guide for your data system for more information.

Software License and Registration

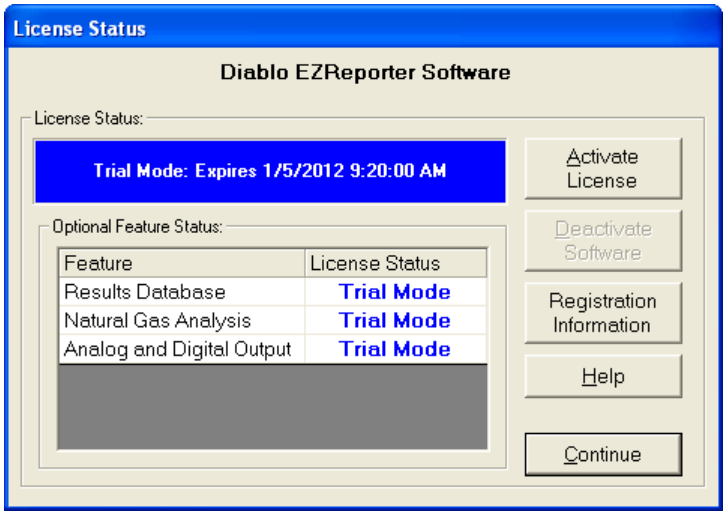
The EZReporter software is distributed as a fully functional 30-day trial application. The trial version has all of the features of the registered version, but you will be reminded that you are running the trial version with a "nag" screen each time you start the software. At the end of the 30-day trial period the application will no longer start unless you purchase a license or request an evaluation extension from Diablo Analytical.

Important:

Important: The Results Database, Natural Gas Analysis (NGA), and Analog & Digital Output Modules are add-on options that require payment of additional license fees and require separate license activation codes (unless they are included in the particular software edition that you have licensed). However, you can evaluate these features during the 30-day trial period of the base software. If you activate the base software without also activating the optional module, then those features from the un-activated module will be disabled.

Activating your License

Please refer to the Diablo Software License Guide for information on how to activate the base EZReporter module or any of the optional modules. This guide can be accessed through the "Help" button on the License Status window that is displayed when you start the software or by selecting the "License Status" option of the "Help" menu. An Adobe Acrobat (PDF) version of the guide is also saved in the EZReporter installation folder.



The EZReporter "License Status" window used to activate the software.

Technical Support

The Diablo EZReporter software was written and is supported by:

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Antioch, CA 94531

Phone: (925) 755-1005
Fax: (925) 755-1007

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Fax

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Electronic Mail

Use our dedicated support address for e-mail based technical support:
support@diabloanalytical.com

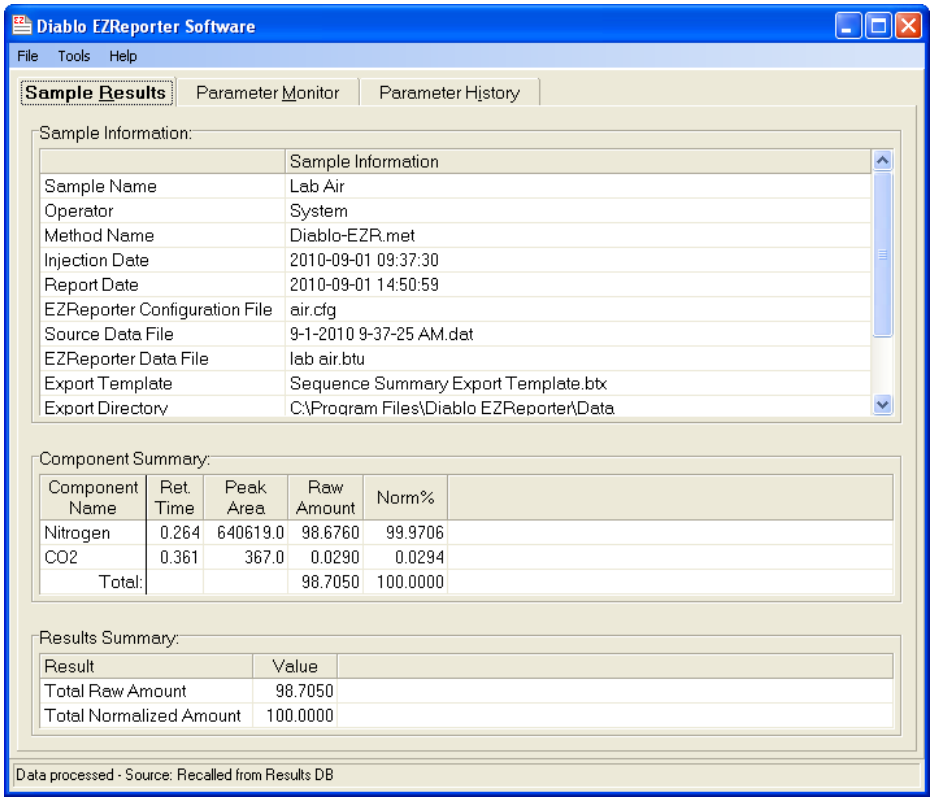
World Wide Web

Use our web-based help desk to submit and track support requests:
http://www.diabloanalytical.com/support.htm

Getting Started

The Sample Results Window

After starting the software, the following window is displayed. This window shows the "Sample Results" tab containing the results of the last analysis (but will be blank when the software is first started).



The "Sample Results" tab on the Main Screen of the Diablo EZReporter Software

Sample Information

This section of the main screen contains the sample information that was passed to the software from the chromatography data system, or was entered by the user during manual processing. You can also define custom sample information fields if you

would like to include additional data in the report. See "Sample Info" on page 27 for more information on this capability.

Note: Blank sample information fields are *not* displayed in the sample Information table.

Component Summary

This section contains a summary of the individual component results including,

- Component Peak **Retention Time**
- Component **Peak Area**
- Component **Raw Amount**
- Component **Normalized Amount**

Results Summary

The calculation results are displayed in this section of the main screen. Results displayed include,

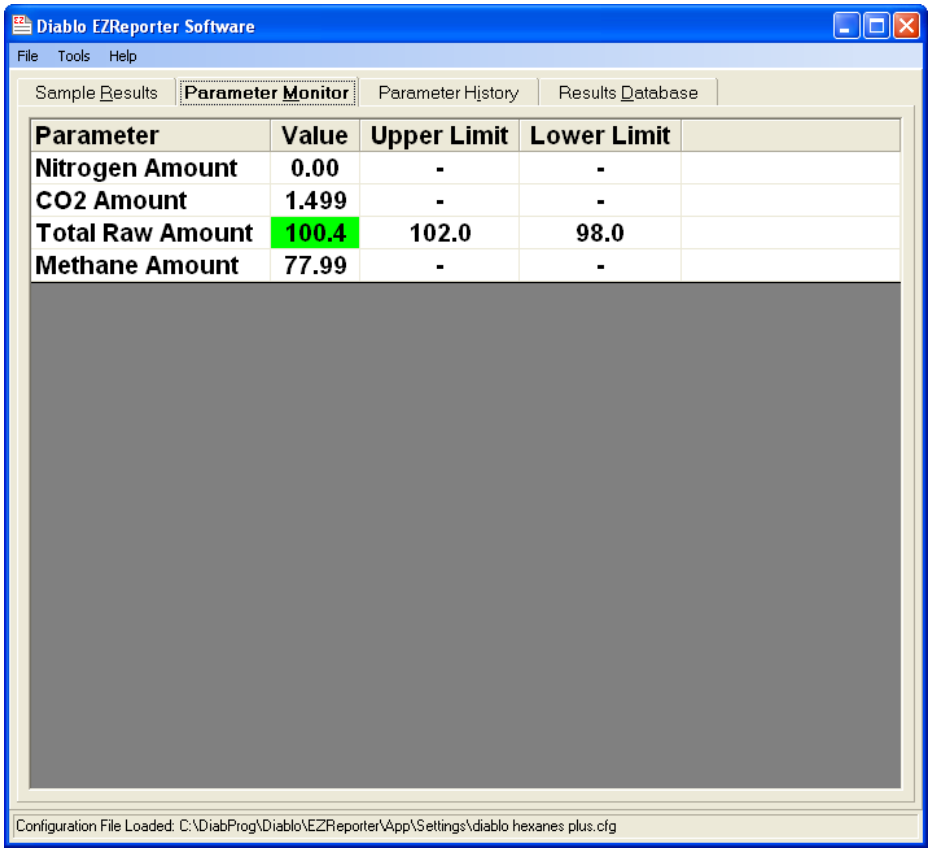
- **Total un-normalized Amount**
- **Total Normalized Amount**

Customizing the Report

You can customize the report window by choosing which results to display, and what labels to use to describe each result. See "Report - Control" on page 23 for more information.

The Parameter Monitor Window

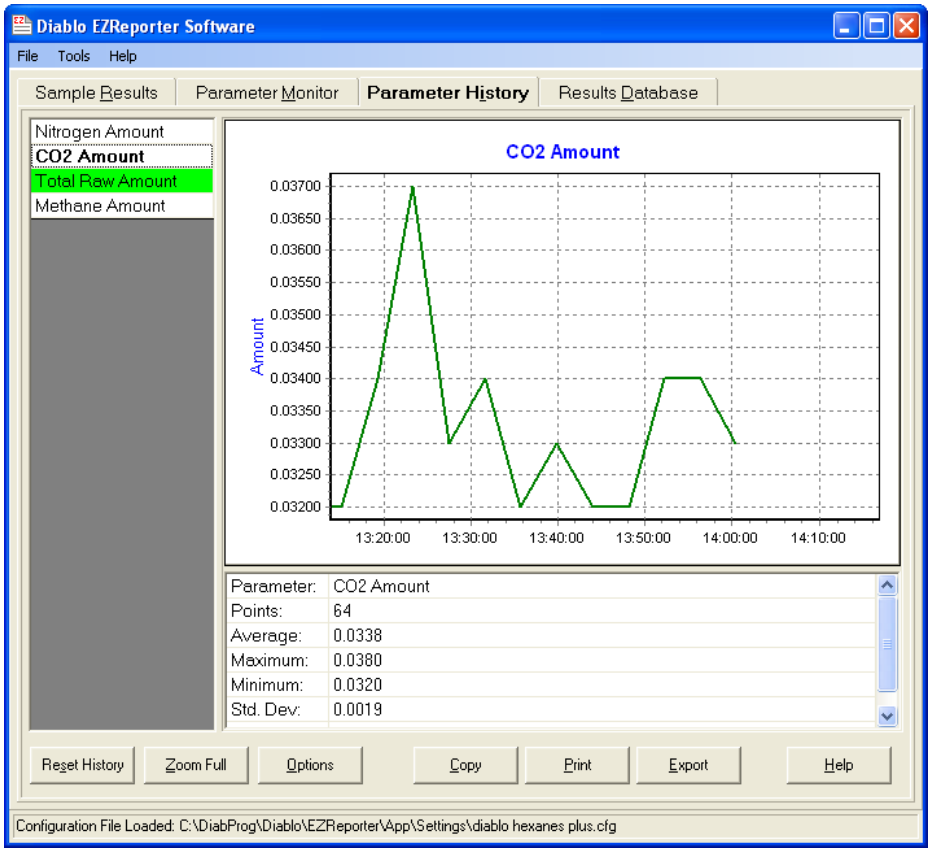
This window shows the Parameter "Monitor" tab that displays the results from the last analysis for any monitored parameters. High and low alarm limits can be set up for each monitored parameter. See "The Parameter Monitor" on page 42 for more information on this capability.



The "Parameter Monitor" tab on the main screen of the Diablo EZReporter

The Parameter History Window

This window shows the Parameter History tab that can be enabled to plot the historical values of any of the monitored parameters. See "Parameter History" on page 42 for more information on this capability.



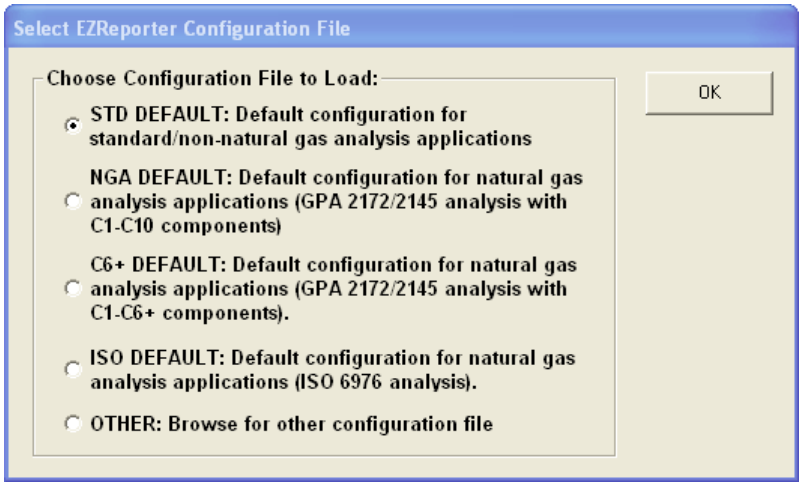
The "Parameter History" tab on the main screen of the Diablo EZReporter Software.

Quick Start Instructions

The following instructions describe the key steps that should be performed when using the software for the first time. You will find more detailed instructions in later sections of this manual.

Load and Edit the Configuration File

The first time you run EZReporter the following window will be displayed allowing you to choose the default configuration file you would like to load:



Choose the default configuration that most closely matches your application or browse for a specific configuration file. Once you have loaded the configuration file, you should configure the settings for your application. To open the configuration editor, select the "Edit Configuration.." option of the "Tools" menu.

Additional information about configuring the software can be found in "Configuring the Base Software" on page 19. The default configuration files shipped with the software are listed in the following table.

Important

Important: If you upgrade or re-install the EZReporter Software, all of the default configuration files listed in this table will be overwritten with the current versions. Consequently, if you use any of these default configuration files as the basis for a custom configuration, make sure to save your configuration file with a different file name.

EZReporter Standard Configuration Files	
File	**Description**
Default Configuration Files	
STD Default.cfg	The default configuration for standard/non-natural gas analysis applications. It does not include any pre-configured components. You will need to add the components required for your analysis.
NGA Default	A default configuration for natural gas analysis applications (GPA 2172/2145 analysis with C1-C10 components). The Pressure Base is set to 14.73 in this file.
C6+ Default.cfg	An alternate configuration for natural gas analysis applications (GPA 2172/2145 analysis with C1-C6+ components).. The calculation factors used for the hexanes plus component are based on a 60:30:10 mixture of hexane, heptane, and octane. The GPA 2145-09 Standard was used to calculate the Hexanes+ calculation factors.

EZReporter Standard Configuration Files	
File	**Description**
ISO Default.cfg	A default configuration for natural gas analysis applications (ISO 6976 analysis). The physical property data are for a combustion temperature of 15 Deg. C and a metering temperature of 15 Deg. C.
ISO 6976 (0-0 Deg C).cfg	Similar to the ISO Default configuration except the physical property data are for a combustion temperature of 0 Deg. C and a metering temperature of 0 Deg. C.
ISO 6976 (15-0 Deg C).cfg	Similar to the ISO Default configuration except the physical property data are for a combustion temperature of 15 Deg. C and a metering temperature of 0 Deg. C.
ISO 6976 (25-0 Deg C).cfg	Similar to the ISO Default configuration except the physical property data are for a combustion temperature of 25 Deg. C and a metering temperature of 0 Deg. C.
ISO 6976 (15-15 Deg C).cfg	Identical to the ISO Default configuration with a combustion temperature of 15 Deg. C and a metering temperature of 15 Deg. C.
ISO 6976 (205-20 Deg C).cfg	Similar to the ISO Default configuration except the physical property data are for a combustion temperature of 20 Deg. C and a metering temperature of 20 Deg. C.
ISO 6976 (25-20 Deg C).cfg	Similar to the ISO Default configuration except the physical property data are for a combustion temperature of 25 Deg. C and a metering temperature of 20 Deg. C.
NGL Default (WtPct-Combined).cfg	A default configuration for Natural Gas Liquids (NGL) with “combined” extended fraction reporting. With this calculation and reporting method the extended fraction results are reported separately and are also combined into the standard /total results through the specified combined component (usually Hexanes Plus). This configuration includes the full component list from GPA TP-17 and GPA 2145-09.
NGL Default (WtPct-Combined-Corrected).cfg	A default configuration for Natural Gas Liquids (NGL) with “combined” extended fraction reporting. This configuration file is the same as the “Combined” configuration, but it is also set up to correct the raw component amounts in the extended fraction using a correction (“bridge”) factor calculated from the iso-pentane and n-pentane amounts from the standard component range (usually from the TCD detector) and the extended component range (usually from the FID detector).
NGL Default (WtPct-Separate).cfg	A default configuration for Natural Gas Liquids (NGL) with “separate” extended fraction reporting. With this calculation and reporting method, the extended fraction results are reported separately from the standard/total results. This configuration includes the full component list from GPA TP-17 and GPA 2145-09.
GPA 2145-03.cfg	Contains the components and factors in the GPA 2145-03 Standard. The Pressure Base is set to 14.696 in this file.
GPA 2145-09.cfg	Contains the components and factors in the GPA 2145-09 Standard. The Pressure Base is set to 14.696 in this file.

EZReporter Standard Configuration Files	
File	**Description**
GPA 2177-03.cfg	A configuration based on the GPA 2177-03 standard. The pressure base is set to 14.696 in this file.
ASTM D3588-98 (2003).cfg	Contains a sub-set of the components and factors in the ASTM D3588-98 (2003) standard. The Pressure Base is set to 14.696 in this file.
Refinery Gas.cfg	A configuration containing common components found in refinery gas. Physical properties are taken from GPA 2145-09, ASTM D3588 (98), GPSA Engineering Data Book (2004) and other sources.
Calculation Check Configuration Files	
GPA 2172-09 Calculation Check at 14.696 psia.cfg	A configuration designed to check the GPA 2172-09 NGA calculations made at a bas pressure of 14.696 psia. Simply load the corresponding data file (GPA 2172-09 Example Data at 14.696 psia.btu) and switch to the "Parameters" table.
GPA 2172-09 Calculation Check at 14.65 psia.cfg	Same as above except it is designed to check the calculations at a bas pressure of 14.65 psia. Make sure to load the correct data file (GPA 2172-09 Example Data at 14.65 psia.btu)
GPA 2177-03 Calculation Check (VolPct).cfg	A configuration designed to check the GPA 2177-03 calculations made at a baes pressure of 14.696 psia. Simply load the corresponding data file (GPA 2177-03 (VolPct).btu) and switch to the "Parameters" table.
GPA 2186-02 Calculation Check (MolPct-Separate).cfg	A configuration designed to check the GPA 2186-02 NGL calculations using the Mole% component amounts and separate extended fraction report. Simply load the corresponding data file (GPA 2186-02 Calculation Check (MolPct-Separate).btu) and switch to the "Parameters" table.
GPA 2186-02 Calculation Check (WtPct-Combined).cfg	A configuration designed to check the GPA 2186-02 NGL calculations using the Weight% component amounts and combined extended fraction report. Simply load the corresponding data file (GPA 2186-02 Calculation Check (WtPct-Combined).btu) and switch to the "Parameters" table.
GPA 2186-02 Calculation Check (WtPct-Separate).cfg	A configuration designed to check the GPA 2186-02 NGL calculations using the Weight% component amounts and separate extended fraction report. Simply load the corresponding data file (GPA 2186-02 Calculation Check (WtPct-Separate).btu) and switch to the "Parameters" table.
ISO 6976 Calculation Check.cfg	A configuration designed to check the ISO 6976 NGA calculations. Simply load the corresponding data file (ISO 6976 Calculation Check.btu) and switch to the "Parameters" table.

Important:

Hint: The order of the components in the component settings table is the order that they will be printed in the report. You can easily rearrange the component order by first selecting a component's row in the table by ***left*** clicking on that row with the mouse. Next, while the cursor is still pointing to that row, click and hold the ***right*** mouse button and drag the component to a new location in the table. The row being moved will be highlighted in red. Release the right mouse button when the component is located at the desired position in the table.

Important: Be careful rearranging the order of components if you are using Calculated Results or Export Templates that refer to component results. In those instances components are identified by a component index, which is the order of the component in the component table. If you rearrange the component table after you have set up a Calculated Result or Export Template, it is possible that the wrong component will be referenced.

Set the Report Preferences

Modify the report titles as desired. In addition, check "Print report for automatically processed results" if you would like a report to be printed automatically when the software generates a report upon receiving and processing results from the chromatography data system. The report will be printed to the default printer.

Set the Data File Preferences

Specify the directory into which you would like to save EZReporter data files – use the "Browse" button to select or create the desired directory (see "Data Files" on page 26).

Automatic file saving

Check this box if you would like to have a data file created in the default data directory during automatic processing of data from the chromatography data system. The data files are named using a date + time format:

YYYYMMDD-HHMMSS.BTU

Where YYYYMMDD is the current date and HHMMSS is the current time (e.g. 20050208-153423.BTU).

File Naming Options

Check this box if you would like to have the sample name added to the Date+Time formatted file name during automatic processing. If you enable this option, then you can also choose whether to add the sample name *before* (e.g. NGA Sample-20050208-153423.BTU) or *after* (e.g. 20050208-153423- NGA Sample.BTU) the file name.

Set up your Chromatography Data System

Follow the instructions in the EZReporter Quick Start guide to set up your chromatography data system to send results automatically to EZReporter for processing. The Quick Start Guides can be found on the installation CD, or can be accessed via links in the Diablo EZReporter program group.

Running the Software

The Main Menu

The Diablo EZReporter is configured and controlled using the following menu options:

File Menu

New Data File

Select this option to create a new data file and manually enter mole percent data. See "Data Processing and Reporting" on page 44 for more information on this capability.

Open Data File…

Select this option to open an existing EZReporter data file saved on disk.

Save Data File As…

Select this option to save the current data and results to an EZReporter data file.

Export Current Results

Select this option to export the current results to a text file using the settings specified in the Export section of the current configuration.

Load Configuration…

Select this option to load a configuration file from disk. This is a shortcut to opening the configuration editor and pressing the "Load" button.

Sample-Specific Configurations…

Select this option to enable the use of sample-specific configuration files when processing results automatically from a supported data system. See "Sample-Specific Configuration Processing" on page 45 for more information.

Print

This menu option allows you to print either the results that are currently displayed in the main screen (Print > Report), or the current settings being used by the software (Print > Current Settings).

The "Print > Report" menu option allows you to send the report to either the printer (Print > Report > Send to Printer) or save it to an Adobe PDF file (Print > Report > "Save as PDF).

The “Print > Parameter History Plot…” menu option allows you to print the trend plot and summary statistics for the parameter currently selected in the Parameter History window.

Print Setup…

This option allows you to configure the printer.

Exit

This option immediately closes the software.

Tools Menu

Edit Configuration…

This option displays the EZReporter Configuration Dialog box. See "Configuring the Base Software" on page 19.

Backup Current Configuration Files...

This option backs up the current EZReporter configuration and log files into a single “Zip” archive file and optionally allows you to copy the file to a flash drive or other backup location. The file is named, ‘ezrbackup-yyyymmdd-hhmmss.zip’, where ‘yyyymmdd’ is the current year month and day, and ‘hhmmss’ is the current hour, minute, and second of the day. The file is created in the EZReporter installation folder.

Edit Current Data Set…

This option allows you to re-edit manually entered data sets. It is not available when an automatically processed data set from a chromatography data system is loaded. See "Data Processing and Reporting" on page 44.

Show Export Template Variables…

Displays a table of the “variables” that can be used in an export template file. See the Appendix for more information about Export Templates.

Help Menu

Help Contents…

Displays the contents page of the Diablo EZReporter help file.

View Release Notes

Opens the current release notes (readme.txt). The release notes document the latest changes and enhancements to the software that may not have made it into this document.

License Status…

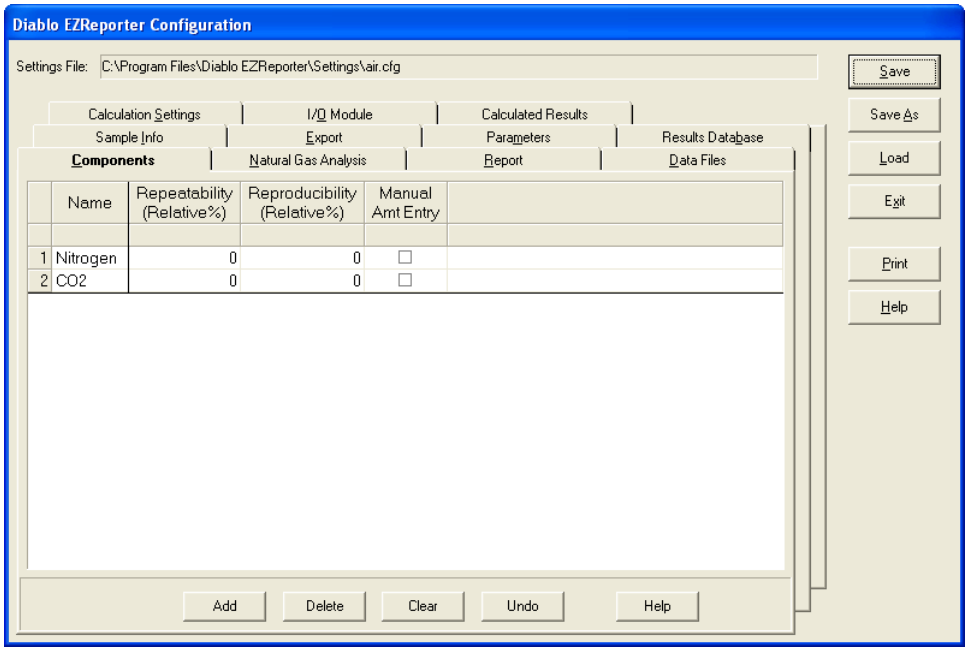
Displays the current license status of the Diablo EZReporter software. This menu option is not displayed in versions of the software that were purchased under a site license.

About Diablo EZReporter…

Displays support and version information about the Diablo EZReporter.

Configuring the Base Software Module

The software is configured using the "Diablo EZReporter Configuration" window, which is displayed by selecting the "Edit Configuration.." option of the "Tools" menu. Note that this dialog box is resizable.



The Diablo EZReporter Configuration Window.

Managing Configuration Files

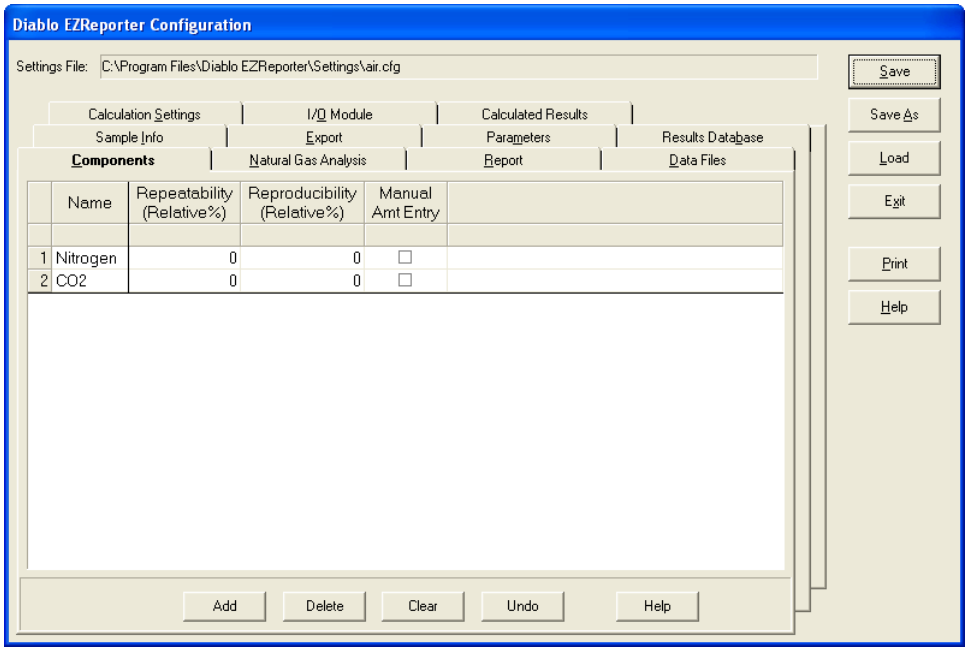
You can Load and Save configuration files using the "Load and "Save" buttons. The "Save As" button allows you to save the current configuration to a new file. Configuration files are saved by default in the Diablo EZReporter installation directory. You can also print a settings report using the "Print" button.

Important

Important: If you upgrade or re-install the EZReporter Software, all of the default configuration files will be overwritten with the current versions. Consequently, if you use any of the default configuration files as the basis for a custom configuration, make sure to save your configuration file with a different file name.

Components

The components "tab" of the configuration dialog is used to manage the list of components that will be included in the calculations and report.



The "Components" tab of the Diablo EZReporter configuration window.

Component Name

The component names entered in the components table will be displayed in the component summary tables and reports.

Important:

Important: If you are going to be processing data from a chromatography data system, then you must make sure that the names in the EZReporter component table match the names in the chromatography data system calibration/report exactly.

Manual Amount/Mole% Entry

Check this box if you are using the software to generate reports automatically from a chromatography data system, and you need to be able to enter the specified component mole percent based on the results of a separate analysis.

When results from the data system are processed, a dialog box will be displayed, allowing you to enter the component's un-normalized amount or mole%, which will then be included in subsequent calculations.

Adding new components

Press the "Add" button to add a new row to the component table manually. The row will be added *below* the currently selected row. Enter the component name and calculation factors for the new component.

Deleting existing components

To delete a component from the component list, select the row containing the desired component and press the "Delete" button".

Changing the component order

The order of the components in the component settings table is the order that they will be printed in the report. You can easily rearrange the component order by first selecting a component's row in the table by ***left*** clicking on that row with the mouse. Next, while the cursor is still pointing to that row, click and hold the ***right*** mouse button and drag the component to a new location in the table. The row being moved will be highlighted in red. Release the right mouse button when the component is located at the desired position in the table.

Important:

Important: Be careful rearranging the order of components if you are using Calculated Results or Export Templates that refer to component results. In those instances components are identified by a component index, which is the order of the component in the component table. If you rearrange the component table after you have set up a Calculated Result or Export Template, it is possible that the wrong component will be referenced.

Clearing the table

Press the "Clear" button to delete all components from the component table.

Undoing changes to the component list

Press the "Undo" button to return the component list to the last saved configuration.

Component Table Context Menu

The following context menu will pop up when you right click with the cursor anywhere in the component table:

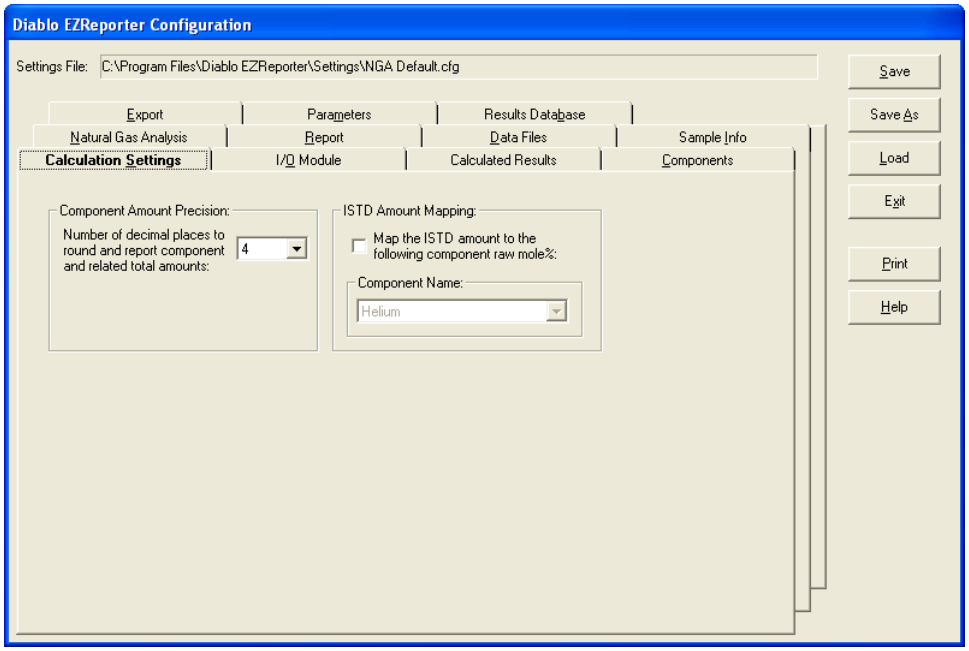
Add new component below: Clicking this option will result in a new blank line being added to the component table directly below the currently selected line.

Clone selected component below: Clicking this option will result in a new line being added to the component table directly below the currently selected line. All of the component physical property data and other settings will be copied from the selected component. The cloned component name will have a "*" appended to it as a reminder that you need to rename it (duplicate component names are not allowed).

Delete selected component: Clicking this option will delete the currently selected component.

Calculation Settings

The "Calculation Settings" tab of the configuration window allows you to modify miscellaneous settings associated with calculations.



The "Calculation Settings" tab of the Diablo EZReporter configuration window

Component Amount Precision

Use this option to set the number of decimal places to round the component amount or mole percent values prior to their being used in calculations. Component and related total amounts will also be displayed in the report using this number of decimal places.

Important:

Important: The normalized mole% values will be rounded to the number of decimal places specified in this setting before they are used in any calculations. In addition, if rounding causes the *total* normalized mole% not to sum to 100%, then a correction is made to the normalized mole% of the most concentrated component in the sample (usually methane in NGA applications) to force the total to 100%.

Internal Standard Amount Mapping

This is an *advanced* option that allows you to map the Internal Standard Amount from an analysis to the raw mole% of one of the components. This means that you can enter a result from another analyzer (e.g. H2S from a Draeger tube) into the chromatography data system sequence, and have it automatically applied to the specified component without requiring reprocessing or prompting.

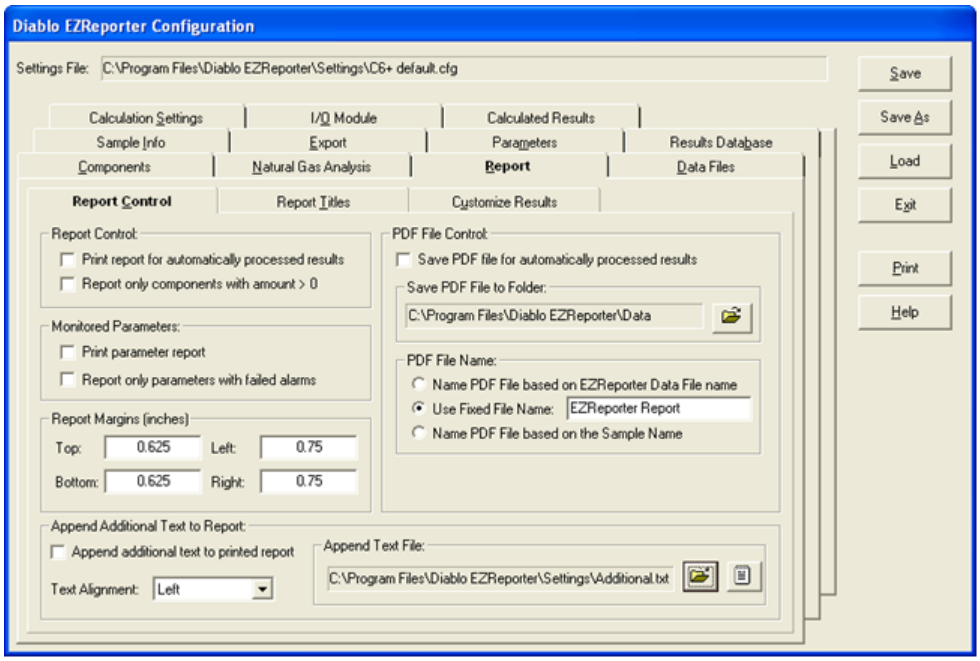
Important:

Note 1: Some data systems will switch the ISTD Amount from 0 or blank to 1 in the sequence table. Consequently, you may need to enter a very small non-zero number for 0 (for example 0.000001).

Note 2: There may be additional method settings required to enable this capability. Please see the EZReporter Quick Start Guide for your data system.

Report - Control

The "Report" tab of the configuration dialog allows you to customize the printed report.



The "Report Control" section of the "Report" Tab of the Diablo EZReporter Configuration Screen

Report Control

Check the "**Print report for automatically processed results**" box if you would like a report to be sent to the default printer when processing data automatically from a chromatography data system.

By default, all components in the component table will be included in the report. Check "**Report only components with amount > 0**" if you would like components with a raw amount of 0 to be excluded from the component results in the report.

Monitored parameters

Check the "Print parameter report" option if you would like to have a monitored parameter report printed along with the standard results report. If you also check the "Report only parameters with failed alarms" option, then only those parameters whose value has exceeded an enabled alarm limit will be included in the parameter report.

Report Margins

You can set the margins of the printed report in inches in order to make space for letterhead or logo, or to increase or decrease the number of lines printed on each page.

PDF File Control

These settings allow an Adobe Acrobat, "PDF" version of the report to be saved to a specified folder when processing results automatically. To enable this option check, "**Save PDF file for automatically processed results**".

Save PDF File to Folder: Click the "Open" button to select the directory to which the "PDF" files will be saved.

PDF File Name: These options are used to specify the PDF file name. You can choose to name the PDF file based on the name of the EZReporter data file (see the "Data Files" tab), or you can enter a "fixed" file name. If you choose the first option, the PDF file will have the same base file name as the EZReporter data file. You can also have the export file named based on the sample name from the chromatography data system.

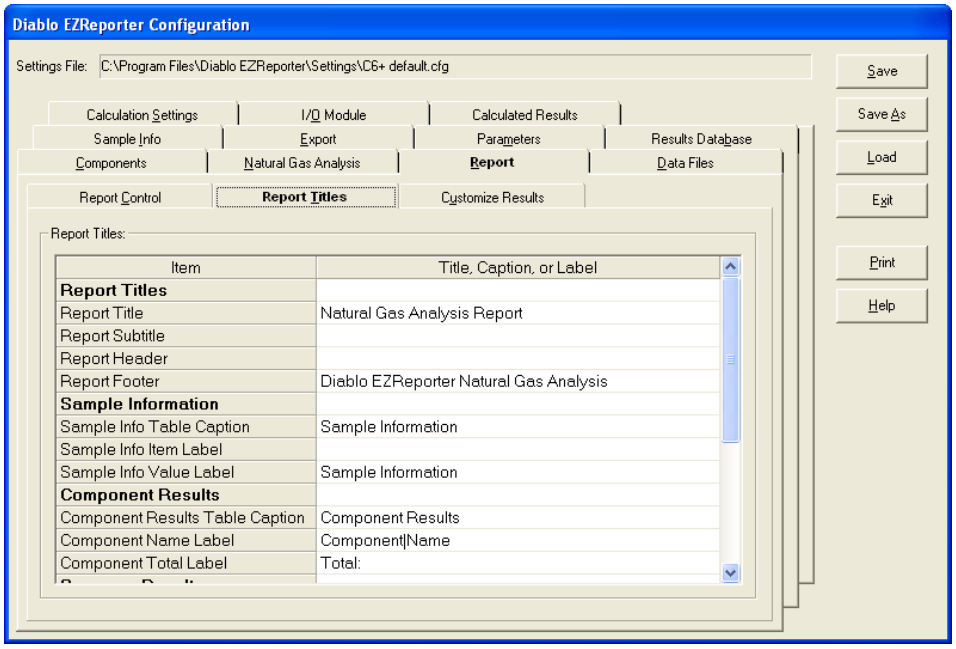
Append Additional Text

This option allows you to append additional custom text to the bottom of the report – below the total/summary results table. You can either edit the file "additional.txt" by clicking the Notepad icon, or browse and select a different file containing the desired text. You can also choose whether the text is left, center, or right justified on the report page.

Note: This additional text is only included in the printed report. It is not displayed on screen.

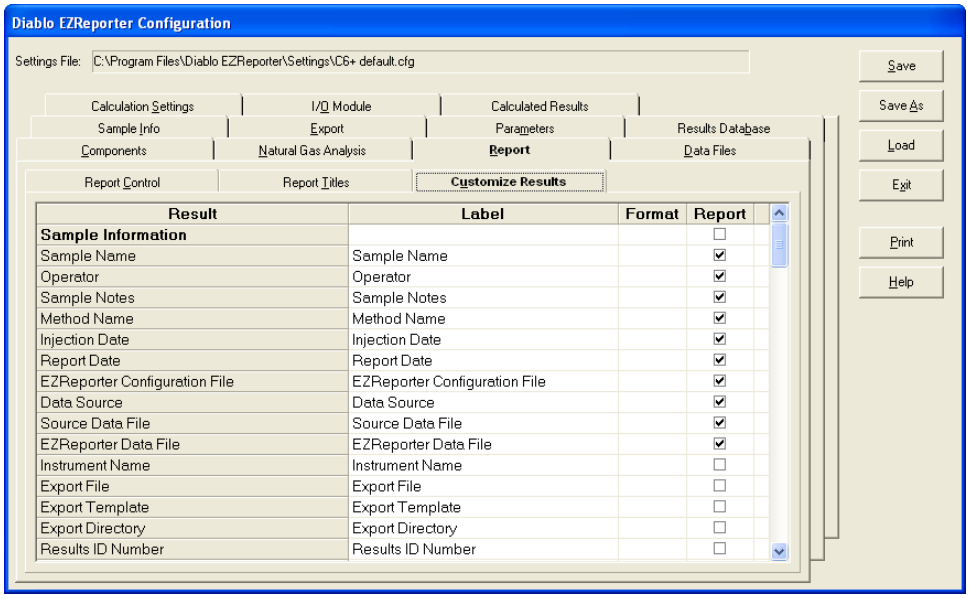
Report – Titles

You can modify all of the titles, captions, and labels displayed on the report in the "Report Titles" tab.



The "Titles" section of the "Report" Tab of the Diablo EZReporter Configuration Screen

Report - Customize



The "Customize" section of the "Report" Tab of the Diablo EZReporter Configuration Screen

The result table shown in the "Customize" tab of the Report configuration screen allows you to customize the viewed/printed report. You can change the text of the labels that identify a result on the report, set the formatting of numeric results, and add or remove results from the report by checking or un-checking the checkbox in the "Report" column.

Note that the "|" character is converted into a line break when the labels are rendered onto the report. This is particularly useful for component results when you want to minimize the width of the component result column.

Format

You can set the numeric formatting for a result by entering a format string in the corresponding field. Examples of common formatting strings are shown in the table below.

Important: The format of component and related total amount results is determined by the "Component Amount Precision" setting (see "Component Amount Precision" on page 22). You are not able to customize the format of those results.

Format String	Result
0	Will display all digits to the left of the decimal point and no digits to the right: The value 10000.2324 will be displayed as 10000 The value 0.2324 will be displayed as 0
0.00	Will display all digits to the left of the decimal point and two digits to the right of the decimal place: The value 232.4012 will be displayed as 232.40 The value 232 will be displayed as 232.00
0.0###	Will display all digits to the left of the decimal place, and from 1 to 4

	digits to the right of the decimal place: The value 232.4012 will be displayed as 232.4012 The value 232.4 will be displayed as 232.4 The value 232 will be displayed as 232.0

Common numeric formatting strings.

Context Menu

If you right click anywhere on the report/result table, the following context menu options will pop up:

Select all results: Check all of the results currently displayed in the table.

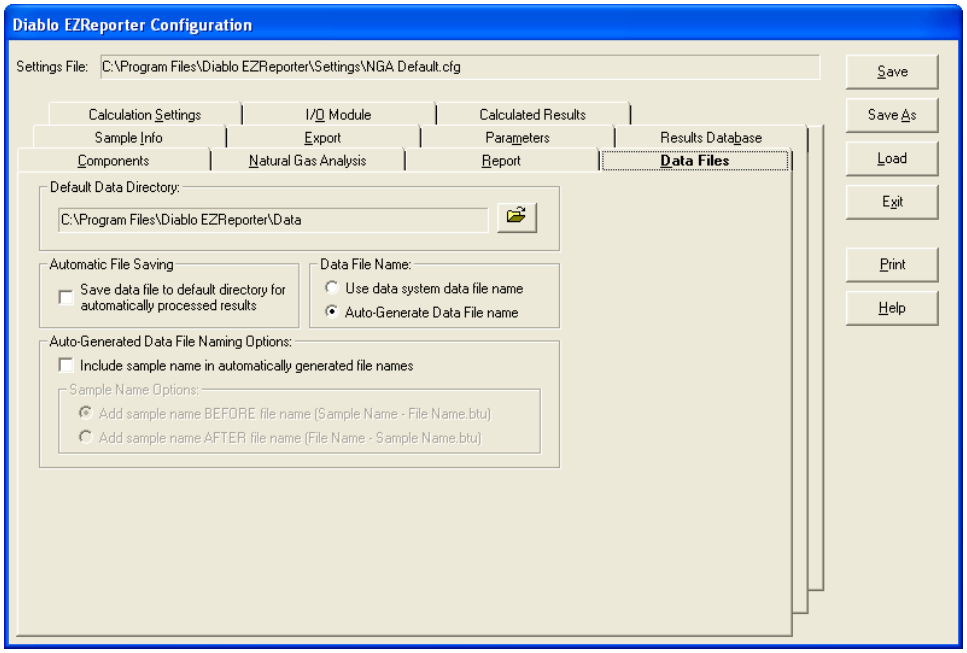
Select no results: Uncheck all of the results currently displayed in the table.

Select default results: Check only the results that are included in the default configuration.

Reset report labels to default values: Resets all of the report labels to their original, default value.

Data Files

The settings in the "Data Files" tab of the configuration dialog allow you to customize how data files are handled.



The "Data Files" Tab of the Diablo EZReporter Configuration Screen

Default Data Directory

Specify the directory into which you would like to save data files – use the "Browse" button to select or create the desired directory.

Automatic File Saving

Check this box if you would like to have a data file created in the default data directory during automatic processing of data from a chromatography data system. There are two options available for naming the data files

Use data system data file name

If you choose this option, the data file will be named based on the source data file name generated by the chromatography data system. The file will be named with the same base filename, but with the ".BTU" file extension instead of the ".DAT" file extension.

Auto-Generate Data File Name

The data files are named using a Date + Time format:

YYYYMMDD-HHMMSS.BTU

Where YYYYMMDD is the current date and HHMMSS is the current time (e.g. 20050208-153423.BTU).

Auto-Generated Data File Naming Options

Check this box if you would like to have the sample name added to the Date+Time formatted file name during automatic processing (e.g. NGA Sample-20050208-153423.BTU).

Sample Name Options

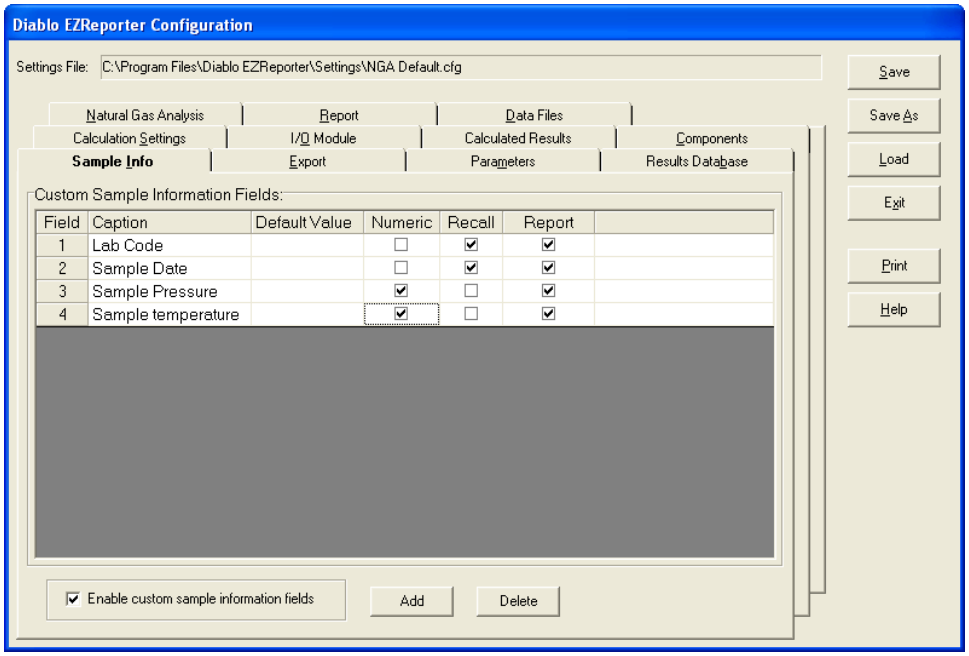
This option allows you to set whether the sample name is added before or after the file name. Select "Before" (e.g. NGA Sample-20050208-153423.BTU) if you want the data files to sort alphabetically by sample name when you view the data file directory in Windows Explorer. Select "After" (e.g. 20050208-153423-NGA Sample.BTU) if you want the data files to sort by the Date/Time.

File Format

This option sets whether the data files are saved using a Comma or a Tab as the delimiter character between fields in the file.

Sample Info

These options allow you to enable and configure custom sample information fields that can be used to report additional conditions like well number, pressure, temperature, etc. They are simply a way for the user to enter additional custom information during an analysis, and have that information printed on reports and saved in the data and export files.



The "Sample Info" Tab of the Diablo EZReporter Configuration Screen

Check the "Enable custom sample information fields" checkbox to enable the custom sample information fields. Press the "Add" button to add a new sample information field, or the "Delete" button to delete the field that is currently selected. The captions are displayed on the printed report, and when you are prompted to enter the associated custom sample information. You can also specify whether the field is numeric.

Default Value

A default value can be specified for each of the custom sample information fields. The default value will be displayed automatically when the Sample Information dialog box is displayed. However, if the "Recall" option is set and a previous value exists for the field, then the previous value will be displayed instead of the default value.

Numeric Sample Information Fields

If a sample information field is numeric, special numeric formatting and scaling can be applied to the value in the export file. See "Data Export" on page 29 for more information.

Recall Last Value

Check the "Recall" check box if you would like the last value entered into this field to be recalled when the form is displayed.

Report

If the "Report" checkbox is checked, then the field will be displayed in the "Sample Information" section of the report. If it is unchecked, then the field will not be added to the report.

Changing the order of Sample Information Fields

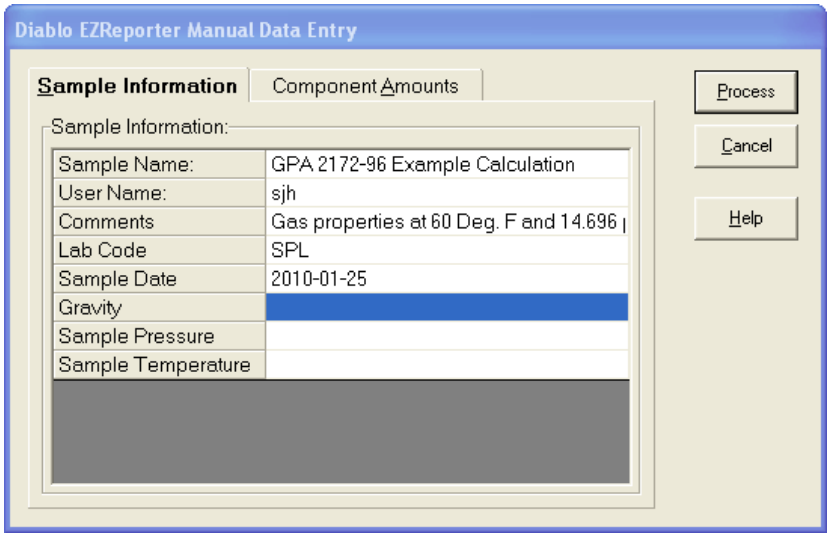
The order of the fields in the sample information table is the order that they will be printed in the report and displayed in the sample information prompt. You can easily rearrange the field order by first selecting a field's row in the table by ***left*** clicking on that row with the mouse. Next, while the cursor is still pointing to that row, click and hold the ***right*** mouse button and drag the field to a new location in the table. The row being moved will be highlighted in red. Release the right mouse button when the field is located at the desired position in the table.

Important:

Important: Be careful rearranging the order of the Sample Information fields if you are using Export Templates that refer to Sample Information fields. In those instances Sample Information fields are identified by their index, which is their order of in the sample information table. If you rearrange the sample information table after you have set up an Export Template, it is possible that the wrong Sample Information field will be referenced.

Entering custom sample information:

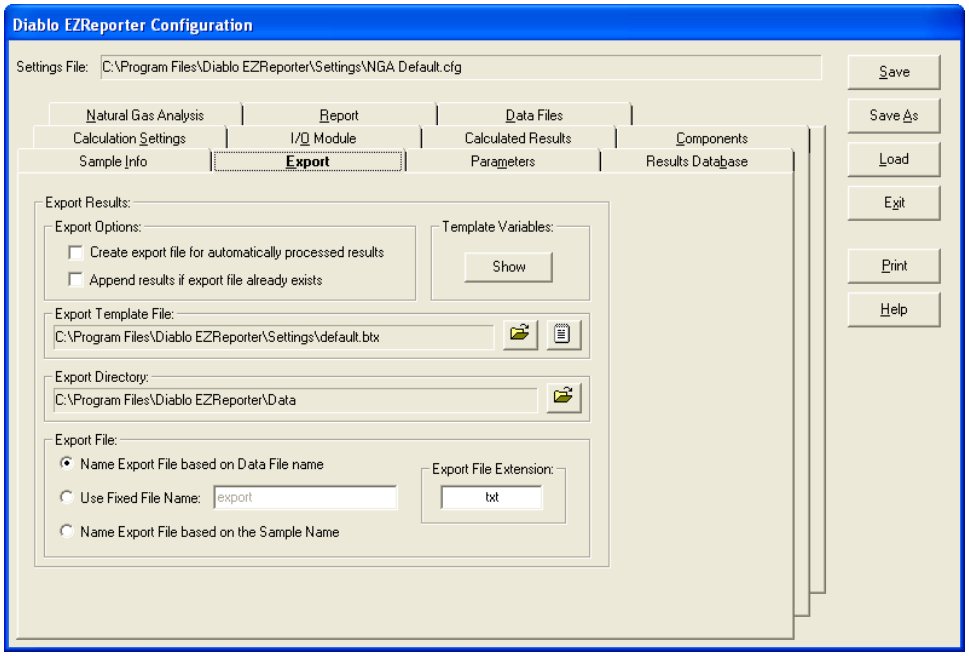
If you have enabled custom sample information fields, and if at least one of the fields contains a caption, then "Manual Data Entry" dialog box will be displayed when automatically processing results from a chromatography data system. This dialog box will display the caption(s) specified in the Sample Info configuration, and allow the associated custom sample information to be entered by the user. Alternatively, you can manually enter the sample information using the "Tools > Edit Current Data Set…" menu option.



The "Diablo EZReporter Manual Data Entry "window showing the custom sample information fields.

Data Export

The EZReporter software includes a flexible data export feature that allows you to create custom data export files in almost any format you might need. An export template file defines the format of the export file.



Export Configuration Panel

Export Options

Check "Create export file for automatically processed results" if you want the results from a chromatography data system to be exported automatically when the data is processed by the EZReporter software.

Check "Append results if export file already exists" if you want the exported results to be appended to any results that already exist in the specified export file. If this option is unchecked, then existing results will be overwritten.

Export Template File

Click the "Open" button to specify the template file that will be used to create the export file. Click the "Notepad" button to open the selected export template file in Windows Notepad for editing. See "Export Template Format" in the Appendix on page 48 for information on creating and editing Export Template files. Note that several example template files are included with the software in the application "Settings" folder.

Export Directory

Click the "Open" button to select the directory to which export files will be saved.

Export File

These options are used to specify the export file name. You can choose to name the export file based on the name of the EZReporter data file (see the "Data Files" tab), or you can enter a "fixed" file name. If you choose the first option, the export file will have the same base file name as the data file.

You can also have the export file named based on the sample name. This allows results from replicate runs of the same sample to be added appended to the same export file even though the data file names are different.

Export File Extension: Enter the file extension to use for the export file into this text box field. The default extension if this field is left blank is "txt".

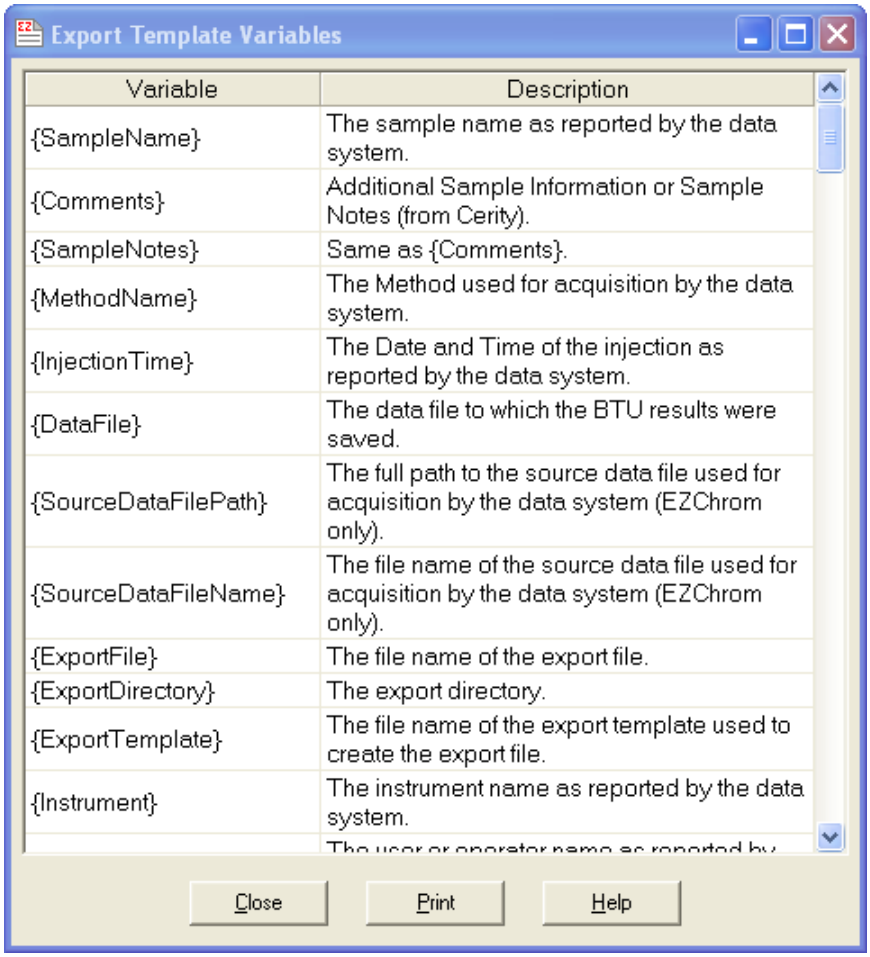
Note: if you enter a fixed export file name that already includes a file extension, it will take precedence over the entry in the Export File Extension field.

Show Template Variables

If you click this button, a table of supported template variables with descriptions will be displayed. You can print this list by pressing the "Print" button.

Hint:

Hint: If you double-click on a particular variable, it will be copied to the Windows clipboard so that you can paste it into a template file.

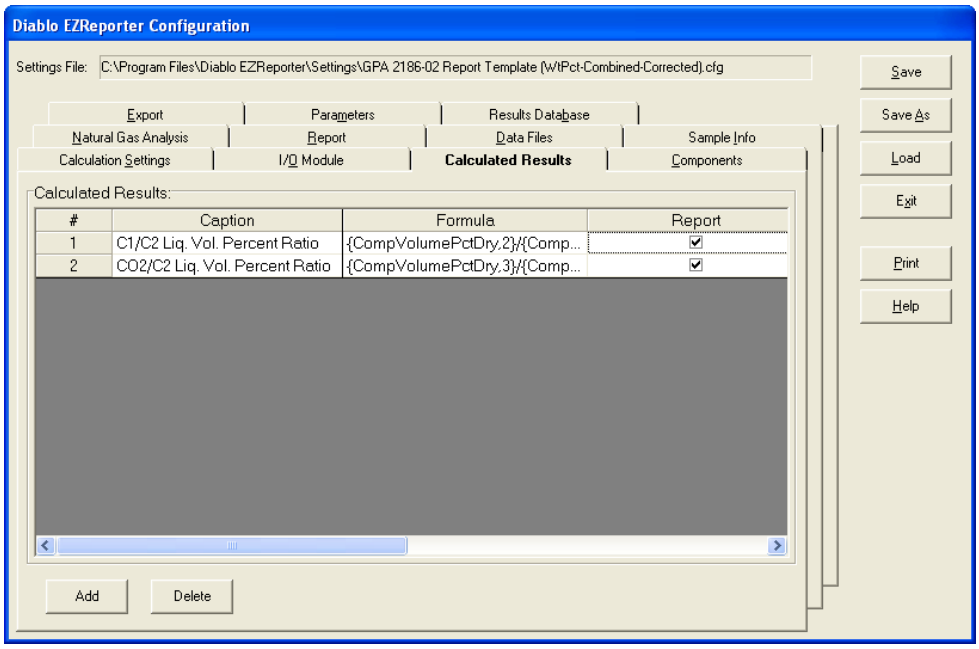


EZReporter Template Variable Table

Calculated Results

Calculated results are based on custom formulas you enter using the "Formula Builder". The Formula Builder allows you to select from a list of available result variables and supported arithmetic operators to build a custom formula that will be evaluated to a numeric value when processing results. The Calculated Result is then displayed in the Results Summary part of the report along with a descriptive caption that you also specify.

Calculated Results can also be used as Monitored Parameters for alarming and trend plotting and both the caption and value can be specified in an Export Template and exported to a text file.



The EZReporter Calculated Results configuration table

Adding Calculated Results to the Configuration and Report

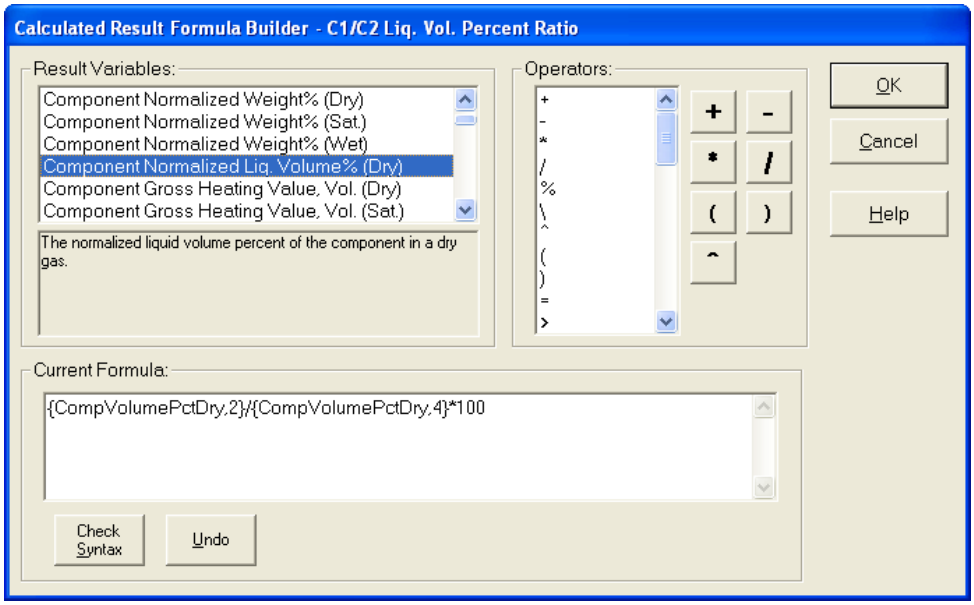
To add a Calculated Result to the configuration and report:

1. Click the "Add" button.
2. In the new line that is added to the Calculated Results table, enter a caption that describes the result. This caption will be displayed along with the calculated value in the "Results Summary" section of the report.
3. Click the […] button that is visible when you click in the "Formula" cell to display the Calculated Result Formula Builder and create the custom formula.
4. Check the "Report" checkbox if you want this Calculated Result displayed in the report.
5. Enter the desired numeric format string for this result. See "Format" on page 25 for information on specifying the numeric format.

Creating a Custom Formula using the Formula Builder

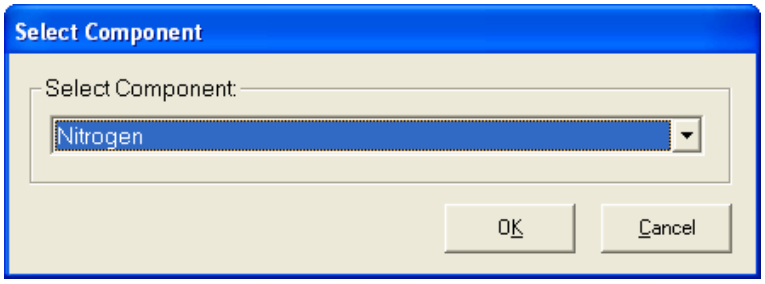
You create a custom formula for a Calculated Result using the Formula Builder tool that is displayed by clicking the […] button when the cursor is in the Formula cell of the Calculated Results table.

Formulas consist of Result Variables and arithmetic Operators (+,-,*, etc.). Simply double click the desired Result Variable or Operator from the respective list and it will be inserted at the current cursor location in the "Current Formula" box. See "Calculated Result Formula Builder Operators" on page 55 in the appendix for a description of supported operators.



The EZReporter Custom Calculation Formula Builder

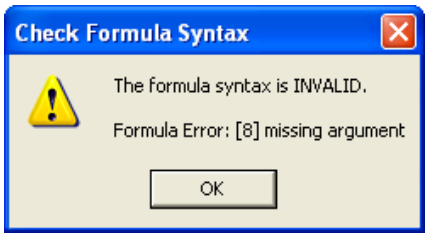
If the Result Variable you have selected is a Component Result, you will also be prompted to select the desired component.



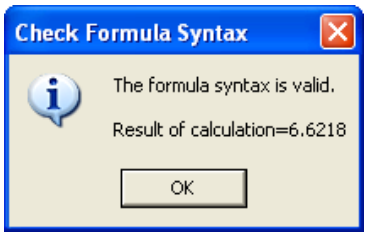
IMPORTANT:

Important: If you have included any Component Variables in the custom formula, you should ***not*** change the order of components in the main Component Table. Component variables are linked to the specific component by the component number, which is based on the order they are displayed in the component table. If you change the component order, it is possible that the formula will be linked to a different component than expected.

Once you have created the custom formula you can check that the syntax is valid by clicking the "Check Syntax" button. If the formula syntax is invalid, an error message will be displayed:

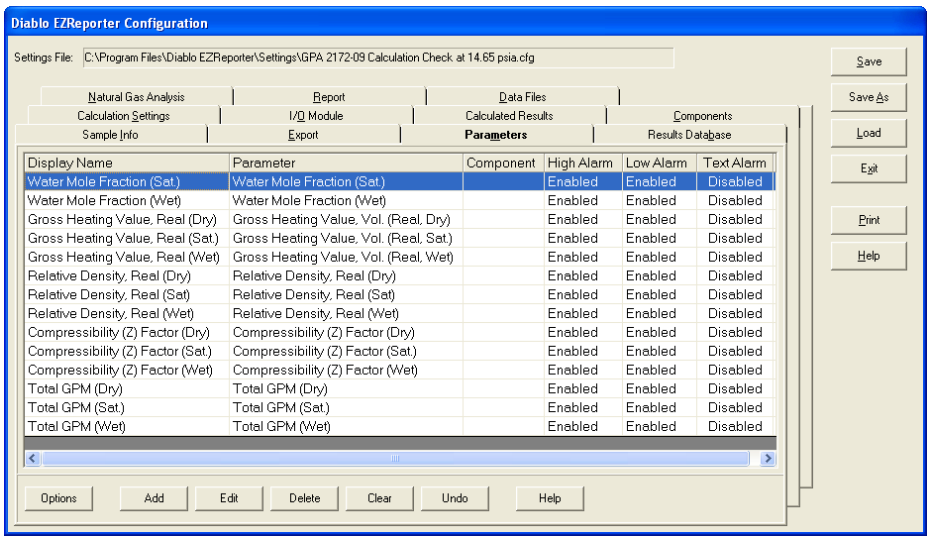


If the formula syntax is valid, the result of the calculation will be displayed. Note that the result of the calculation will be 0 unless there is a current report with actual results displayed in the main EZReporter Sample Result window in which case it will use the actual result values in the calculation.



Parameter Options

The "Parameters" tab allows you to configure a list of component or calculated results that will be displayed in the "Parameter Monitor" window of the main software screen. You can set both high and low alarm limits for these monitored parameters – if the parameter value exceeds either of these limits, the result will be displayed with a red background in the parameter table to alert you.



The Parameter Monitoring configuration panel

Options: Clicking the "Option" button displays the Monitoring Options dialog box. See "Setting Monitored Parameter Options" on page 35.

Add: Clicking the "Add" button allows you to configure and add a new parameter to the monitored parameter table. See "Adding or Editing Monitored Parameters" on page 37.

Edit: Clicking the "Edit" button allows you to edit the options for the parameter that is currently selected the parameter table. You can also double-click the desired row in the table to edit a parameter's options. See "Adding or Editing Monitored Parameters" on page 37.

Delete: Clicking the "Delete" button will remove the selected parameter from the parameter table.

Clear: Clicking the "Clear" button will clear the parameter table.

Undo: Clicking the "Undo" button will restore the parameter table to the last saved configuration.

Help: Clicking the "Help" button displays context-sensitive help for this topic.

Changing the Display Order of Parameters

To rearrange the order of the parameters in the parameter table, first select the row of the parameter you want to move by ***left*** clicking on that row with the mouse. Next, while the cursor is still pointing to that row, click and hold the ***right*** mouse button and drag the selected row to the desired new location in the table. Release the right mouse button when the field is located at the desired position in the table.

Cloning Parameters

Right clicking on a parameter in the table displays a context menu that allows you to clone the properties of the selected parameter to a new parameter. This allows you to create a new parameter quickly using an existing parameter as a template.

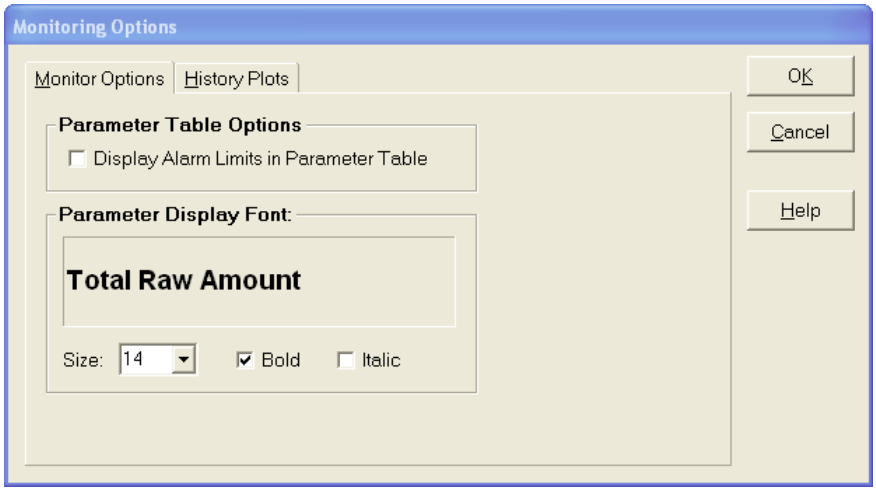
Auto-add All Components

Right clicking on a component parameter table displays a context menu that allows you to add the remaining components in the configuration to the parameter table using the selected component parameter as the template.

Setting Monitored Parameter Options

Click the "Options" button to set additional options for the Parameter Monitoring.

Monitor Options Tab



Parameter Monitoring Options Dialog – Monitor Options Tab.

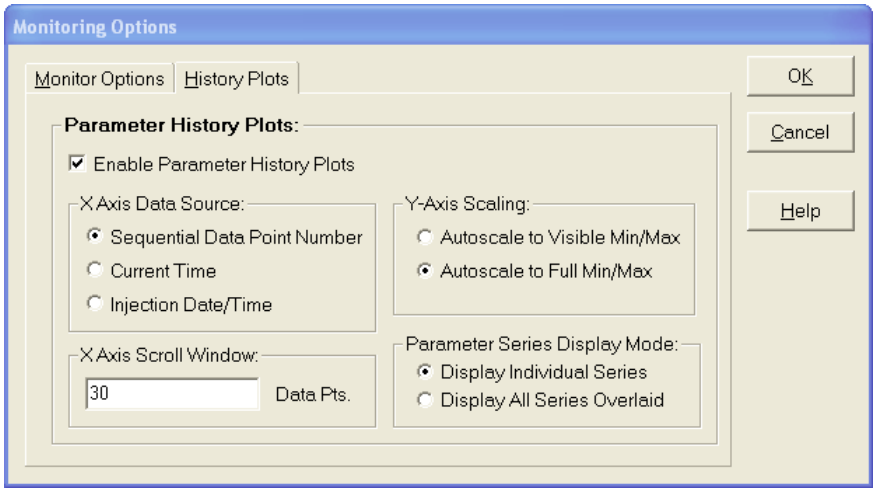
Parameter Table Options

Check the "Display alarm limits in parameter table" option if you would like to include the actual upper and lower alarm limits in the parameter table along with the parameter name and value. This can be especially useful when using relative alarm limits so that you can see the actual calculated limits for each parameter.

Parameter Display Font

In the "Parameter Display Font" section, use the "Size" list box and "Bold" and/or "Italic" check boxes to set the desired font for the Monitor Table. A preview of the font is displayed for you.

History Plots Tab



Parameter Monitoring Options Dialog – History Plots Tab

Enable Parameter History Plots: Check this box to enable history plots for the monitored parameters. Note that this option will be set automatically if history plots are enabled for any of the individual parameters.

X-Axis Data Source: You can choose to plot the parameter values against a sequential data point/run number, the current time when the report/results are generated, or the injection date/time of the chromatographic run.

X-Axis Scroll Window: The X-Axis will automatically zoom to this time (in minutes) or data point window. When new results are received, older data points outside this window will no longer be visible. However, the entire history plot can be displayed at any time by clicking the "Zoom Full" button, or double-clicking on the plot window.

Y-Axis Scaling: You can choose to have the y-axis scale adjusted automatically so that the range includes only the data points that are visible in the current plot/window. Alternatively, you can choose to have the y-axis scale adjusted so that it represents the full range of parameter values, including those outside the current plot/window.

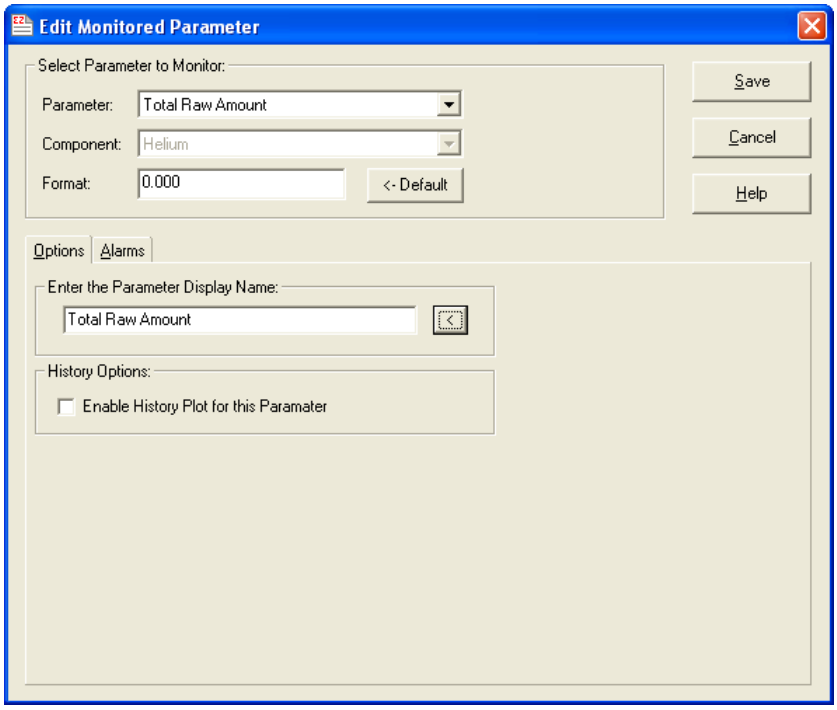
Important:

Important Note: If you have enabled either high or low alarm limits in the parameter configuration, then those limits will be displayed as red, dotted lines on the history plot. Those alarm limits are included when determining the Y-axis range.

Parameter Series Display Mode: You can display each parameter history plot series either individually or with all series overlaid on the same axes.

Adding or Editing Monitored Parameters

Click the "**Add**" button to add a new monitored parameter or the "**Edit**" button to edit the monitored parameter currently selected in the parameter table (you can also double click the line in the table that you want to edit). You can also clear the current table by pressing the "**Clear**" button, or undo any changes you have made to the table by pressing the "**Undo**" button.



The Edit Monitored Parameter dialog

Parameter: Select the parameter that you want to monitor from this list box. If you select a parameter that is derived from a component result (component amount,

for example), then you will also need to specify the corresponding component from the component list box.

Note that if the NGA Module is active, the parameter list will include a number of different NGA-related result parameters. If the NGA module is not active, only chromatographic parameters like retention time, peak area, and amount will be listed.

Component: If you select a parameter that is derived from a component result (component amount, for example), then you will also need to specify the corresponding component from the component list box.

Format: You can set the numeric formatting for the displayed parameter value by entering a format string in this text box. Examples of common formatting strings are shown in the table below.

Format String	Result
0	Will display all digits to the left of the decimal point and no digits to the right: The value 10000.2324 will be displayed as 10000 The value 0.2324 will be displayed as 0
0.00	Will display all digits to the left of the decimal point and two digits to the right of the decimal place: The value 232.4012 will be displayed as 232.40 The value 232 will be displayed as 232.00
0.0###	Will display all digits to the left of the decimal place, and from 1 to 4 digits to the right of the decimal place: The value 232.4012 will be displayed as 232.4012 The value 232.4 will be displayed as 232.4 The value 232 will be displayed as 232.0

Common numeric formatting strings.

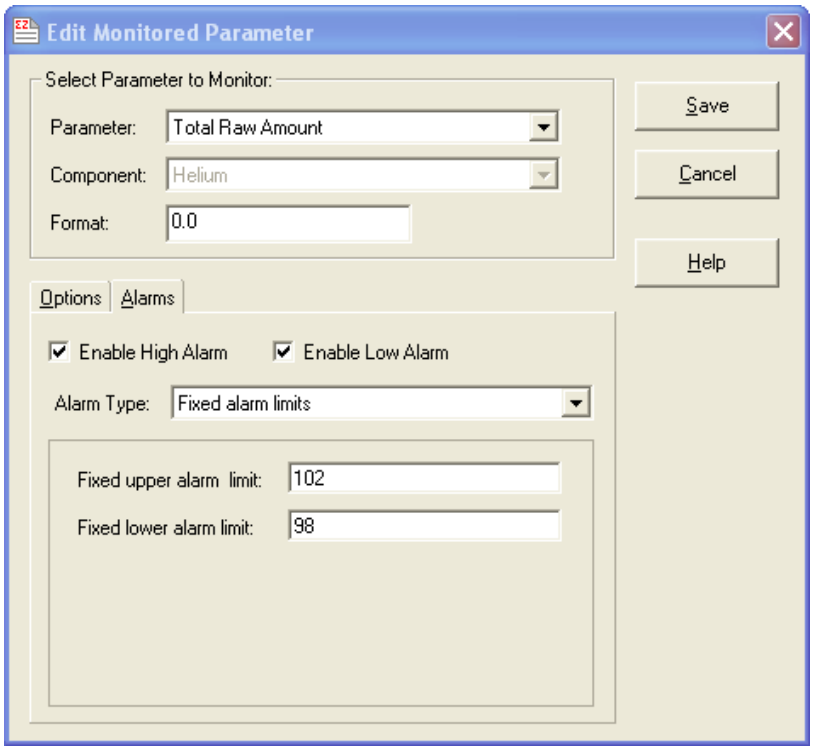
Default: If you click the "Default" button, the default formatting string for this type of parameter will be copied into the format text box for you.

Display Name: The text entered into the "Display Name" text box will be displayed for this parameter in the Monitor Table. You can click the [<] button to copy text from the parameter and component (if appropriate) list boxes into the text box.

Enable History Plot for this parameter: If you check this box, then the value of this monitored parameter will be plotted in the Parameter History display.

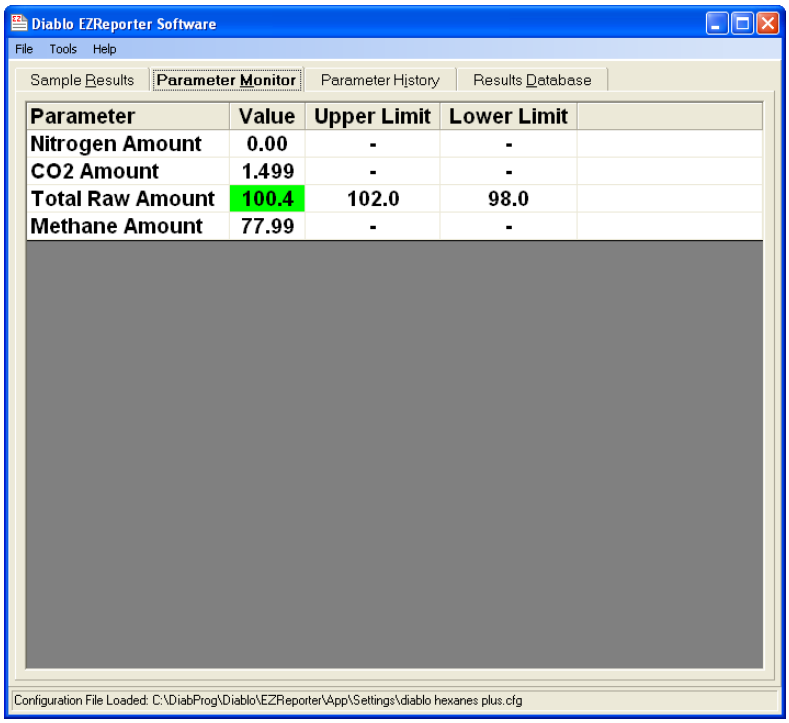
Parameter Alarms

You can enable both high and/or low parameter alarms by checking either one or both of these check boxes and selecting the desired alarm type/limit.



The "Alarms" tab of the Edit Monitored Parameter window showing both High and Low Alarms enabled.

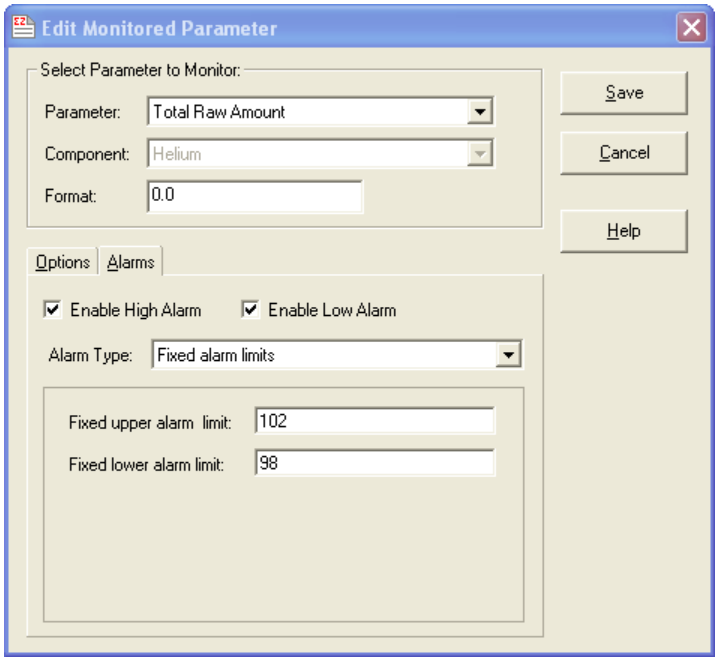
If an alarm is enabled and the parameter value exceeds the specified limit, the result will be displayed with a red background in the Monitor Table to alert you. Conversely, if the alarm is enabled and the parameter value does *not* exceed the limit, the result is displayed with a green background.



The EZReporter software supports several types of Alarms, including fixed alarm limits, and relative alarm limits. Use the "Alarm type" list box to select the type of alarm limits to use for the parameter.

Fixed Alarm Limits

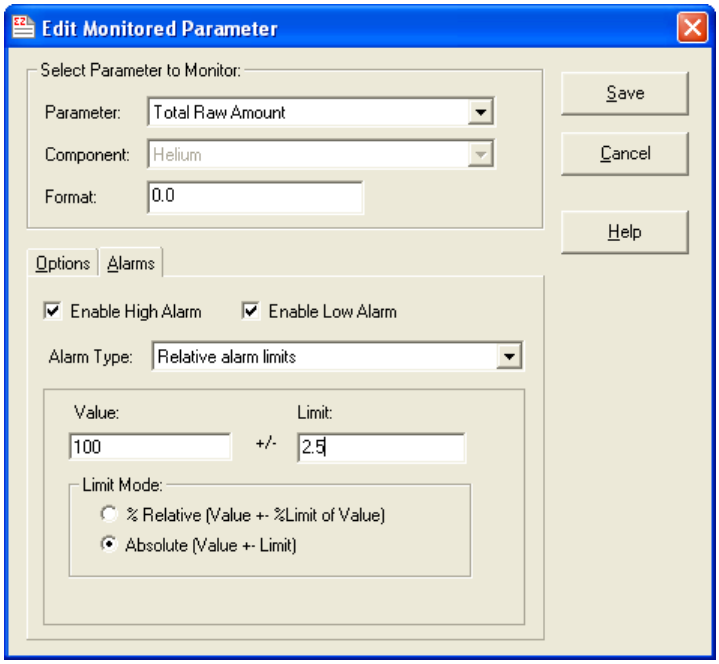
With the "Fixed alarm limits" alarm type you simply enter the upper and lower values for the alarm limits.



The "Alarms" tab of the Edit Monitored Parameter window showing the settings for fixed upper and lower alarm limits.

Relative Alarm Limits

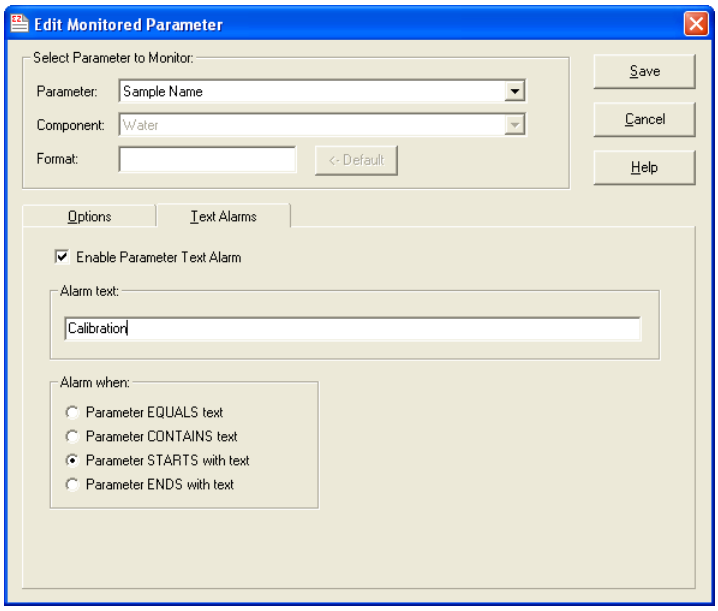
With "Relative alarm limits" you must enter an alarm value and the limits are calculated relative to that value. You can specify whether you want the limits calculated as a percent relative to the Value (Value +/- %Limit of the Value) or use absolute limits (Value +/- Limit).



The "Alarms" tab of the Edit Monitored Parameter window showing the settings for relative alarm limits.

Text Alarms

Text alarms are available when the chosen parameter is a non-numeric, text result like "Sample Name". If you enable the Text Alarm, the alarm will be triggered when the parameter text matches the alarm condition defined by the "Alarm Text" and the "Alarm when" setting. The comparison is *not* case sensitive.



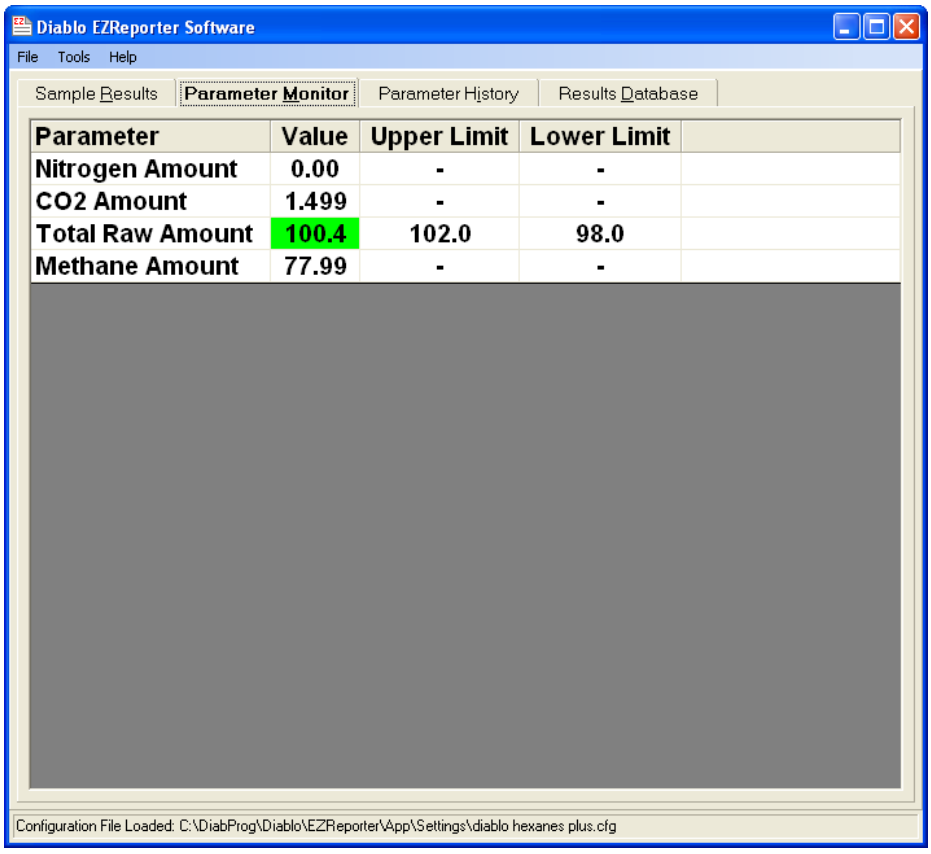
The "Text Alarms" tab of the Edit Monitored Parameter window showing the settings for a Text Alarm.

Using Monitored Parameters and History Plots

The Parameter Monitor

Monitored parameters are displayed in a table on the "Parameter Monitor" tab of the main software screen. The parameter table displays the results for monitored parameters from the last analysis or last data file loaded.

If either the high or low alarm is enabled for any of the monitored parameters, then the background color of the parameter value will be either red or green depending on whether the actual value exceeds the enabled alarm limit.



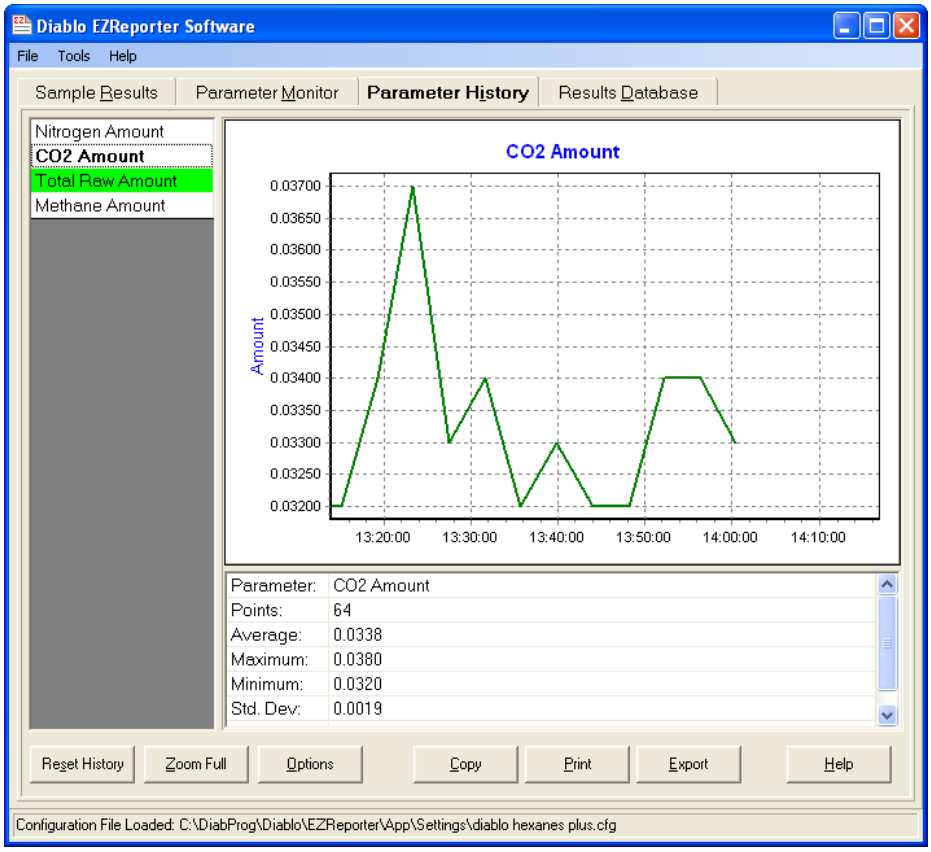
The EZReporter Parameter Monitor Window

Parameter History

Historical values of monitored parameters can be plotted in the Parameter History window.

In order to display the parameter history window, you must enable history plots for each individual parameter whose results you want to plot. See "Parameter Options" on page 34" for more information.

The individual parameter history plots and summary statistics are displayed by clicking on the desired parameter display name in the parameter list. If either high or low alarm limits have been enabled for a parameter, then the parameter name will be displayed with either a red or green background to indicate whether the current parameter value has exceeded an alarm limit (red background) or not (green background). In addition, the alarm limit is displayed a s red, dotted line on the history plot.

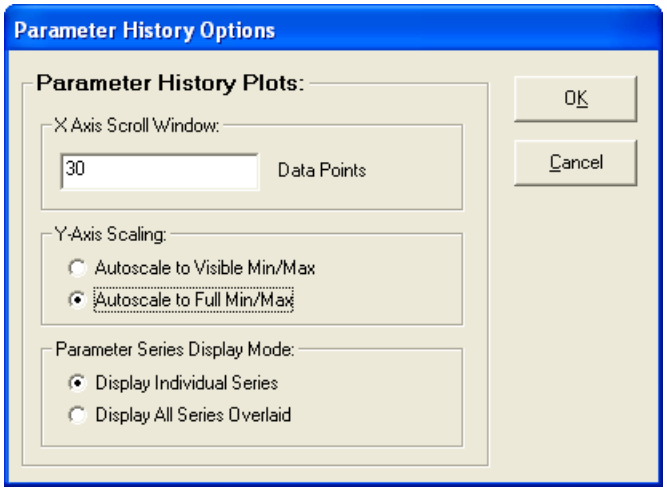


The "Parameter History" tab on the main screen of the Diablo EZReporter

Reset History: Click the "Reset History" button to clear and reset the history plot and summary statistics for all plotted parameters.

Zoom Full: Click the "Zoom Full" button to expand/contract the X and Y axes of the history plot to display the entire plot. Double-clicking in the history plot window performs the same function.

Options: Click the "Options" button to change the X-axis scroll window or Y-axis scaling mode:



Copy: Click the "Copy" button to copy the currently displayed trend plot to the Windows clipboard.

Print: Click the "Print button to print the currently displayed history plot and summary statistics.

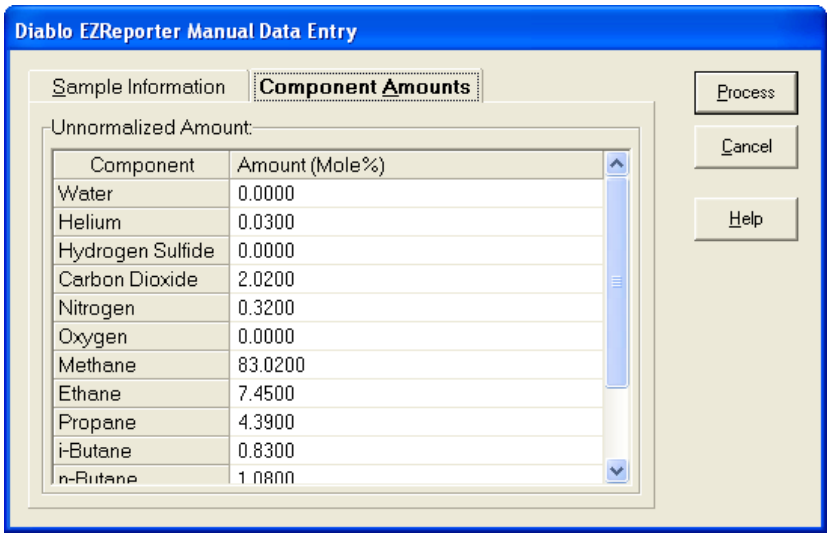
Export: Click the "Export" button to export the history results for all components to a comma-delimited text file.

Help: Click the "Help" button to display context-sensitive help for this topic.

Data Processing and Reporting

Manual Data Processing and Reporting

It is possible to enter component mole% values manually and calculate results based on those values. Select "New Data Set…" from the "file" menu. Any existing results will be cleared from the main screen, and you will be presented with the Manual Data Entry dialog. Enter the mole% values into the component table, and optionally a sample name, user name, and comments, and then press the "Process" button to perform the calculations.



Manual Data Entry Dialog Box

Important:

Important: Make sure to save these results to an EZReporter data file (select "Save Data Set As…" from the "File" menu) if you want to be able to recall the data at a later time. You can print a report by selecting "Print > Report" from the "File" menu.

You can re-edit the data you entered manually by selecting "**Edit Current Data Set…**" from the "**Tools**" menu. Note however, that for purposes of data integrity, this option is disabled for data sets from a chromatography data system that were processed automatically.

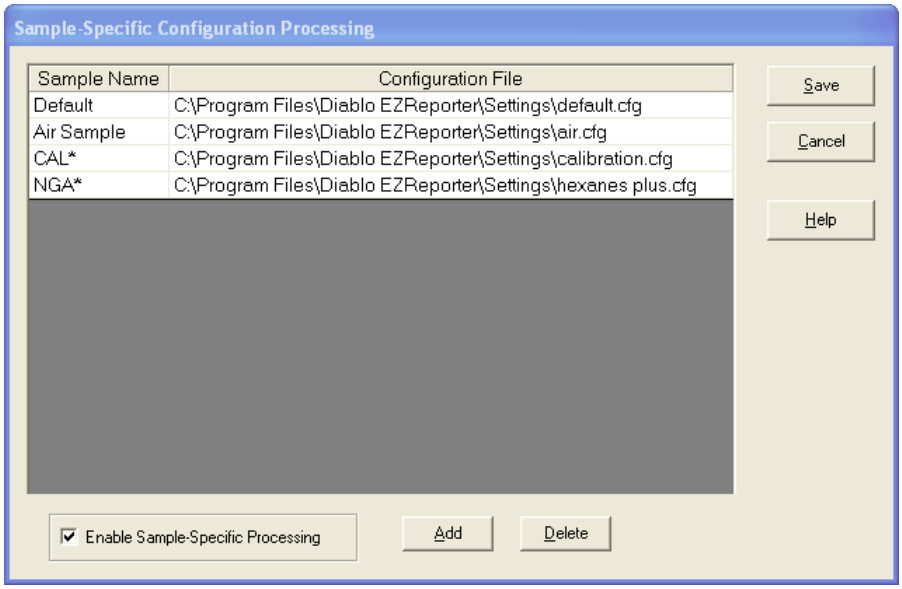
Automatic Data Processing and Reporting

Refer to the EZReporter Quick Start Guide for your chromatography data system for instructions on how to configure the data system to send results automatically to EZReporter for data processing and reporting.

Sample-Specific Configuration Processing

Sample-Specific Configuration Processing allows you to use different EZReporter configuration files based on the sample name when automatically processing results from a supported data system.

To configure this feature, select the “File > Sample-Specific Configurations…” menu option.



Check or uncheck the "Enable Sample-Specific Processing" checkbox to enable or disable this feature. If enabled during automatic processing of results from one of the supported data systems, the sample name from the data system is compared to the sample names in the table. If a match is found, the corresponding configuration file is loaded prior to processing the sample results.

Simply click the "Add" button to add a sample name and the corresponding configuration file that should be used for that type of sample. You can include '*' and '?' wildcard characters in the sample name. The '*' character will match any character or characters in that position, while the '?' matches a single character in that position.

Note: If a sample name matches both a fixed sample name ("Air Sample") and a wildcard sample name ("Air*"), then the configuration file specified for the *fixed* sample name will be used. If a sample name matches more than one wildcard entry, then the configuration file for the first entry alphabetically will be used.

The mandatory "Default" configuration file is selected whenever a sample name doesn't match any of the sample names in the table.

Appendix

EZReporter Data File Format

EZReporter data files are comma-delimited text files that can be imported into LIMS or process data systems. An example file is listed below.

Hint:

Hint: Although the EZReporter data files are text files that can be used directly to send results to other customers or databases, Export files are a much better, more flexible way to do this. See "Data Export" on page 29 for more information on Export Templates and Export Files.

```
SampleName,"GPA 2172-96 Example Calculation"

MethodName,""

UserName,""

Comments,"Gas properties at 60 Deg. F and 14.696 psia
(Gas Analysis on Dry Basis)"

InjectionTime,""

SettingsFile,"C:\Program Files\ Diablo
EZReporter\Settings\GPA 2172-96 Wet.cfg"

ProcessMode,3

DataSource,1

Instrument,""

SampleInfo1,"1456" (optional)

SampleInfo2,"82" (optional)

SampleInfo3,"" (optional)

SampleInfo4,"" (optional)

,,"Component","Ret.Time","Peak Area","Unnormalized
Mole%","Normalized Mole%","Gross Heating Value","Molar
Mass Ratio","Summation Factor"

Component,1,"Helium",0.000,0,0.03,0.03,0,0.00004146,0
```

```
Component,2,"Nitrogen",0.000,0,0.32,0.32,0,0.003095136,0
.00001408

Component,3,"Carbon
Dioxide",0.000,0,2.02,2.02,0,0.03069592,0.00039794

Component,4,"Methane",0.000,0,83.02,83.02,838.502,0.4598
64384,0.00963032

Component,5,"Ethane",0.000,0,7.45,7.45,131.84265,0.07734
59,0.00178055

Component,6,"Propane",0.000,0,4.39,4.39,110.45679,0.0668
4214,0.00151016

Component,7,"i-
Butane",0.000,0,0.83,0.83,26.99077,0.01665644,0.00038014

Component,8,"n-
Butane",0.000,0,1.08,1.08,35.23284,0.02167344,0.00051624

Component,9,"i-
Pentane",0.000,0,0.31,0.31,12.40279,0.00772272,0.0001801
1

Component,10,"n-
Pentane",0.000,0,0.25,0.25,10.02225,0.006228,0.00015775

Component,11,"n-
Hexane",0.000,0,0.3,0.3,14.2677,0.0089265,0.0002406

SumHV,1179.71779

SumMolarMass,0.69909204

SumZ,0.01480789

RawTotalMolePct,100

PressureBase,14.696

WaterMoleFractionSat,1.74442025040827E-02

GrossHeatingValueIdealDry,1179.71779

GrossHeatingValueRealDry,1183.53165556816

GrossHeatingValueIdealSat,1159.13855397357

GrossHeatingValueRealSat,1163.31848048984

RealRelativeDensityDry,0.701094431772844

RealRelativeDensitySat,0.700006424492229

GasCompressibilityFactorDry,0.996777555082519

GasCompressibilityFactorSat,0.996406894082425
```

Export Template Format

Export templates are plain-text files with a ".btx" file extension that are used to define how results will be saved to the text files created by the export feature of the EZReporter software. Any text editor like Windows Notepad can edit export

template files. However, make sure they are saved with the ".BTX" file extension (Notepad will sometimes append a ".TXT" file extension to the end of the ".BTX" extension.)

The export function will replace any "variables" it finds within the export template file with the current value of the variable. Variables are pre-defined names enclosed between braces: {VariableName}.

Note: The template examples shown below are included in the template file, "Example Export Template.btx".

Any other text that is present in the template file will be exported "as is" unless it is part of a comment or other special template section.

```
{StartComment}

Any text present between {StartComment} and
{EndComment} will not be saved to the export file.
Comments can be used to annotate the template file.

{EndComment}
```

The lines between StartHeader and EndHeader will only be saved to a new export file. They will not be saved when new results are appended to an existing export file. This can be used to create a column header for a summary list of results from multiple runs, for example.

```
{StartHeader}

Date, Name, Ret. Time, Area, Mole%

{EndHeader}
```

"DecimalPlaces" is a special variable used to set the number of decimal places to include for calculated results (4 places in this example). It affects the results that are exported after its place in the template. Note that the default value is the number of decimal places specified in the Data Files configuration.

Note: It is generally best to change the number of decimal places to report using the option in the Data Files section of the EZReporter configuration editor rather than the "Decimal Places" variable.

```
{DecimalPlaces,4}
```

To create a comma-delimited export file, simply include commas between the fields you wish to separate. In addition, if you want quotation marks to enclose text fields, simply include them in the template as shown below.

```
"CurrentDate", "{Now}"
```

```
"SampleName", "{SampleName}"
"UserName", "{UserName}"
```

To create a tab-delimited file, simply use the tab key on your keyboard, or include the special tab variable, "Tab", between the fields you wish to separate as shown below.

```
CurrentDate    {Now}
SampleName     {SampleName}
UserName {UserName}
```

or

```
MethodName{Tab}{MethodName}
SettingsFile{Tab}{SettingsFile}
InjectionTime{Tab}{InjectionTime}
```

You can use the special component loop to print the component-specific results (Name, Mole%, Area, etc.) for *all* of the components in the current configuration. The components are exported in the same order that they appear in the configuration editor.

```
{StartCompLoop}
{CompName},{CompRT},{CompArea},{CompNormMolePct}
{EndCompLoop}
```

If instead, you want to export the results for a specific component, simply include the component number in the variable as shown below. Components are numbered in the order they appear in the configuration editor, starting with 1 for the first component.

```
Component 1 Name:  {CompName,1}
Component 1 Mole%: {CompNormMolePct,1}
```

You can use the special line continuation variable, "_", to force the next line in the template to be appended to the current line instead of in a new line:

```
{CompName,1},{_}
{CompName,2},{_}
```

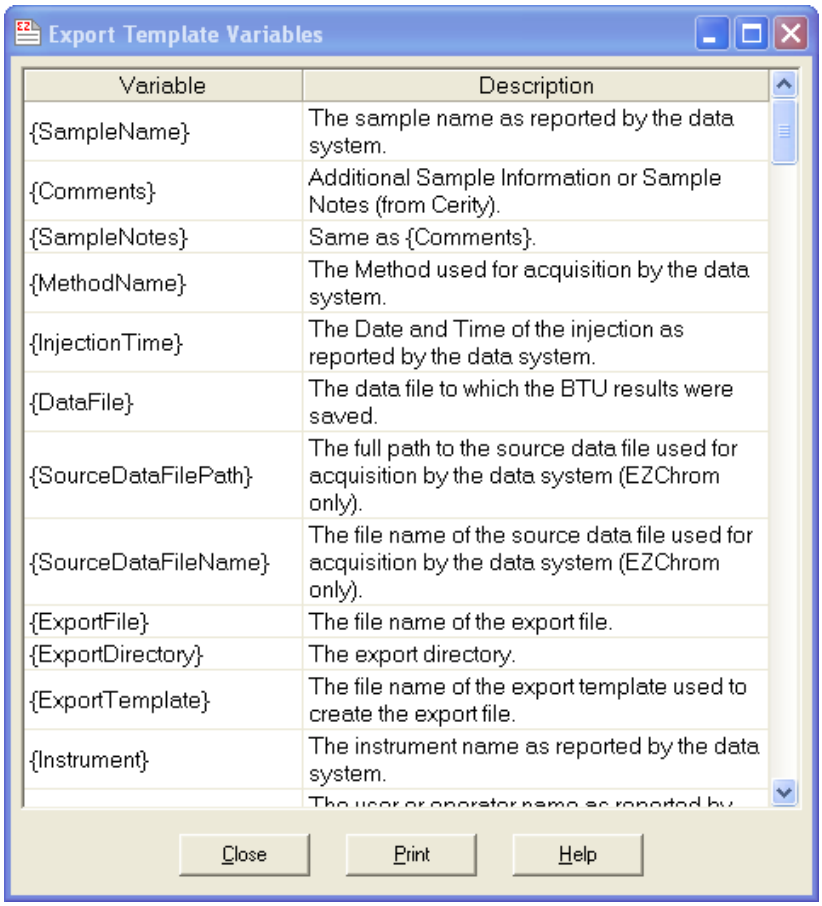
```
{CompName,3}
```

Line continuation is most useful in instances where you want all of the results to appear in a single line. For example, you would use the line continuation in a component loop to create a summary export file in which each line corresponds to a single run.

```
{StartCompLoop}
{CompName},{CompRT},{CompArea},{CompNormMolePct},{_}
{EndCompLoop}
```

Summary of Export Template Variables

You can view a list of the variables that are supported by Export Templates at any time by selecting either the "Tools > Show Export Template Variables…" menu option, or by clicking on the "Show" button in the Export section of the configuration editor.



EZReporter Template Variable Table

Hint:

Hint: If you double-click on a particular variable in the table, it will be copied to the Windows clipboard so that you can paste it into a template file.

Export Variable Format Strings and Scale Factors

Optional formatting strings and scaling factors can be specified for export variables to increase flexibility.

Important:

Important: The use of formatting strings and scaling factors is an advanced feature and should only be utilized when export file requirements dictate.

The export variable syntax is shown below:

```
{VariableName, [PARAMETER], [FORMAT], [SCALEFACTOR]}
```

VariableName: The name of the variable.

[PARAMETER]: An optional parameter value that is required for some variables.

[FORMAT]: A special format string that instructs the export engine on how to format the variable value before writing it to the export file.

[SCALEFACTOR]: If the variable is numeric, it will be multiplied by the specified scaling factor prior to formatting and writing the result to the export file.

The following table describes the special characters used to make up a format string.

Format Character	Description
Numeric Formatting	
0	Digit placeholder. Display a digit or a zero. If the variable has a digit in the position where the 0 appears in the format string, display it; otherwise, display a zero in that position.
#	Digit placeholder. Display a digit or nothing. If the variable has a digit in the position where the # appears in the format string, display it; otherwise, display nothing in that position.
.	Decimal placeholder. The decimal placeholder determines how many digits are displayed to the left and right of the decimal separator. If the format expression contains only number signs to the left of this symbol, numbers smaller than 1 begin with a decimal separator. To display a leading zero displayed with fractional numbers, use 0 as the first digit placeholder to the left of the decimal separator.
Text String Formatting	
@	Character placeholder. Display a character or a space. If the string has a character in the position where the "at" symbol (@) appears in the format string, display it; otherwise, display a space in that position.
&	Character placeholder. Display a character or nothing. If the string has a character in the position where the ampersand (&) appears, display it; otherwise, display nothing.
Date Formatting	
d	Display the day as a number without a leading zero (1 – 31).
dd	Display the day as a number with a leading zero (01 – 31).
m	Display the month as a number without a leading zero (1 – 12).
mm	Display the month as a number with a leading zero (01 – 12).
yy	Display the year as a 2-digit number (00 – 99).
yyyy	Display the year as a 4-digit number (100 – 9999).

Time Formatting	
h	Display the hour as a number without leading zeros (0 – 23).
Hh	Display the hour as a number with leading zeros (00 – 23).
N	Display the minute as a number without leading zeros (0 – 59).
Nn	Display the minute as a number with leading zeros (00 – 59).
S	Display the second as a number without leading zeros (0 – 59).
Ss	Display the second as a number with leading zeros (00 – 59).

The following table shows a few examples of format strings and scaling factors.

Variable	Variable Value	Value Exported
{CompRawMolePct,1,0.000}	1.523446	1.523
{CompRawMolePct,1,0.000}	85.67234	85.672
{CompRawMolePct,1,00000,1000}	85.67234	85672
{CompArea,2,00000000}	1234	00001234
{InjectionTime}	10/12/2004 1:08:13 PM	10/12/2004 1:08:13 PM
{InjectionTime,,mmddyyyy}	10/12/2004 1:08:13 PM	10122004
{InjectionTime,,HhNn}	10/12/2004 1:08:13 PM	2013
{SampleName,,@@@@@@@@}	Sample Name	Sample N
{SampleName,,@@@@@@@@}	RC1	RC1*****

* = a space character

Full List of Export Template Variables

The following table lists all of the variables that are supported by EZReporter's Export Templates.

Hint:

Hint: The most up to date list of export template variables can always be viewed and printed by clicking the "Tools > Show Export Template Variables…" menu option.

Export Variable	Export Variable Description
Component Result Variables	
CompNum	The current component number being processed in a component loop.
CompName	The name of the component.
CompRT	The retention time of the component as reported by the data system.
CompArea	The integrated peak area of the component as reported by the data system.
CompRawAmount	The concentration of the component as reported by the data system.
CompNormAmount	The normalized amount of the component calculated by normalizing all of the raw

	component concentrations to 100%. For NGA applications this is the dry normalized mole% (water content exlcuded).
Total/Summary Result Variables	
TotalRawAmount	The total raw amount, including water if it has been entered.
TotalNormAmount	The total normalized amount (should always be 100%)
Sample Information and Header Variables	
SampleName	The sample name as reported by the data system.
UserName	The user or operator name as reported by the data system.
Comments	Additional Sample Information or Sample Notes as reported by the data system.
MethodName	The method used for acquisition by the data system.
InjectionTime	The date and time of the injection as reported by the data system.
ReportDate	The date and time that the results were calculated and reported.
SettingsFile	The EZReporter settings/configuration file used to calculate the results.
SourceDataFileName	The file name of the source data file used for acquisition as reported by the data system.
DataFile	The data file to which the EZReporter results were saved.
Instrument	The name of the instrument used for acquisition as reported by the data system.
ExportFile	The file name of the export file.
ExportTemplate	The file name of the export template used to create the export file.
ExportDirectory	The directory in which the export file is saved.
EZReporterVersion	The EZReporter version number.
SampleInfo	The value of the custom sample information field as entered by the user. Usage: {SampleInfo, 1} is the value of custom sample information field #1.
SampleInfoCaption	The caption for the custom sample information field as set in the configuration file. Usage: {SampleInfoCaption, 1} is the caption associated with custom sample information field #1.
Tab	The ASCII \"tab\" character.
Now	The current date and time as reported by the operating system
StartCompLoop	Start a component processing loop. All template lines between {StartCompLoop}

	and {EndCompLoop} will be repeated once for each component in the configuration. Use the component loop to report component-specific results.
EndCompLoop	End a component processing loop (see {StartCompLoop})
StartHeader	All template lines between {StartHeader} and {EndHeader} will only be exported the first time an export file is written. The header lines will not be written when additional results are appended to an existing export file.
EndHeader	See {StartHeader}
StartComment	Any text between {StartComment} and {EndComment} will not be exported. Use to annotate your template file.
EndComment	See {StartComment}
UCase	Place on a line by itself to convert all subsequent export lines to upper case.
LCase	Place on a line by itself to convert all subsequent export lines to lower case.
NoCase	Place on a line by itself to report all subsequent export lines in their original case.
DecimalPlaces	Place on a line by itself to set the number of decimal places that will be reported for calculated numeric results. The default value is the number of decimal places specified in the Data Files configuration. Usage: {DecimalPlaces,3}, sets the number of decimal places reported to 3.
_	Line continuation variable placed at the end of a line to force the next line in the template to be appended to the current line instead of to a new line.

Calculated Result Formula Builder Operators

The following table lists the arithmetic operators that can be used along with Result Variables to create a Calculated Result custom formula using the Formula Builder tool. See "Creating a Custom Formula using the Formula Builder" on page 33 for more information on custom formulas.

Operator / Function	Description	Note
+	addition	
-	subtraction	
*	multiplication	
/	division	35/4 = 8.75

Operator / Function	Description	Note
%	percentage	35% = 0.35
\	integer division	35\4 = 8
^	raise to power	3^1.8 = 7.22467405584208 (°)
>	greater than	return 1 (true) 0 (false)
>=	equal or greater than	return 1 (true) 0 (false)
<	less than	return 1 (true) 0 (false)
<=	equal or less than	return 1 (true) 0 (false)
=	equal	return 1 (true) 0 (false)
<>	not equal	return 1 (true) 0 (false)
tan(x)	tangent	argument (in radians) x≠ k*π/2 with k = ± 1, ± 2…
atn(x)	inverse tangent	atn(pi/4) = 1
abs(x)	absolute value	abs(-5)= 5
sin(x)	sin	argument in radians
cos(x)	cosine	argument in radians
exp(x)	exponential	exp(1) = 2.71828182845905
log(x)	logarithm natural	argument x>0
logN(x,n)	N-base logarithm	logN(16,2) = 4
sqr(x)	square root	sqr(2) =1.4142135623731, also 2^(1/2)
int(x)	integer part	int(-3.8) = −4
fix(x)	integer part	fix(-3.8) = 3
dec(x)	decimal part	dec(-3.8) = -0.8
rnd(x)	random	returns a random number between x and 0
sgn(x)	sign	returns 1 if x >0 , 0 if x=0, -1 if x<0
min(a,b,...)	minimum	min(13,24) = 13
max(a,b,...)	maximum	max(13,24) = 24
round(x,d)	round a number with d decimal	round(1.35712, 2) = 1.36
Sum(a,b,...)	Sum	sum(8,9,12,9,7,10) = 55
Mean(a,b,...)	Arithmetic mean	mean(8,9,12,9,7,10) = 9.16666666666667

Operator / Function	Description	Note
`Meanq(a,b,...)`	Quadratic mean	meanq(8,9,12,9,7,10) = 9.30053761886914
`Meang(a,b,...)`	Arithmetic mean	meang(8,9,12,9,7,10) = 9.03598945281812
`Var(a,b,...)`	Variance	var(1,2,3,4,5,6,7) = 4.66666666666667
`Varp(a,b,...)`	Variance pop.	varp(1,2,3,4,5,6,7) = 4
`Stdev(a,b,...)`	Standard deviation	Stdev(1,2,3,4,5,6,7) = 2.16024689946929
`Stdevp(a,b,...)`	Standard deviation pop.	Stdevp(1,2,3,4,5,6,7) = 2

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