

■ Envent

Gas Chromatograph Software



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■ **Envent**
Knowledge by Analysis

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1.0 INTRODUCTION

1.1 About this manual

The 131S/132S Gas Chromatograph uses Envent GCS (Gas Chromatograph Software) for configuration, calibration, and reporting. To install the Gas Chromatograph Software, refer to the installer which comes in a USB flash drive supplied with the analyzer (Check Start-up kit box). The software is also available at www.enventengineering.com.

This manual will cover only basic operation and configuration of the gas chromatograph. Advanced configuration items will not be covered; if the user wishes to perform an operation not covered in this manual, please contact Envent Support.

This manual will be referring to models 131S and 132S. However, the information applies equally to the 131S-T4 and 132S-T4, unless otherwise stated.

1.2 Warranty & Liability Statements

Products produced and supplied by the manufacturer (Envent Engineering Ltd), unless otherwise stated, are warranted against defects in materials and workmanship for up to 36 months from the shipping date or up to 24 months from the start-up date (whichever comes first). During the warranty period the manufacturer can choose to either repair or replace products which prove to be defective.

The manufacturer or its representative can provide warranty service at the buyer's facility only upon prior agreement. In all cases, the buyer has the option of returning the product for warranty service to a service facility designated by the manufacturer or its representative. The buyer shall prepay all shipping charges for products returned to a service facility. The manufacturer or its representative shall pay all shipping charges for the return of products to the buyer. The buyer may also be required to pay round-trip travel expenses and labour charges (at prevailing labour rates) if the warranty has been violated. The warranty may be considered violated for any of the reasons listed below.

1.2.1 Limitation of Warranty

The foregoing warranty shall not apply to defects arising from:

- Improper or inadequate maintenance of the product by the user.
- Improper unpacking or installation procedures.
- Inadequate site preparation.
- Unauthorized modification or misuse of the product.
- Operation of the product in unfavorable environments such as at high temperatures, high humidity, or in corrosive atmospheres.
- Operation of the product outside of the published specifications.

Envent Engineering Ltd carries no responsibility for damage caused during transportation or unpacking, unless otherwise specified in the incoterms.

An extended warranty may be available with certified start-up. Contact Envent Engineering Ltd for details.

Envent Engineering Ltd reserves the right to change the product design and specifications at any time without prior notice.

1.2.2 Disclaimer

No other warranty is expressed or implied. The manufacturer specially disclaims the implied warranties of merchantability and fitness for a particular purpose. The sole remedy of the buyer shall in no case exceed the purchase price of the analyzer. The manufacturer shall not be liable for personal injury or property damage suffered in servicing the product. The product should not be modified or repaired in any manner differing from procedures established by the manufacturer.

1.3 Safety Information

The procedures and settings outlined in this manual constitute what is considered proper use of the equipment in question. The equipment was designed and tested under the assumption that these procedures and settings will be adhered to. Applying values outside of the provided ranges (such as permitting excessive pressures) or modifying provided procedures is considered improper use of the equipment. Envent Engineering Ltd is not responsible for any injury or property damage caused by improper use of the equipment. Once in the field, the user is solely responsible for the safe operation of the equipment.

1.3.1 Key Symbols

The following symbols are used throughout the manual to call attention to important information. We recommend familiarizing yourself with them before reading further.

An Exclamation Mark Symbol indicates a potential hazard that, if not properly addressed, could result in damage to the equipment or injury to the operator. Throughout this document caution statements will be preceded by an orange bar and warning statements will be preceded by a red bar.



A WARNING statement will be used to indicate that the operation, or parameter change, may cause damage to the analytical components, or inadvertently create a potentially dangerous environment for the operator.



A CAUTION statement will be used to indicate that the operation, or parameter change, may cause changes in analysis, measurement, and/or outputted values or results.



Indicates supplementary information that the operator should be aware of before proceeding. It serves to clarify an earlier statement or assist the reader in understanding the given topic more thoroughly.

WARNING:

Read this manual before operating the GCS software to change the default configuration to ensure correct operation of the gas chromatograph.



Envent Engineering Ltd configures the gas chromatograph in conformance with the customer specifications (if applicable). Any modifications to the factory configuration by the user may impair the proper functionality of the gas chromatograph if not performed properly. Contact Envent Engineering Ltd for more information on how to modify the configuration of the gas chromatograph.

1.4 Software Revisions

This edition of the software manual deals only with software edition GCS 1.0 or later. For assistance with other Envent Software contact Envent Support.

1.5 Installation Instructions

1.5.1 System Requirements

The Envent Gas Chromatograph Software is currently available for Windows operating systems only. The minimum requirements are:

- 1 GHz Processor
- 2GB RAM
- Screen resolution of a minimum 1280 x 800
- 1GB Hard-drive space (more space recommended for storing reports and other files)
- Windows 7 SP1 or above operating system
- At least .NET Framework 4.8
- USB Port(s) for connection to GC
- Gas Chromatograph Firmware 7.4.0 or higher

1.5.2 Installing

Double-click the file “GCSInstallationFile.msi” and follow the instructions. If necessary, check windows update for any updates to the Microsoft .NET Framework (required for GCS to function properly).

If required, also install the USB Driver by double-clicking “USB Driver Setup.exe” and follow the instructions.

1.5.3 Troubleshooting Installation

Ensure that the latest updates to the Microsoft .NET Framework are installed (typically found in Windows Update). The installer is also packaged with the Microsoft DirectX libraries for hardware acceleration.

If the software does not function properly after installation, double-click the installer again and select “Repair Envent GCS”. If this does not solve the issue, contact Envent Support.

1.5.4 Uninstalling

Double-click the file “GCSInstallationFile.msi” and select Remove Envent GCS. Click Finish and wait for the software to finish uninstalling.

2.0 GETTING STARTED

This manual covers the main functionalities of the GCS. It shows how to connect, configure, and change the factory configuration to accommodate for different applications.

The model 131S/132S gas chromatograph is supplied with a USB-Mini Type “B” connection interface. This interface will be located on the top of the GC below the display (on the model 132S GC) or underneath the explosion proof cap below the display (on the model 131S GC).

2.1 Overview

The functionality of the GCS will be largely familiar to users who have experience with Microsoft Windows applications and programs. The following sections will describe some of this software's features.

Next is an overview showing all the basic parts of Envent GCS. The user should become familiar with these sections and what each does. Each section will have a portion of this manual dedicated to it in more detail.

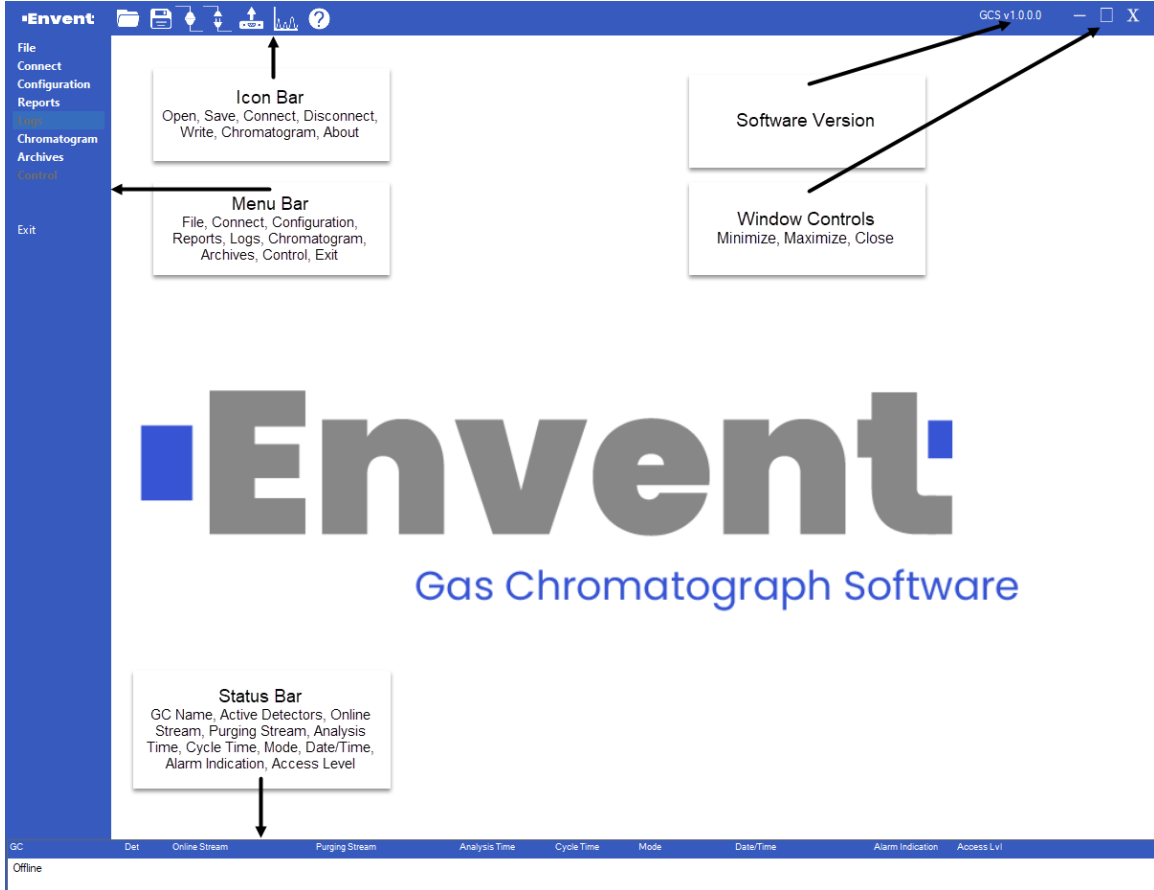


Figure 1: Software Overview




Software Version	Indicates the version of the currently opened software.
Minimize 	Minimizes the software window to the system tray.
Maximize 	Maximizes the software window to fill the computer display, pressing it again will revert to the default view size.
Exit 	Closes the software.

Table 1: Software Version and Window Controls

2.1.1 Icon Bar

The icon bar contains icons which will be frequently used during operation of the software. Refer to this section of the manual when navigating the software and its functionality.








<p>Open File Icon</p> 	Opens the “Open” dialogue box, used to load a previously saved configuration “.device” file.
<p>Save Icon</p> 	Opens the “Save As...” dialogue box, allowing the user to save the configuration “.device” file to a location on the computer.
<p>Connect Icon</p> 	Opens the “Connect Options” dialogue box, which allows for selection of a network or USB device.
<p>Disconnect Icon</p> 	Disconnects from the currently connected device.
<p>Write-to-Device Icon</p> 	Writes the currently open configuration to the currently connected device. If no device is connected, a dialogue will open asking the user to select a device.
<p>Chromatogram Icon</p> 	Opens the Chromatogram Viewer.(6.0 Chromatogram)
<p>About Icon</p> 	Opens the “About...” dialogue box

Table 2: Icon Bar Options

2.1.2 File Menu

New	Opens the new device dialogue menu
Save	Saves the current configuration file to the previously defined save location. If no save location has been defined, this will open the “Save As...” dialogue box
Save As	Opens the Windows “Save As...” dialogue box. This is used to save a current device file
Open	Opens a saved “.device” configuration file
Close	Closes the current configuration file
View	Opens the View Menu
Clock Sync	Press this button to Synchronize the Analyzer’s Clock with the current PC time – this happens immediately with no requirement to “write” the configuration

Table 3: File Menu Options

2.1.2.1 View Menu

Preferences	Allows the user to change software preferences such as the time units, chart preferences, and temperature/pressure units displayed
Manual	Opens the Envent GC User’s Manual and Envent GCS Software Manual
Drawings	Opens the drawing set for the Gas Chromatograph (if available)
User Access	Opens the “User Access” configuration menu (Section 2.6 User Access Control).

Table 4: View Menu Options

2.1.3 Connect Menu

Connect	Move mouse cursor over this menu item to display a list of currently available Envent Gas Chromatographs to connect to – either through USB or Network.
Disconnect	Closes the connection to the currently connected Envent Gas Chromatograph.
Scan Network	Scans the currently connected network (Ethernet Connections Only) for any Envent Gas Chromatographs on the network.
Clear Scanned List	Clears the list of devices found by “Scan Network”. Does not clear any manually created connections which were created by “Add Connection”.
Add Connection	Opens the “Network Device Edit” dialogue, allowing the user to add a new Envent Gas Chromatograph network device.
Edit Connections	Opens the “Network Device Configuration” dialogue, allowing the user to edit a current Envent Gas Chromatograph network device.

Table 5: Connect Menu Options

2.1.4 Configuration Menu

Write Config to Device	Writes the currently open configuration to the currently connected device. If no device is connected, a dialogue will open asking the user to select a device.
Hardware	Opens Hardware Configuration (section 3.1 Hardware).
System	Opens System Configuration (Section 3.2 System).
Component Data	Opens Component Data Table(s) Configuration (Section 3.3 Component Data).
Timed Events	Opens Timed Events Table(s) Configuration (Section 3.4 Timed Events).
Streams	Opens Streams Configuration (Section 3.5 Streams).
User Modbus	Opens User Modbus Configuration (Section 3.1.6 Valve outputs).
Alarms	Opens Alarms Configuration (Section 3.7 Alarms).
Calculations	Opens Calculation Selection Configuration (Section 3.8 Calculations).
Display	Opens Display Configuration (Section 3.9 Display).

Table 6: Configuration Menu Options

2.1.5 Reports Menu

Calibration	Opens Calibration Reports page (Section 4.1 Calibration).
Analysis	Opens Analysis Reports page (Section 4.2 Analysis).

Table 7: Reports Menu Options

2.1.6 Logs Menu

Maintenance Logs	Opens the Maintenance Logs page (Section 5.1 Maintenance Logs).
Change Logs	Opens the Change Logs page (Section 5.2 Change Logs).
Alarm Log	Opens the Alarm Log page (Section 5.3 Alarm Log).

Table 8: Logs Menu Options

2.1.7 Chromatogram

Opens the Chromatogram Viewer. See section 6.0 Chromatogram for more details.

2.1.8 Archives Menu

User Archive Setup	Opens Configuration page for User Archives (Section 7.1 User Archive Setup)
Archive Display	Opens the User Archive Display (Section 7.2 Archive Display)
Periodic Samples	Opens the Periodic Sampling (averaging) configuration page (Section 7.3 Periodic Samples)

Table 9: Archives Menu Options

2.1.9 Control

Opens the Operator Control page. See section 8.0 Control for more details.

2.1.10 Exit

Closes the software.

2.1.11 Status Bar

The Envent Gas Chromatograph Software features an always-active on-line status bar. The status bar will always indicate the live status of the Gas Chromatograph while actively connected to the analyzer. Some of the items act as short-cuts to other areas of the software; an item in italics indicates whether it will act as a shortcut.

<i>GC</i>	Displays the name of the currently connected GC. Shortcut to the System Info page (Section 3.2 System).
<i>Det</i>	Shows 1 or 1,2 – indicating how many detectors are active.
<i>Online Stream</i>	Indicates which stream is currently cycling through the columns. Shortcut to the Streams page (Section 3.5 Streams).
<i>Purging Stream</i>	Indicates which stream is currently purging through the sample loop. Shortcut to the Streams page (Section 3.5 Streams).
<i>Analysis Time</i>	The number of seconds which have elapsed in the current analysis cycle. Shortcut to the Timed Events page (Section 3.4 Timed Events).
<i>Cycle Time</i>	The total number of seconds in the current analysis cycle Shortcut to the Timed Events page (Section 3.4 Timed Events).
<i>Mode</i>	The current mode of the GC (analysis, calibration, purging, idle, etc.).
<i>Date/Time</i>	The date and time stored in the GC (YYYY-MM-DD HH:MM:SS AM/PM)
<i>Alarm Indication</i>	Indicates whether there is an active alarm: Green = No Active Alarms Red = Active Alarms Shortcut to the Alarms Log page (Section 5.3 Alarm Log)
<i>Access Lvl</i>	Indicates the access level which is currently logged in. Shortcut to the User Access page (Section 2.6.3 User Access Page).

Table 10: Status Bar Sections

GC	Det	Online Stream	Purging Stream	Analysis Time	Cycle Time	Mode	Date/Time	Alarm Indication	Access Lvl
GC Simulator	1,2	Stream 1	Stream 2	195	310	Analysis	2024-04-04 10:41:22 AM		Factory


Figure 2: Status Bar

2.2 Connecting the Analyzer to a Computer Using GCS

2.2.1 Connection Via USB

Once Envent’s GCS is installed, physically connect the Gas Chromatograph to the computer using the USB-Mini-B to USB Type-A cable provided. The interface will be on the top section of the GC below the display (on the model 132S GC) or underneath the explosion proof cap below the display (on the model 131S GC).

Ensure that the driver is installed properly; if the driver has been installed properly, the USB device should show as a comm port in the device manager of the operating system. In Windows 7, 8, 10, or 11 the device manager can be found by navigating to the system’s control panel. For assistance with installing the USB driver, contact Envent Support.

Step 1 Open the GCS. Once in Envent’s GCS click the Connect Icon on the Icon Bar , or click Connect >> Connect and select the correct communications port (in the screenshot below, COM4 was the selected port).

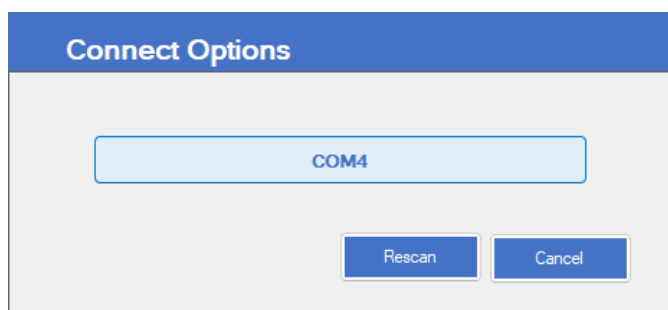


Figure 3: Connect Options Example

Step 2 Envent GCS will automatically connect and read all parameters from the analyzer, connection is complete once the progress bar at the top of the software finishes. Note: a password may be requested if password access is configured (Section 2.6 User Access Control)

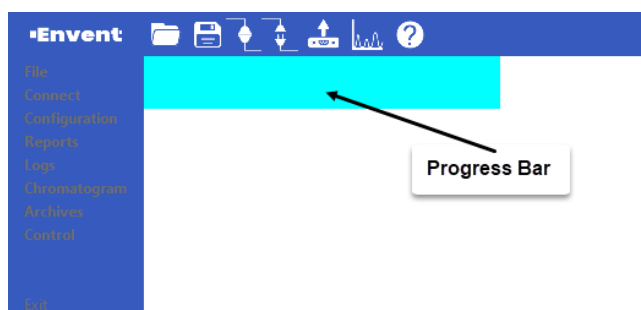


Figure 4: Progress Bar

2.2.2 Connection Via Ethernet

The model 131S/132S gas chromatograph is supplied with an Ethernet interface card which can be used for connection via Envent GCS or for telemetry purposes via Modbus. The connection interface port on the ethernet card is a standard 8-pin RJ45 Ethernet connection. All 8 pins are required for communication; thus, a standard Category 5 (or greater) cable is recommended.

A connection can be established directly connected to the analyzer, or through a network or sub-network. The host PC and Envent Analyzer must be on the same sub-network to communicate. The default connection parameters are as follows:

IP Address: 192.168.1.105
 Subnet Mask: 255.255.255.0
 Gateway: 192.168.1.1
 Host Name: (Typically, SN of the board)
 DNS 0.0.0.0 (Windows 11 only)

If the default settings are lost, please contact Envent Support for instructions on retrieving the settings.

- Step 1** Connect the Ethernet cable from the PC to the gas chromatograph’s interface or connect to the same network as the gas chromatograph. Ensure that the PC is in the same sub-network range as the analyzer.
- Step 2** Apply power to the analyzer and wait for the Green LED on the networking card to start blinking. (Indicates connection to the network)
- Step 3** In Envent’s GCS click the Connect menu and select “Scan Network” or click “Add Connection” if the network parameters are already known.

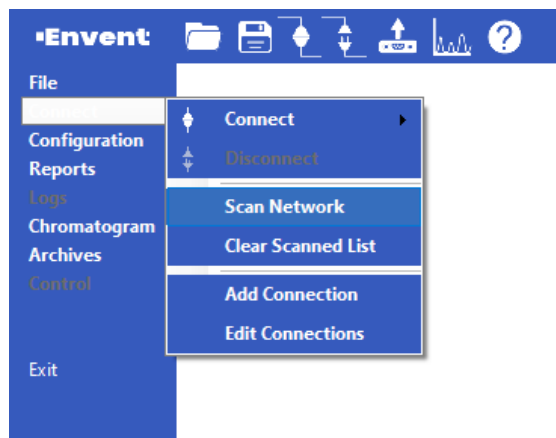


Figure 5: Connection Through Side Menu

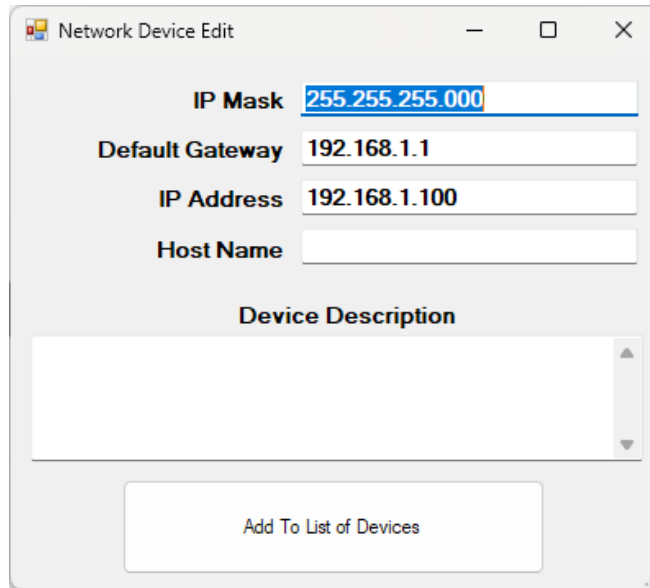



Figure 6: Add Connection Menu

Alternatively, click the Connect Icon  and press “Rescan”.

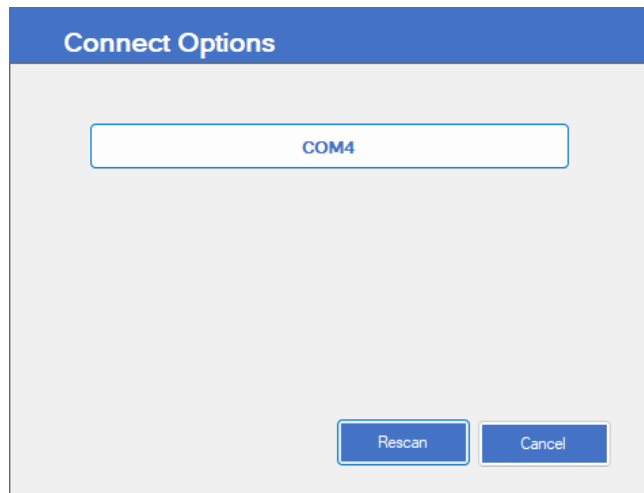


Figure 7: Connection Through Icon Menu

After a successful scan, the Network menu will display all Envent Analyzers currently connected to the network.

Step 4 Click the analyzer name, COM-Port, or IP Address to establish a connection to the gas chromatograph. Envent’s GCS will automatically connect and read all parameters from the analyzer. Connection is complete once the progress bar at the top of the software finishes. See Figure 4 for reference. (A password may be requested if password access is configured.)

INFORMATION:



If the current unit address does not appear it may be due the wireless setting on the laptop. The wireless adapter needs to be disabled or turned off to force the scan through the wired connection.

Configuration of the Ethernet Interface

Envent’s GCS has a built-in system for configuration of the ethernet interface card. This configuration should be done with the PC directly connected to the interface card and not through a network switch, if possible.

Step 1 Determine the sub-network to which the analyzer is connected, ensure the user’s PC is on the same network – even if the device is directly connected.

Step 2 Refer to the previous section to “scan” the network and find the analyzer on the network.

Step 3 Click Connect >> Edit Connections on the Menu Bar; point at the device name using the mouse cursor and select the “Edit...” option.

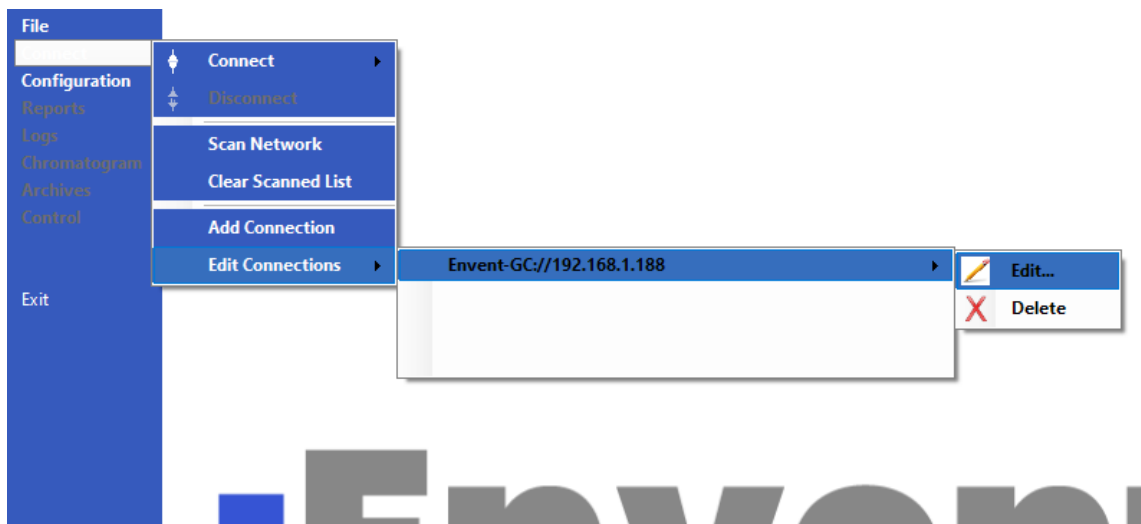


Figure 8: Edit Connections

Step 4 A dialogue menu will open, the new parameters of the network interface card can be programmed here, once complete click the “Send Changes” button, this will alter the configuration of the card.

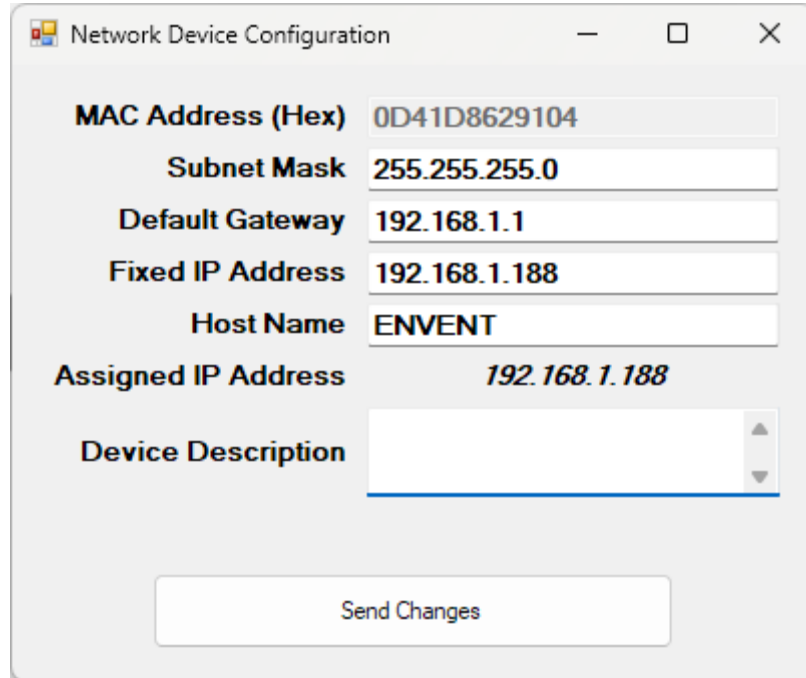



Figure 9: Network Device Configuration

Step 5 Confirm that the change worked by altering the user’s PC Network configuration to match the analyzer and use GCS to “scan” the network (refer to the previous section).

2.3 Saving a Device File


At times it may be necessary to save the current device configuration. These should be stored for future reference, or in the case an Envent Engineering technician requests the device file for diagnostic purposes.

Step 1 Connect to the device using one of the methods described in “Connecting the Analyzer to a Computer Using GCS”. Ensure that the device is connected and has been “read” and all parameters are successfully in the software. The save function only saves the current “read” state of the analyzer.


Step 2 Click the File menu and click “Save As...”, or click the Save Icon , save the device file to a known location and give the file a descriptive name. The recommended file format is as follows: “YYYY-MM-DD – [SN]. device”

2.4 Uploading a Device file to the Analyzer

It may be required to upload an older (or preconfigured) device file to the analyzer.

Step 1 Load the configuration “.device” file by clicking the File Menu and Open or click the Open Icon . Select the configuration “.device” file and click “Open”.

Step 2 Ensure the software indicates “GC Offline” in the bottom-left corner .

Step 3 Click Configuration and click “Write Config to Device” or click the Write-to-Device Icon .

Step 4 Acknowledge the “Write Offline Config to Device?” dialogue box and select the connection to use to write the opened configuration file.

Step 5 If the analyzer prompts for a password, enter the “Technician” level password.

2.5 Changing System Units

Click the File > View > Preferences menu. This dialogue menu will allow the user to change the time units as well as the temperature and pressure units displayed in Envent GCS. The recommended time units to use are “ss”.

2.6 User Access Control

The Envent Gas Chromatograph includes User Access Control levels which are configurable by the end user. Envent Gas Chromatographs are shipped with “No Passwords” as a default. The first time a user connects to the Gas Chromatograph using Envent’s GCS, the software will prompt the user to configure the passwords.

2.6.1 User Access Levels

There are two access levels in the Envent’s Gas Chromatograph Software. Each of them has specific permissions designed to protect sensitive analytical configurations.

Operator	<p><u>Permissions</u></p> <p>Connect/Disconnect to/from Envent Gas Chromatograph. Open/Save configuration files. Retrieve and save calibration and analysis reports. View and save maintenance log, change log, and alarm logs. View and save User Archives. Halt Gas Chromatograph. Start or resume Auto-Sequence. Initiate single stream analysis runs. Initiate manual calibration runs (normal calibration). Adjust Operator Level Password (if applicable).</p>
Technician	<p><u>Permissions</u></p> <p>All permissions above, plus... Write to Device. Clock Sync. Configuration menus, except factory settings. Chromatogram viewer and functions. User archive configuration. Periodic Sampling configuration. Abort current running stream. Run a “Forced Calibration”. Adjust Technician Level Password (if applicable).</p>

Table 11: User Access Level Permissions

2.6.2 Configuring User Access Control

During a first-time connection, or after the password configuration has been reset, the “Password Setup” dialogue box will appear. To reset the password configuration, contact Envent Support.

Password Configuration	<p><u>No Passwords:</u> No passwords are required to connect to the device, user level control restrictions still apply (Minimum Security).</p> <p><u>1 Password:</u> The device can be logged in with “Operator” level without requiring a password, but “Technician” level still requires a password (Medium Security).</p> <p><u>Multiple Passwords:</u> Both “Operator” and “Technician” level requires passwords to access their respective levels (Maximum Security).</p>
Operator Password	Use this field to configure the password required for Operator Level access.
Technician Password	Use this field to configure the password required for Technician Level access.
Apply	Applies the selected configuration to the analyzer.
Cancel	<p>Cancels the connection to the device.</p> <p>(The password configuration must be applied to allow connections to the analyzer).</p>

Table 12: Password Configuration

Figure 10: Password Setup

2.6.3 User Access Page

Enter this page by navigating to File >> View >> User Access, or by clicking the “Access Lvl” item in the Status Bar.

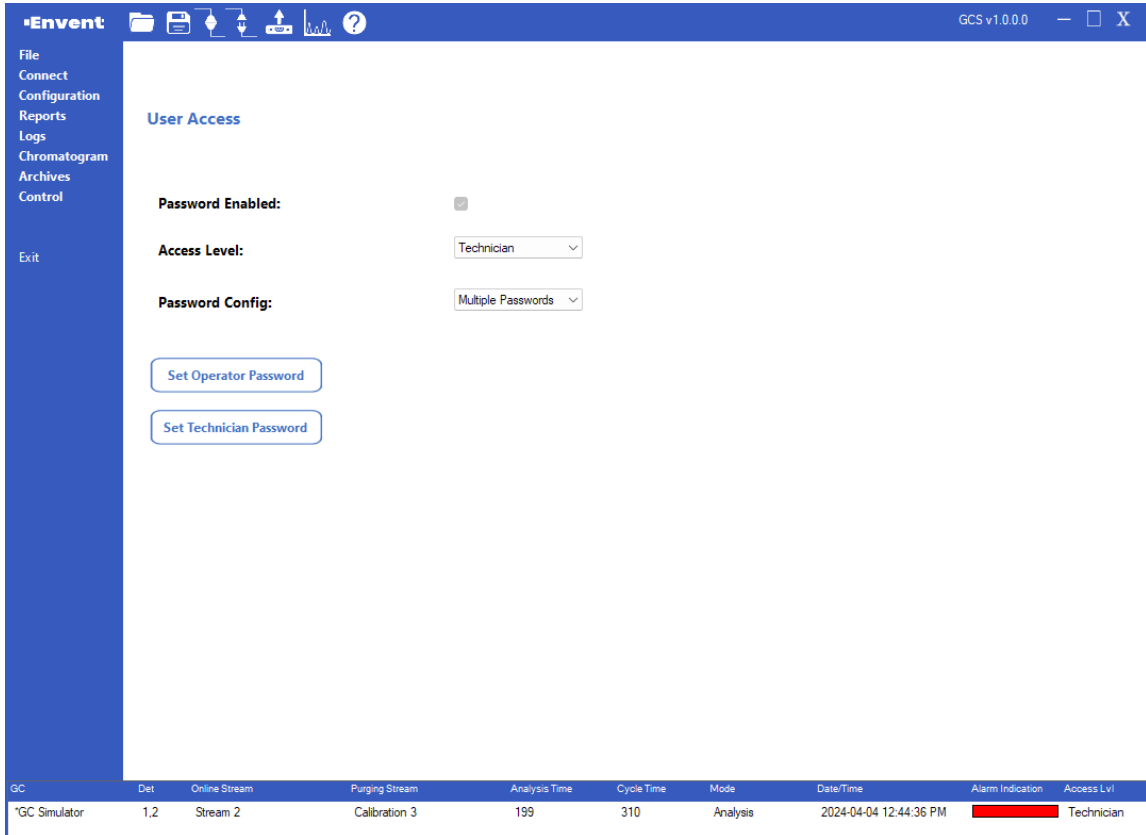


Figure 11: User Access Page



<p>Password Enabled</p>	<p>This Checkbox will enable or disable password protection (currently unavailable, protection always enabled on current version).</p>
<p>Access Level</p>	<p>Allows the user to select between different access levels available in the Gas Chromatograph. If the level requires a password, the user will be prompted for that password.</p>
<p>Password Config</p>	<p>[Technician Level and Higher] Allows the user to change the password configuration.</p>
<p>Set Operator Password</p> 	<p>[Operator Level and Higher] Allows the user to change the operator password (Multiple Password configs only).</p>
<p>Set Technician Password</p> 	<p>[Technician Level and Higher] Allows the user to change the technician password.</p>

Table 13: User Access Page Options

2.6.4 User Access Factory Defaults

In higher security access levels, the analyzer will not allow access without the correct passwords. Should the password(s) become lost, forgotten, or obfuscated, it may be necessary to reset the User Access level to factory defaults. This procedure can be performed without losing any critical measurement data or analytical configuration.

In this case, contact Envent Support – refer to the “Contact Us” section of this manual.

2.7 Using the Variables Options (Blue Menu)

Variable Options are used for configuration, such as setting up User Archives or the Modbus Mapping of the analyzer. The variable options button, and menu, become visible when on a page which can accept these variables. Clicking the “Variable Opts” button will display, or hide, the Variable Options menu.

A blue rounded rectangular button with the text "Variable Opts" in white.

Figure 12: Variable Options Button

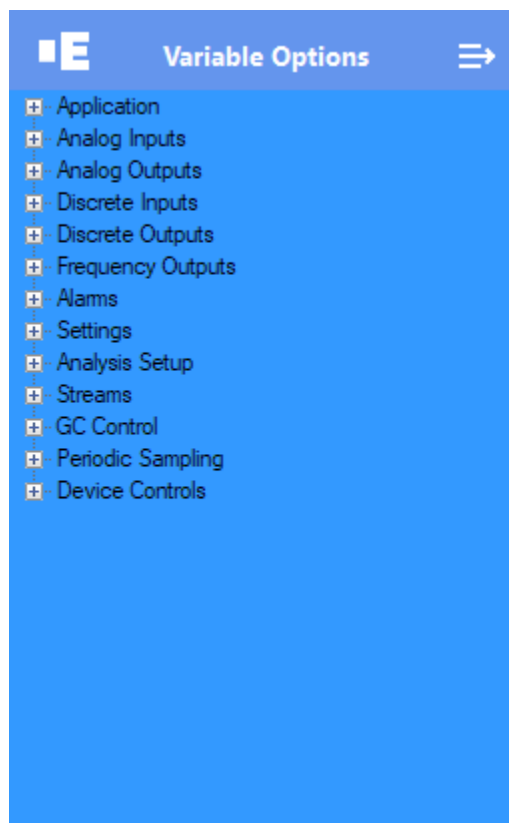


Figure 13: Variable Options Menu

Each variable option can be “dragged” into a field which accepts it. Some fields (such as Modbus Configuration) allow system variables to be double-clicked or even entire folders to be dragged.

Step 1 Identify the variable that is needed and locate it in the folders.

Step 2 Drag the variable into the required field (see screenshot below). In the example below, TCD1 millivolt output was added to a new User Archive.

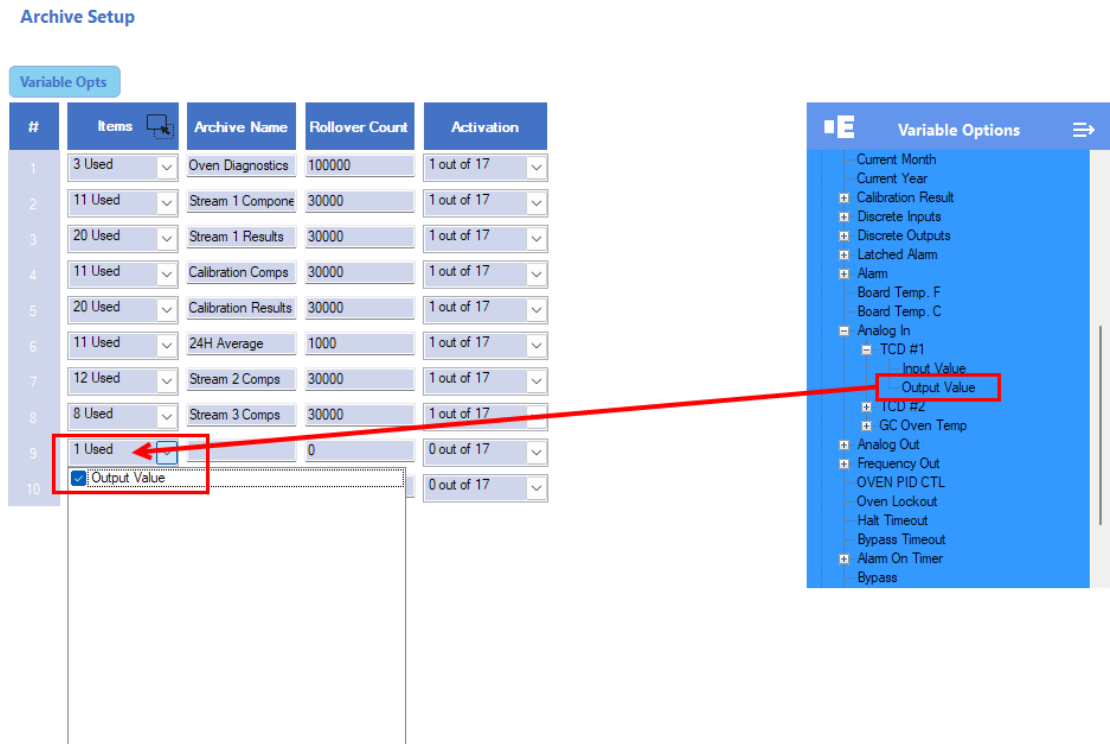


Figure 14: Dragging Variable Options

INFORMATION:



For some variables we must use the “Output Value” of the variable. An example may be the oven temperature. The location “Analog Inputs > Oven Temp” is the *configuration* of the oven temperature input and not the actual variable. For this example, the correct variable would be: “GC Control > Analog Input > Oven Temp > Output Value”.

Please contact Envent Support for assistance if required.

3.0 CONFIGURATION

CAUTION:



Before modifying the factory configuration file, make sure to save it on your computer first for future retrieval. If the factory configuration file is lost or modified without saving it, a copy is kept in the USB flash drive given with the analyzer. Envent Engineering Ltd. can also provide a copy. To save the configuration file, go to File > Save or Save as.

Make the appropriate changes to the factory configuration file through Envent's GCS. When changes are made, they need to be uploaded to the analyzer in order to overwrite what is

currently on it. Click on the "Write button" , and wait until the new configuration is successfully uploaded.

Warning:



The gas chromatograph relies on parameterization for correct analytical operation. Adjusting values without a proper understanding of their function can have consequences including, but not limited to, loss of measurement, damage to analytical components, and/or injury or loss of life to operators.

Make sure to read, and understand, the contents of this manual fully and consult Envent Engineering Ltd. if there are any concerns or doubts to the operation, maintenance, or parameterization of the gas chromatograph analyzer.

3.1 Hardware



Figure 15: Hardware Window

3.1.1 Oven Temperature

Warning:



Temperature control is critical to the functionality of the analyzer. Adjusting these values may cause temperature instability and may damage analytical components. Contact Envent Engineering Ltd. Before making any adjustments to the temperature control.

Setpoint	Allows the user to set the desired oven temperature in Celsius.
Oven Temp	Displays the current oven temperature in Celsius.
PWM	Displays the Pulse Width Modulation Setting
P(PID)	Proportional Control Setting (Controller gain)
I(PID)	Integral Control Setting (Integral time)
D(PID)	Derivative Control Setting (Derivative time)

Table 14: Oven Temperature Sections

3.1.2 Analog Inputs

Analog inputs are pivotal to the functionality of the gas chromatograph, encompassing the two Thermal Conductivity Detectors (TCDs). Users can monitor real-time readings under the "Live" section.

3.1.3 Analog Outputs

Analog outputs serve the purpose of monitoring or controlling a device remotely via a pair of conductors. The gas chromatograph controller provides two 4-20 mA loop-powered analog output connections.

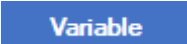
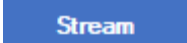
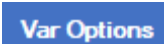


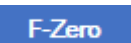


Variable 	The variable to be output (selected through the drop-down menu).
Stream 	Allows the user to select the stream or calibration stream used.
Var Options 	Gives further options depending on the variable.
Zero 	Allows the user to change the lower limit of the range being measured.
Span 	Allows the user to change the upper limit of the range being measured.
F-Zero 	F-Zero and F-Span are set at factory. They compensate for the differences on the resistors and capacitors in the gas chromatograph controller
F-Span 	
Live 	Live reading, not of amperes but converted unit depending on what is being measured.

Table 15: Analog Outputs Sections

3.1.4 Discrete Inputs

There are 4 discrete inputs available in the gas chromatograph which correspond with the discrete input channels on the main board. These inputs are programmed to configure alarm points or switching points. The below table describes the configuration of the discrete input parameters.

Name Name	The name is up to the user's discretion. Once a discrete input is configured, an alarm can be added based on the discrete input status.
Live Live	Shows whether the discrete input's status is on or off.

Table 16: Discrete Inputs Parameters

3.1.5 Discrete Outputs

The discrete outputs section allows the configuration, control, and live reading of the gas chromatograph's 4 relay outputs.

Name Name	The name is up to the user's discretion. Once a discrete output is configured, an alarm can be added based on the discrete output status.
Control Control	Allows the user to set the output in the on, off or automatic state.
Live Live	Shows whether the discrete input's status is on or off.

3.1.6 Valve outputs

Name Name	The name is up to the user's discretion. Once a valve output is configured, an alarm can be added based on the valve output status.
Control Control	Allows the user to set the output in the on, off or automatic state.
Live Live	Shows whether the discrete input's status is on or off.

3.1.7 Dip Switch

The Dip Switch allows the user to set up the Plug ID.

3.1.8 Serial Ports

<p>Usage</p> <p>Usage</p>	<p>Access Sim2251 registers or User Modbus registers.</p> <p>[Ethernet Setting] Allows the user to select between user defined Modbus or SIM2251* output.</p>
<p>Baud Rate</p> <p>Baud Rate</p>	<p>Specifies the rate at which data is transmitted over the serial port, measured in bits per second (bps). Select connection speed from 1200 – 115200 baud/s.</p>
<p>Stop Bits</p> <p>Stop Bits</p>	<p>Allows the user to select in between 1 or 2 stop-bit communication.</p>
<p>Parity</p> <p>Parity</p>	<p>Select between none, even, or odd.</p>
<p>Framing</p> <p>Framing</p>	<p>Method used for bit transfer and data validation on the port. Select between: RTU, or ASCII.</p>
<p>Comm ID</p> <p>Comm ID</p>	<p>Comm ID of the RS485 port, must be unique on the network. If this value is set to 0, then Comm ID = Plug ID.</p>

3.1.9 Network Usage

Allows the user to change the RJ45 port (IP-Modbus configuration) to output User Modbus or SIM2251 (See Envent GC User’s Manual for a description of Modbus functionality).

3.2 System

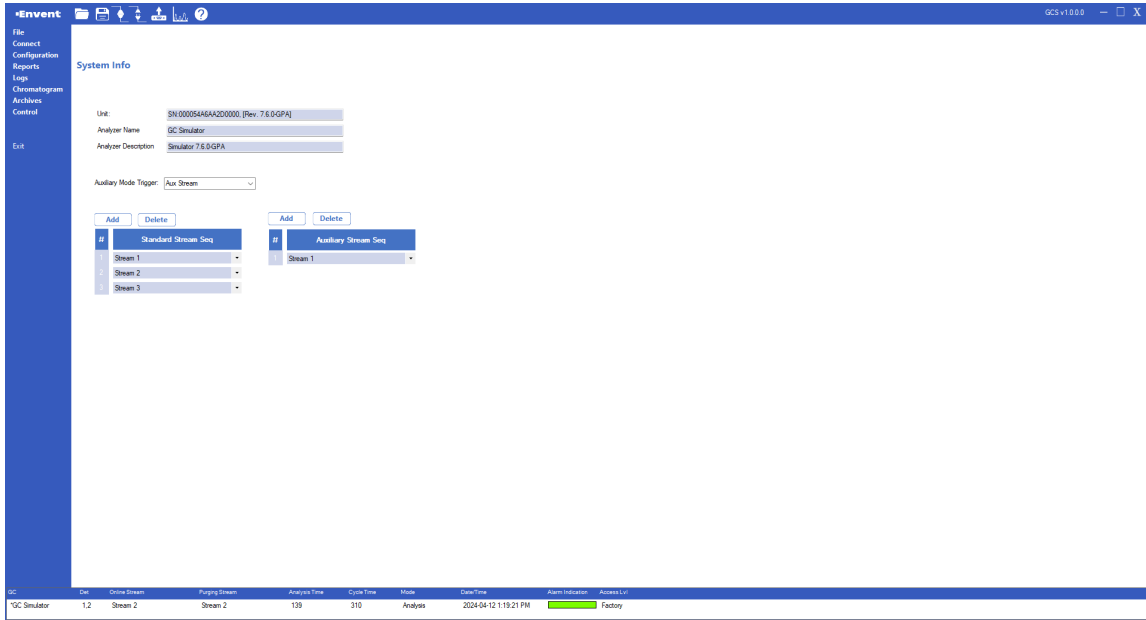


Figure 16: System Info Window



Unit	Serial Number of the analyzer.
Analyzer Name	User defined analyzer name.
Analyzer Description	User defined description of the analyzer.
Auxiliary Mode Trigger	Trigger for starting the Auxiliary Stream Sequence.
Add 	When clicked, this button will add a new line to the bottom of the stream sequence.
Delete 	When clicked, this button will remove the bottom line from the stream sequence.

Table 17: System Info Options

3.3 Component Data

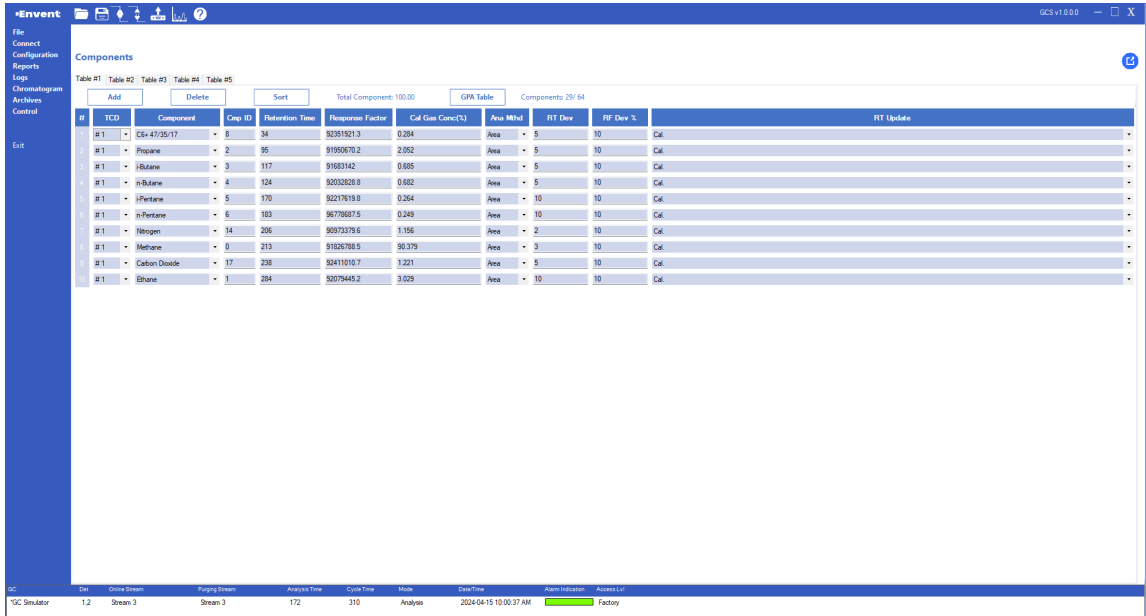


Figure 17: Components Window

CAUTION:



The components page contains parameters and configuration vital to the calibration and operation of the analyzer. Adjustment of these values on this page will have an impact on the accuracy and reporting of the analyzer. Proper care must be taken when making manual adjustment to the calibration factors.

The Components Window allows the user to set up multiple Component Data Tables for different calibration streams as required.

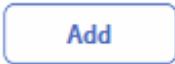
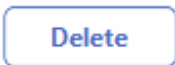
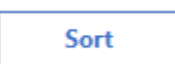

Add 	When clicked, this button will add a new line to the bottom of the list.
Delete 	When clicked, this button will remove the bottom line from the list
Sort 	Sorts the table based on time. Low to high.
GPA Table 	Opens a Pop-up Window with the component properties for all components on the table.

Table 18: Component Table Functions

This page is where the calibration tables and components split tables can be defined and configured. See below for a description of each configurable field.

TCD TCD	Defines on which detector the component will be measured
Component Component	Drop-down menu for selecting the component to be measured.
Cmp ID Cmp ID	Component ID
Retention Time Retention Time	Time at which the component appears on a chromatogram – determined by calibration.
Response Factor Response Factor	Calibration factor calculated during calibration.
Cal Gas Conc(%) Cal Gas Conc(%)	Defines de concentration that appears on the calibration standard
Ana Methd Ana Mthd	Analysis method being used, Area, Height, or Fixed. Area = Calculates the concentration based on peak area (Recommended) Height = Calculates concentration based on peak height.
RT Dev RT Dev	Retention Time Deviation – User defined deviation allowance for determining a calibration PASS/FAIL.
RF Dev % RF Dev %	Response Factor Deviation – User defined deviation allowance for determining a calibration PASS/FAIL.
RT Update RT Update	Retention Time update method being performed. Cal. = Retention time updates at the end of a successful calibration run. Ana. = Retention time updates at the end of every analysis run. None = Retention time does not update automatically.

Table 19: Component Configurable Fields

3.4 Timed Events

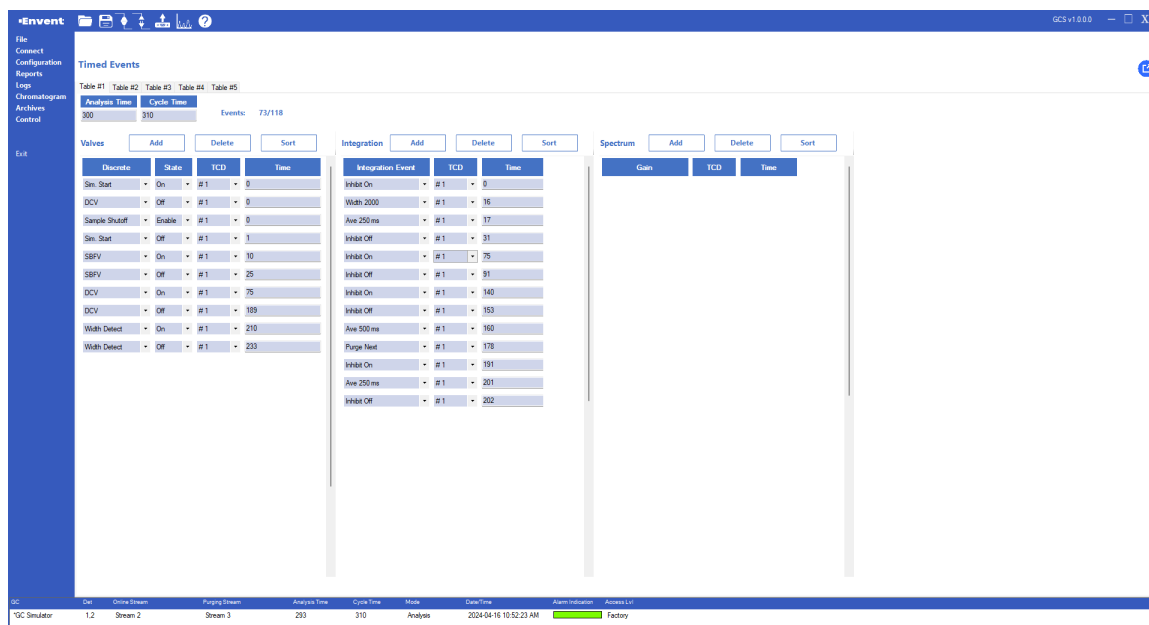


Figure 18: Timed Events Window

Timed events allow the user to configure multiple parameter tables to configure the analyzer to automatically control the timing of valves, inhibits, filtering, etc. to produce a proper output and graph.

WARNING:



The timing is critical to the functionality of the analyzer. Proper care must be taken when adjusting these values, or damage to the valves or the analytical columns can occur. For assistance with the timed events tables, please contact Envent Engineering Ltd.

Analysis Time Analysis Time	Time for an analysis to be completed
Cycle Time Cycle Time	Time for a cycle to be completed

Table 20: Analysis and Cycle Times

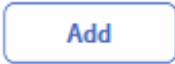
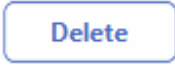

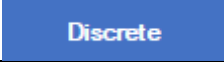
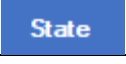

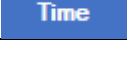
Add 	When clicked, this button will add a new line to the bottom of the list.
Delete 	When clicked, this button will remove the bottom line from the list
Sort 	Sorts the table based on time. Low to high.
Discrete 	Defines the discrete output that will be affected.
State 	Defines the new state for the discrete output.
TCD 	Defines which detector will be affected.
Time 	Time at which the event will trigger.

Table 21: Valves Parameters

Integration events serve as filters within the chromatogram, aiding in its cleanup. Additionally, they encompass a couple of other chromatogram options.

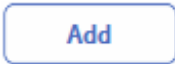
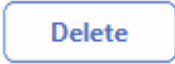

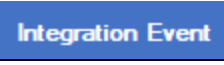

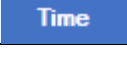
Add 	When clicked, this button will add a new line to the bottom of the list.
Delete 	When clicked, this button will remove the bottom line from the list
Sort 	Sorts the table based on time. Low to high.
Integration Event 	Defines the Integration event that will be triggered.
TCD 	Defines which detector will be affected.
Time 	Time at which the event will trigger.

Table 22: Integration Events Parameters

The spectrum table is designed to artificially enhance the chromatogram without affecting the measurement itself. It allows users to amplify the visual representation of the chromatogram on the screen for better analysis and interpretation, while the underlying measurement remains unaffected.

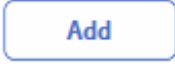
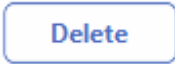



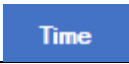
Add 	When clicked, this button will add a new line to the bottom of the list.
Delete 	When clicked, this button will remove the bottom line from the list
Sort 	Sorts the table based on time. Low to high.
Gain 	Screen gain
TCD 	Defines which detector will be affected.
Time 	Time at which the event will trigger.

Table 23: Spectrum Parameters

3.5 Streams

Name	Usage	Cal ID	Ext ID	Auto Cal	Total Runs	Ave Runs	Start Time	DOW	DOM	Interval	Base Press	Base Temp.	Purge Outputs	Purge Time
Stream 1	Analysis	#1	#1								101.325	15.556	2 out of 20	0
Calibration 1	Calibrate	#1	#1	<input checked="" type="checkbox"/>	3	2	13:00			Daily	101.325	15.556	2 out of 20	60
Stream 2	Analysis	#2	#2								101.325	15.556	2 out of 20	0
Calibration 2	Calibrate	#2	#2	<input checked="" type="checkbox"/>	3	2	13:30			Daily	101.325	15.556	2 out of 20	60
Stream 3	Analysis	#3	#3								101.325	15.556	0 out of 20	0
Calibration 3	Calibrate	#3	#3	<input checked="" type="checkbox"/>	3	2	14:00			Daily	101.325	15.556	0 out of 20	60

Figure 19: Streams Window

CAUTION:



Adjusting the values on this page may impact the measurement, calculations, and output of the analyzer. It is imperative for the user to thoroughly read and comprehend each value before making any adjustments. For assistance, please contact Envent Engineering Ltd.

The user can define up to 10 unique streams. Refer to the following table for descriptions of each section on this page.

Name Name	User-defined name (ex: “Sales Gas” or “Sales Cal”)
Usage Usage	<p>Analysis = Any stream whose results must be analyzed, stored, reported to the end user. Typically, the process streams.</p> <p>Calibrate = Any stream whose results can alter the measurement parameters (response factors/ retention times) for analysis streams.</p> <p>Validate = Any stream whose results can not alter the measurement parameters and need not be stored/reported to the end user.</p>
Cal Tbl Cal Tbl	Specifies which component data table will be used for the stream.
Evt. Tbl Cal Tbl	Specifies which timed event table will be used for the stream.
Auto Cal Auto Cal	Activates Auto Calibration
Total Runs Total Runs	Total number of times the stream will run.
Ave Runs Ave Runs	Controls the number of runs the calibration will average for the final report
Start Time Start Time	Start time in 24hr format HH:MM
DOW DOW	Day of the Week.
DOM DOM	Day of the Month.
Interval Interval	Interval for at which the stream will run.
Base Press Base Press	Pressure at which property calculations are performed.
Base Temp Base Temp	Temperature at which property calculations are performed
Purge Outputs Purge Outputs	Will activate the outputs selected in that stream when the “purge next” event gets triggered.
Purge Time Purge Time	[Optional] time to purge the stream before running

Table 24: Stream Parameters

3.6 User Modbus

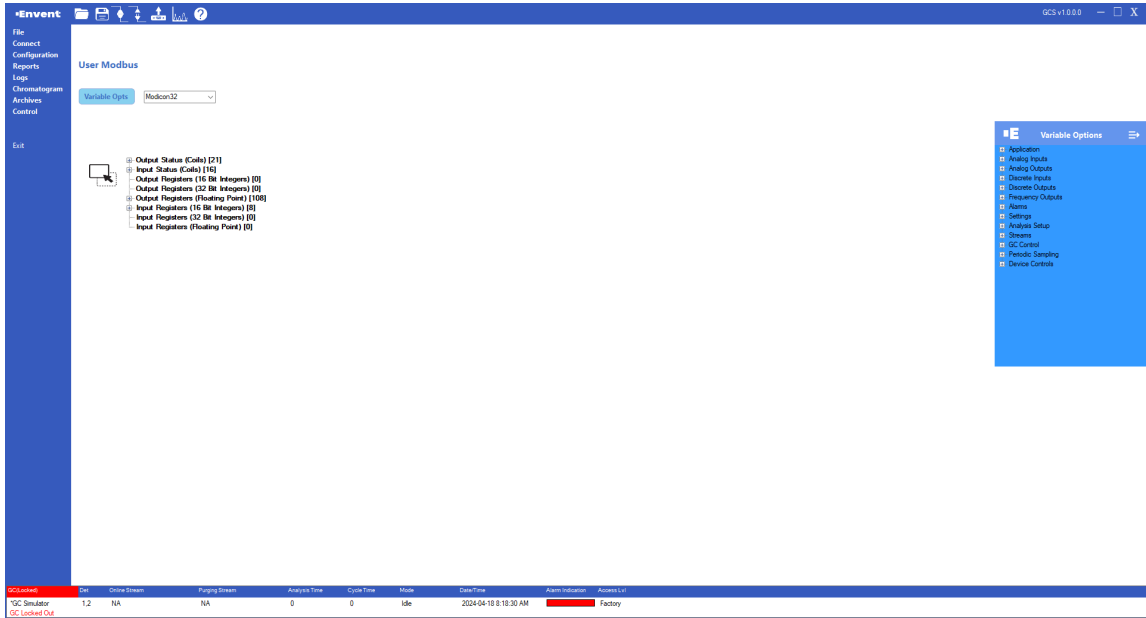


Figure 20: User Modbus Window

There are three selectable Modbus options:

Enron	Also known as “Daniel” mode. Uses 32-bit registers
Modicon16	Switches the registers to 16-bit registers
Modicon32	Switches the registers to 32-bit registers

Table 25: Modbus Configurations

The user Modbus page allows for user-defined Modbus variables to be output on all Modbus channels. There are multiple register types that can be configured. Variables must be “dragged” from the System Variables interface on the right side of the screen. Binary data i.e., switch or relay status are normally configured as coils. Stream data such as the current analyzer reading are normally configured as Floats

The default hardware configuration allows for three Modbus interfaces: two RS-485 connections and one Ethernet port. These ports operate at 9600 N 8 1 using RTU protocol by default. (ASCII is also supported).

3.7 Alarms

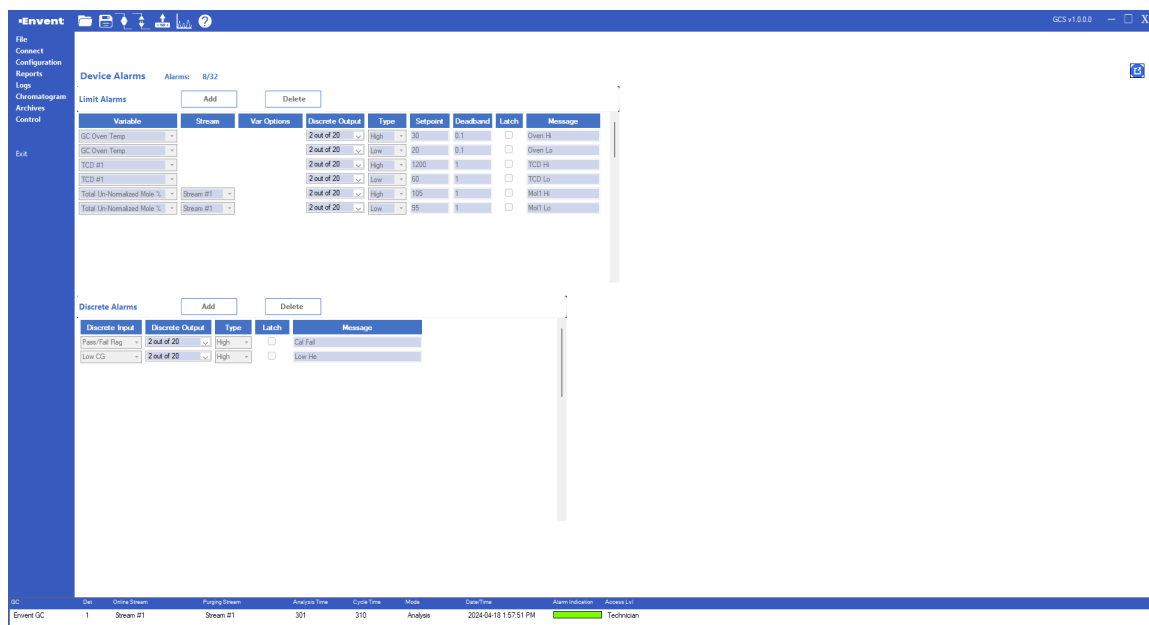


Figure 21: Alarms Window

The alarms page facilitates the definition of points that trigger specific states, which can include software or hardware discrete outputs. The user can set up to 32 different alarms. Alarms can be set based on a limit or based on a discrete input.

3.7.1 Limit Alarms

Variable Variable	Variable which is selected from the System Variables on the dropdown menu
Stream Stream	Stream that will trigger the alarm.
Var Options Var Options	Gives additional options pertaining the variable. For instance , selecting an alarm on Stream 1 Comp. Mole %, allows the user to select a Component.
Discrete Output Discrete Output	Specifies the discrete outputs states to be changed when the alarm is triggered.
Type Type	High = Triggers the alarm while ascending past the set point. Low = Triggers the alarm while descending past the set point.
Setpoint Setpoint	The setpoint is the value at which the alarm will activate.
Deadband Deadband	Absolute difference between setpoint and reset.
Latch Latch	Checked = Alarm will remain until acknowledged. Unchecked = Alarm will clear when the state clears.
Message Message	Message to be displayed when alarm is triggered.

Table 26: Limit Alarms Parameters

3.7.2 Discrete Alarms

Discrete Input Discrete Input	Input which will trigger the alarm.
Discrete Output Discrete Output	Specifies the discrete outputs states to be changed when the alarm is triggered.
Type Type	High = Triggers the alarm while ascending past the set point. Low = Triggers the alarm while descending past the set point.
Latch Latch	Checked = Alarm will remain until acknowledged. Unchecked = Alarm will clear when the state clears.
Message Message	Message to be displayed when alarm is triggered.

Figure 22: Discrete Alarms Parameters

3.8 Calculations

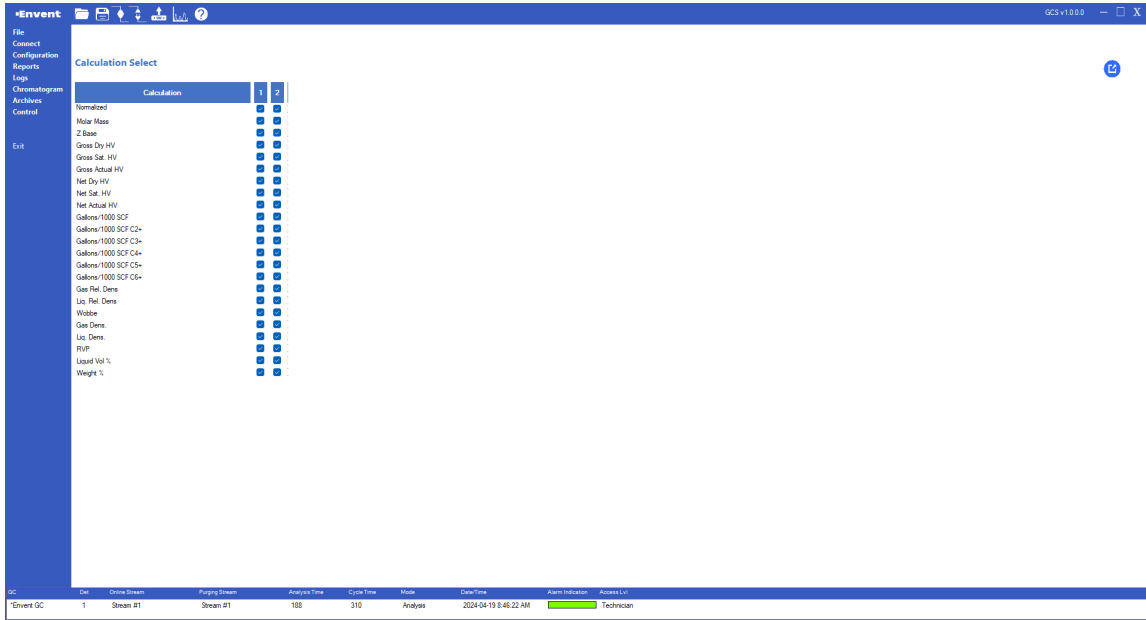


Figure 23: Calculation Window

This window displays users with a list of possible calculations that can be applied to each stream. To execute a calculation on a specific stream, simply check the corresponding calculation box next to the intended stream.

Calculation Select

Calculation	1	2	3	4	5	6	7
Normalized	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Molar Mass	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Z Base	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross Dry HV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross Sat. HV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gross Actual HV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Net Dry HV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Net Sat. HV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Net Actual HV	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gallons/1000 SCF	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gallons/1000 SCF C2+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gallons/1000 SCF C3+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gallons/1000 SCF C4+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gallons/1000 SCF C5+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gallons/1000 SCF C6+	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Gas Rel. Dens	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liq. Rel. Dens	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Wobbe	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Gas Dens.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liq. Dens.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
RVP	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Liquid Vol %	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Weight %	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Figure 24: Calculation Select Example

In this example, Streams 1-4 are designated for gas streams reporting heating value exclusively. Stream 5 is dedicated to a single analyte, reporting unnormalized mole percentage. Finally, Streams 6 and 7 are allocated for liquid streams, indicating liquid molar volume.

3.9 Display

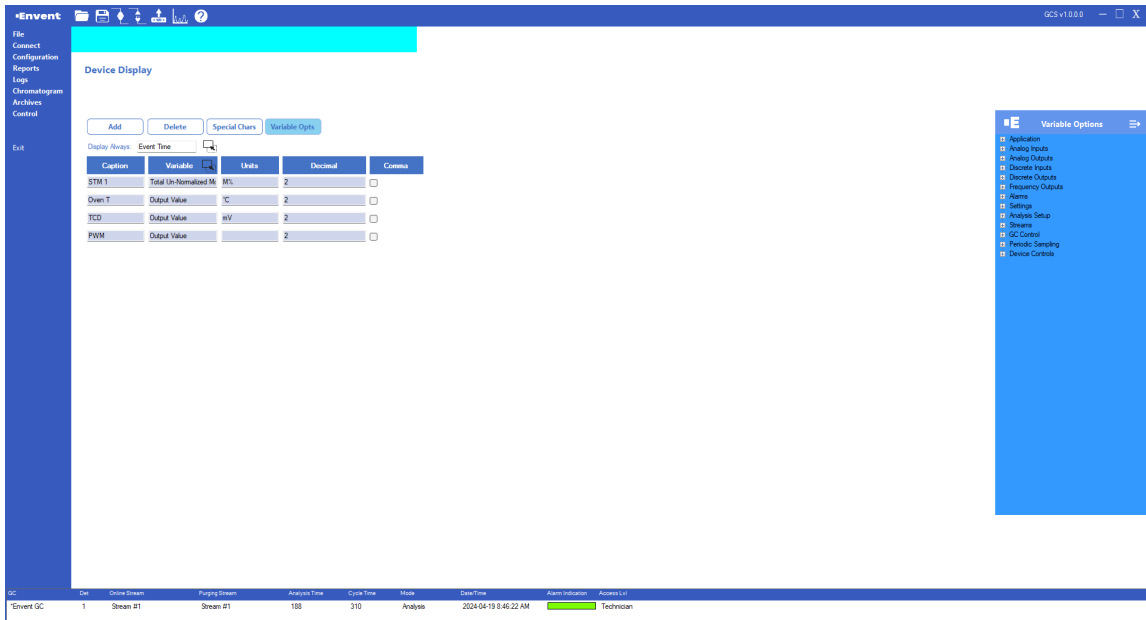


Figure 25: Display Window

This page grants users the ability to configure or alter the factory settings displayed and select which variables will be visible on the screen.

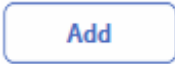
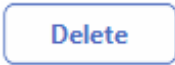

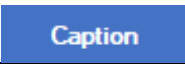

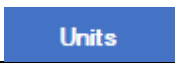
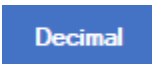

<p>Add</p> 	<p>When clicked, this button will add a new line to the bottom of the list.</p>
<p>Delete</p> 	<p>When clicked, this button will remove the bottom line from the list</p>
<p>Special Chars</p> 	<p>When clicked, this button will open a blue menu designed for inserting special characters into the caption and units areas.</p>
<p>Caption</p> 	<p>Names assigned to the selected variables to be shown in the display. The name is up to the user's discretion.</p>
<p>Variable</p> 	<p>Item that will be shown in the analyzer's display. To select a new variable, go to the right-hand menu on dark blue background and find the new variable. Click and drag variable to the variable box and proceed to change the specification on the analog output row according to the new variable.</p>
<p>Units</p> 	<p>Unit of measurement that describes the variable selected.</p>
<p>Decimal</p> 	<p>This is where the number of decimals per variable are decided.</p>
<p>Comma</p> 	<p>Check to activate comma separators.</p>

Table 27: Display Options

4.0 REPORTS

4.1 Calibration

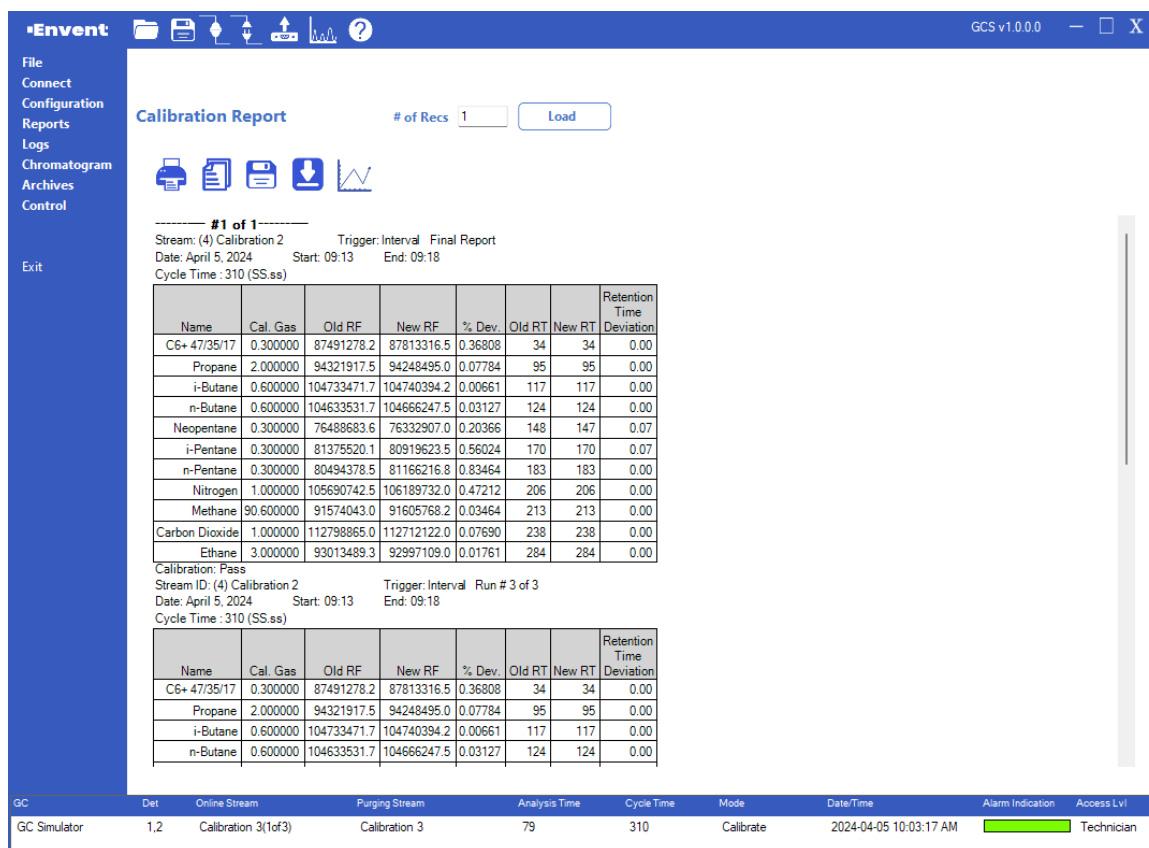


Figure 26: Calibration Window

Calibration reports are generated using this page. When the page is opened, it will automatically retrieve 3 records. To generate a report, select the number of records required (in the text box) and click the “Load” button. The “Final Report” (always at the top) is not included in the number of records (loading 3 records will display 3 calibration runs and 1 final report).

The Final Report is the average of the last two runs of calibration for each report. Below the Final Report will be each Calibration Run record, in reverse chronological order.

The maximum number of records which can be displayed is 150, which would equate to 50 calibration runs (50 final reports) with a default calibration configuration.

There are additional options on the calibration report page.






<p># of Recs</p> <p># of Recs <input type="text" value="3"/></p>	<p>Number of records to extract from the analyzer into the report. Each full report is typically 3 records</p>
<p>Load Button</p> <p><input type="button" value="Load"/></p>	<p>When clicked, this button will retrieve the number of records specified from the analyzer</p>
<p>Print</p> <p></p>	<p>Opens the print preview dialogue box, allowing the user to print the report(s) to a PDF or to a printer</p>
<p>Export to Excel</p> <p></p>	<p>Exports the reports directly to excel. If the computer does not have excel installed, an error message will display. (Note: depending on the number of records, it may take several minutes to open in excel)</p>
<p>Save Report</p> <p></p>	<p>Displays the “Save As...” dialogue which allows the report to be saved to the computer in a “.rpt” format</p>
<p>Load from File</p> <p></p>	<p>Displays the “Open” dialogue, which allows the opening of a saved report in the “.rpt” format</p>
<p>Trend RF's in Excel</p> <p></p>	<p>Clicking this button will take the Final Report from the calibration report and open excel to trend the Response Factors Vs. Molecular Weight (linearity)</p>

Table 28: Additional Options for Calibration Page

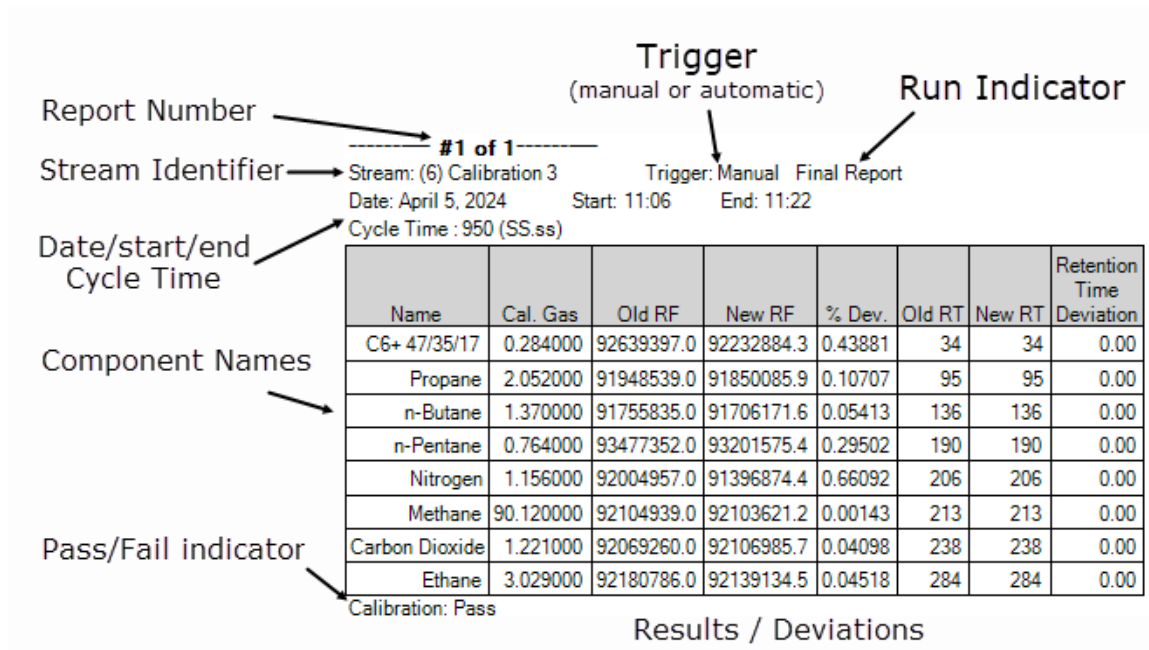


Figure 27: Parts of a Calibration Report

4.2 Analysis

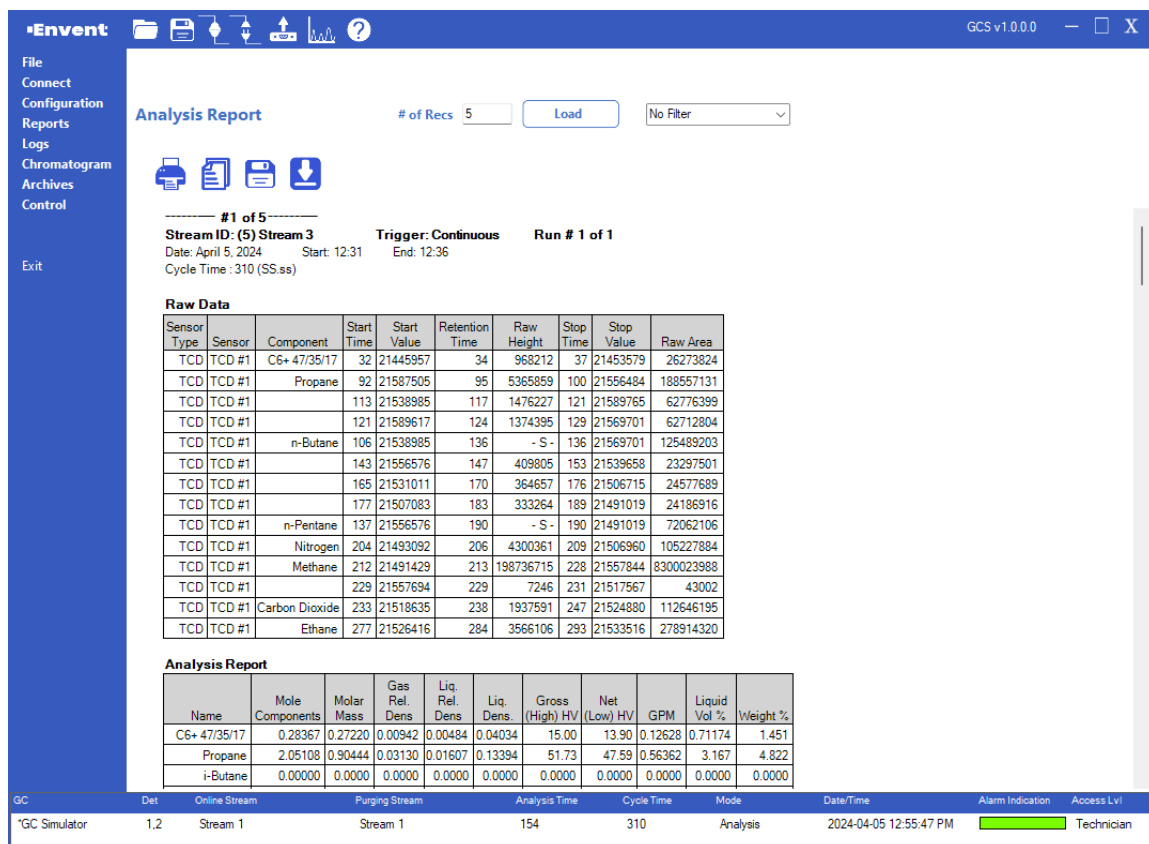


Figure 28: Analysis Window

This page allows the user to generate analysis reports. The analysis report contains the raw and analytical data for all stream runs (including calibration streams). When this page is opened, Envent GCS will automatically retrieve 5 analysis reports from the Gas Chromatograph. To generate a report, select the number of records required (in the text box) and click the “Load” button.

By default, the report will contain all chromatograph runs within the requested number of records, including any calibration runs which may have taken place. The filter button at the top of the page allows for viewing of individual streams.

There are additional options on the Analysis Reports page.





<p># of Recs</p> <p># of Recs <input type="text" value="3"/></p>	<p>Number of records to extract from the analyzer into the report.</p>
<p>Load Button</p> <p><input type="button" value="Load"/></p>	<p>When clicked, this button will retrieve the number of records specified from the analyzer</p>
<p>Filter Menu</p> <p><input type="text" value="No Filter"/></p>	<p>After retrieving reports, the filter drop-down menu will allow the viewing of specific stream runs individually</p>
<p>Print</p> <p></p>	<p>Opens the print preview dialogue box, allowing the user to print the report(s) to a PDF or to a printer</p>
<p>Export to Excel</p> <p></p>	<p>Exports the reports directly to excel. If the computer does not have excel installed, an error message will display. (note: depending on the number of records, it may take several minutes to open in excel)</p>
<p>Save Report</p> <p></p>	<p>Displays the “Save As...” dialogue which allows the report to be saved to the computer in a “.rpt” format</p>
<p>Load from File</p> <p></p>	<p>Displays the “Open” dialogue, which allows the opening of a saved report in the “.rpt” format</p>

Table 29: Additional Options for Analysis Page

5.0 LOGS

5.1 Maintenance Logs

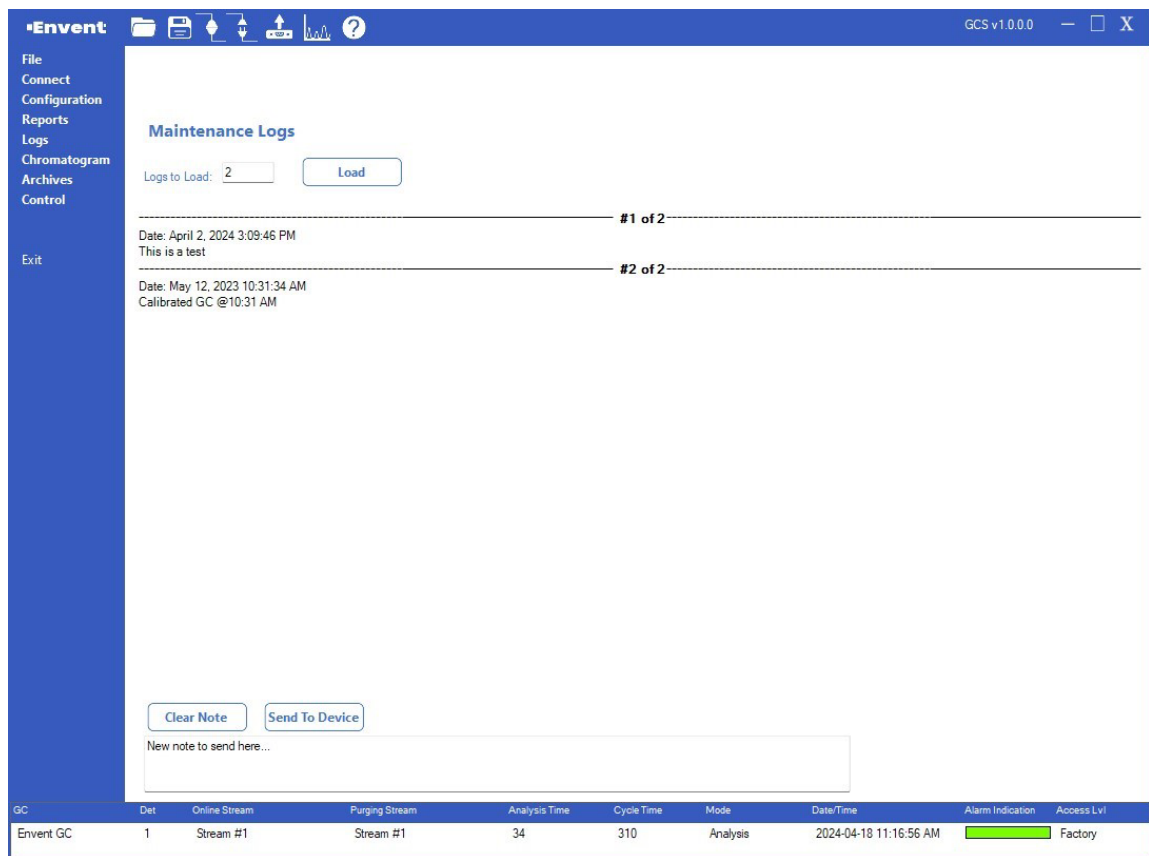


Figure 29: Maintenance Logs Window

This page allows the user to store Maintenance Logs in the GC for later viewing. While connected to the GC, type text into the textbox at the bottom of the page and click “Send to Device”. Maintenance Logs can be read back by typing the number of logs requested into the “Logs to Load:” textbox and clicking the “Load” button.

The maintenance log archive can store 64 logs, after which the oldest are overwritten. The minimum number of characters which can be sent is 7 and the maximum number is 124.

<p>Logs to Load</p> <p>Logs to Load: <input type="text" value="2"/></p>	Number of logs to extract from the analyzer into the report.
<p>Load Button</p> <p><input type="button" value="Load"/></p>	When clicked, this button will retrieve the number of logs specified from the analyzer.
<p>Clear Note</p> <p><input type="button" value="Clear Note"/></p>	Clears any text currently entered in the new note textbox.
<p>Send to Device</p> <p><input type="button" value="Send To Device"/></p>	Sends the currently entered text to the device for storage.

Table 30: Maintenance Logs Options

5.2 Change Logs

The screenshot shows the 'Change Log' window in the Envent software. The window title is 'Change Log' and it contains a list of system events and stream data. At the bottom, there is a table with columns: GC, Det, Online Stream, Purging Stream, Analysis Time, Cycle Time, Mode, Date/Time, Alarm Indication, and Access Lvl.

GC	Det	Online Stream	Purging Stream	Analysis Time	Cycle Time	Mode	Date/Time	Alarm Indication	Access Lvl
Envent GC	1	Stream #1	Stream #1	141	310	Analysis	2024-04-18 11:18:44 AM	 	Factory

Table 31: Change Logs Window

The change log keeps a record of changes made to configuration parameters in the software only. Note, this log is only valid for the currently connected session and is not stored in the analyzer.

Refresh <input type="button" value="Refresh"/>	Refreshes the log with the most current changes.
Clear <input type="button" value="Clear"/>	Clears the current log from the memory of the software.

Table 32: Change Logs Options

5.3 Alarm Log

5.3.1 Active Alarms

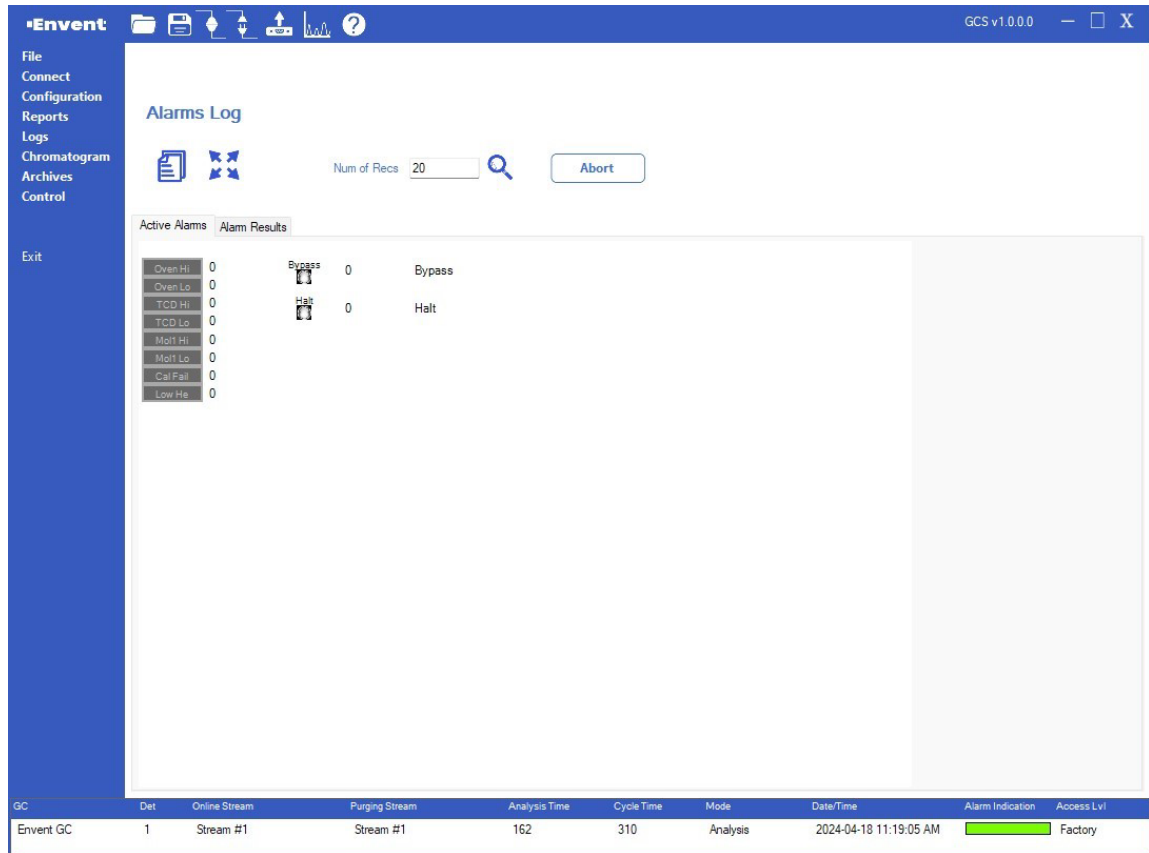


Figure 30: Active Alarms Tab

The Active Alarms tab displays any currently active alarms in the connected Gas Chromatograph, as well as a timer (if the alarm has a timer) next to the indicator. This page will also display whether the Gas Chromatograph is in Bypass or Halt mode with circular indicators. If the alarm, or mode, is active – the corresponding item will illuminate red.



Figure 31: Active Alarm

5.3.2 Alarm Results

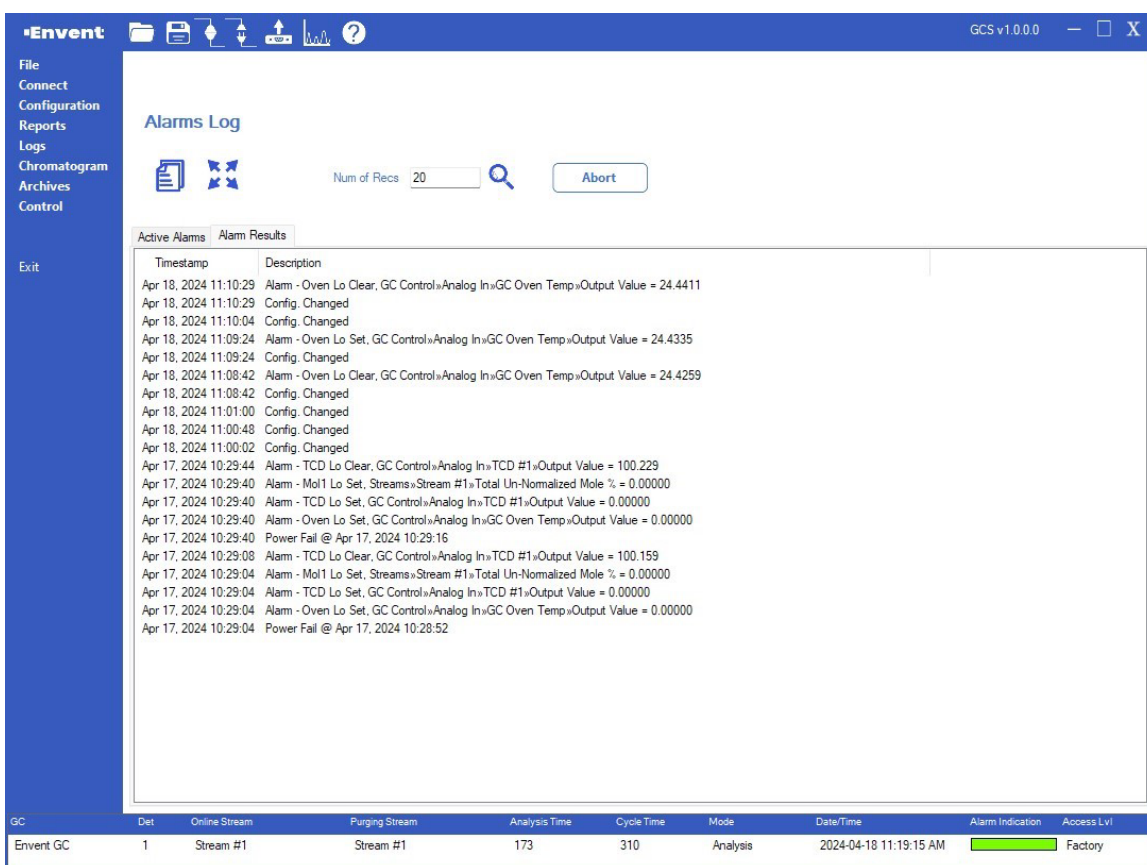


Figure 32: Alarm Results Tab

The alarm results tab allows the user to retrieve the history of alarms and other events (such as power failures and if the configuration was changed).






<p># of Recs</p> <p></p>	<p>Number of records to extract from the analyzer into the report.</p>
<p>Load Button</p> <p></p>	<p>When clicked, this button will retrieve the number of records specified from the analyzer</p>
<p>Abort Button</p> <p></p>	<p>This button will stop the software from retrieving any more records past the point that have already loaded</p>
<p>Export to Excel</p> <p></p>	<p>Exports the reports directly to excel. If the computer does not have excel installed, an error message will display. (Note: depending on the number of records, it may take several minutes to open in excel)</p>
<p>Autofit</p> <p></p>	<p>Clicking this button will automatically adjust the width of the columns so that the data is viewed in its entirety</p>

Figure 33: Alarm Results Functions

6.0 CHROMATOGRAM

6.1 Viewer

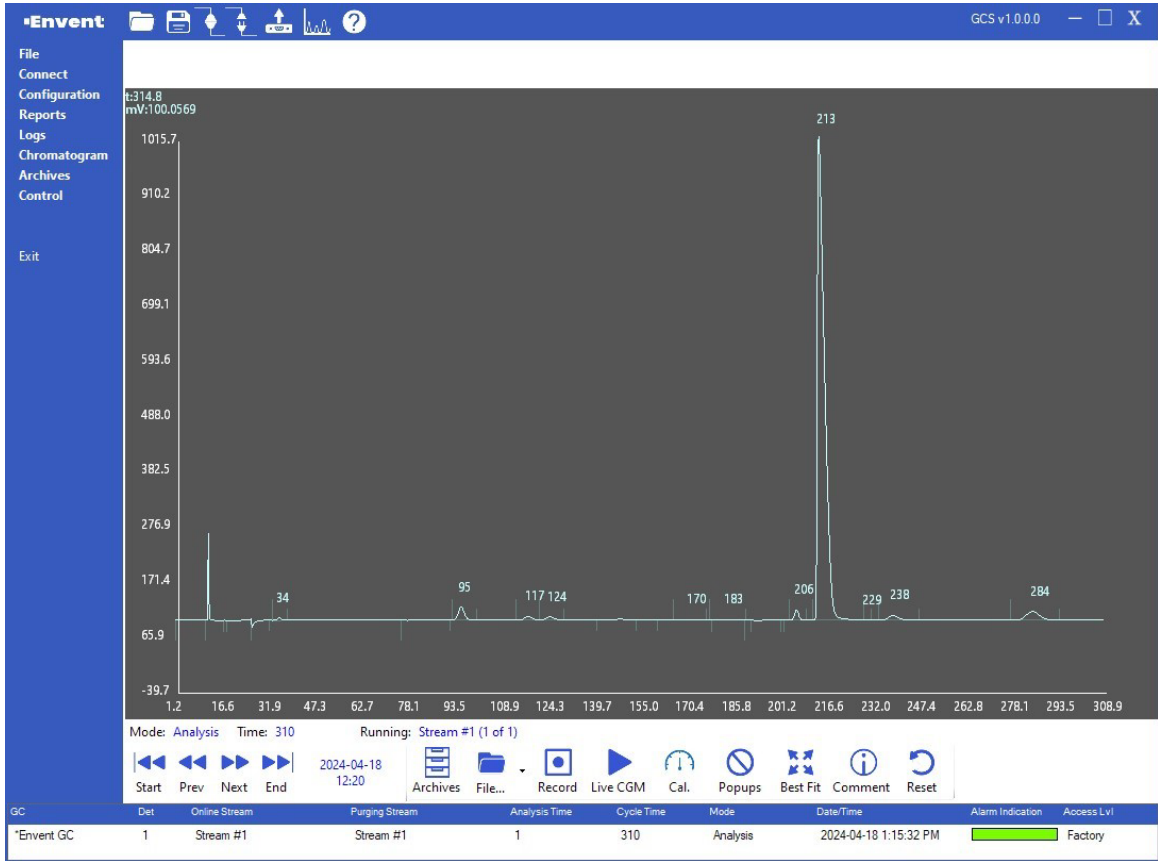


Figure 34: Chromatogram Window

The chromatogram page allows the user to view live or archived chromatograms and all related analytical data.

The main viewer takes up the bulk of the page, with navigational and control buttons at the bottom of the view.

There are some intuitive controls to navigate the chromatogram viewer. The chromatogram can be dragged around by holding left-click and moving the mouse. When the right-click button is held and the mouse is moved, a box is drawn to zoom in on a desired portion of the chromatogram. Double-left-click recenters the view and resets the scaling to the default scale.

Right-clicking anywhere on the chromatogram brings up the context menu for more operations including the ability to convert the chromatogram into an Analysis Report, performing a forced calibration, and turning individual traces on/off (in the case of a multiple detector analyzer).

The table goes over the controls at the bottom of the chromatogram page.











	<p>Controls that navigate the viewer between previous and next chromatograms. The timestamp indicates the currently viewed chromatogram</p>
 <p>Archives</p>	<p>Clicking this button brings up the archive dialogue box, the user can select chromatograms to view from the analyzer's internal archive</p>
 <p>File...</p>	<p>The File button allows the user to open a previously saved chromatogram (.chart) file. Clicking the arrow next to the icon brings up additional options to save, or close, the chromatogram file</p>
 <p>Record</p>	<p>Begins recording live chromatograms to the PC's internal memory. If they are not saved using the file dialogue, they are lost forever when closed</p>
 <p>Live CGM</p>	<p>Starts the software playing the live chromatogram from the analyzer as it appears real-time</p>
 <p>Cal.</p>	<p>The Cal. Button enters the currently viewed chromatogram into calibration mode. Which enables more features.</p>
 <p>Popups</p>	<p>Clicking the Popups button enables contextual popups on the chromatogram – indicating some data about peaks and timed events when the mouse cursor is pointed at them</p>
 <p>Best Fit</p>	<p>Best Fit automatically scales the view of the chromatogram to the height of the largest peak visible on the screen at the time the button is pressed.</p>
 <p>Comment</p>	<p>Shows the comment box for the currently viewed chromatogram.</p>
 <p>Reset</p>	<p>Resets the view to the default view (largest peak scaling).</p>

Figure 35: Chromatogram Controls

6.2 Chromatogram Archives

Stream #	Stream Name	Type	Date	Time
2	Calibration #1	Cal	April 16, 2024	1:12 PM
2	Calibration #1	Cal	April 16, 2024	1:06 PM
2	Calibration #1	Cal	April 16, 2024	1:01 PM
2	Calibration #1	Cal	April 15, 2024	1:15 PM
2	Calibration #1	Cal	April 15, 2024	1:10 PM
2	Calibration #1	Cal	April 15, 2024	1:05 PM

Stream #	Stream Name	Type	Date	Time
1	Stream #1	Run	April 18, 2024	1:10 PM
1	Stream #1	Run	April 18, 2024	1:04 PM
1	Stream #1	Run	April 18, 2024	12:59 PM
1	Stream #1	Run	April 18, 2024	12:41 PM
1	Stream #1	Run	April 18, 2024	12:36 PM
1	Stream #1	Run	April 18, 2024	12:30 PM
1	Stream #1	Run	April 18, 2024	12:25 PM
1	Stream #1	Run	April 18, 2024	12:20 PM
1	Stream #1	Run	April 18, 2024	12:14 PM
1	Stream #1	Run	April 18, 2024	12:09 PM
1	Stream #1	Run	April 18, 2024	12:04 PM
1	Stream #1	Run	April 18, 2024	11:58 AM
1	Stream #1	Run	April 18, 2024	11:53 AM
1	Stream #1	Run	April 18, 2024	11:48 AM

Figure 36: Chromatogram Archives Pop-up

Clicking the Chromatogram Archives button will open the archives box. The top section of the box is where the calibration chromatograms are stored, while the bottom section is where the stream (analysis) run chromatograms are stored. Chromatograms can be loaded as single records or multiple records.

Double-click one item to load it. Alternatively, select multiple records by using shift + click (or shift + arrow keys), or ctrl + click (or ctrl + arrow keys), or drag a box around the records – then click the “Load” button and all the selected records will be retrieved from the analyzer.

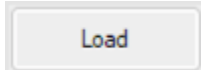
<p>Load Button</p> 	<p>When clicked, this button will retrieve the number of chromatograms specified from the analyzer.</p>
--	---

Table 33: Chromatogram Archive Load

After the records are requested, a progress bar will appear on the chromatogram viewer, indicating the progress through loading all the records requested. Once it is completed, the chromatograms will show up in the viewer. It will take several minutes to load a high number of records.

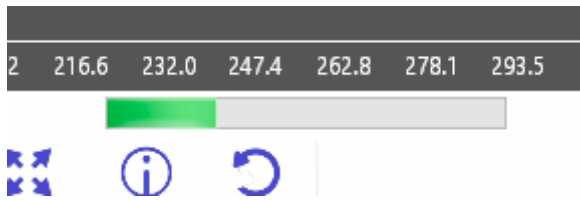


Figure 37: Progress Bar Retrieving the Requested Chromatogram(s).

6.3 Context Menu

Right-clicking anywhere on the chromatogram viewer will open the context menu specific to the currently selected chromatogram only.

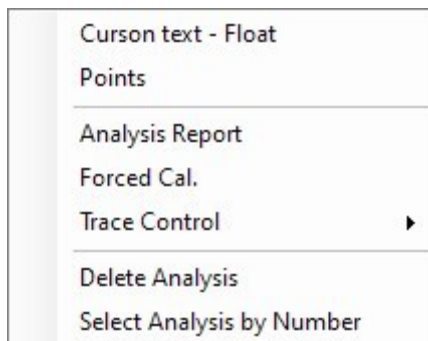


Figure 38: Context Menu

Cursor text – Float Cursor text - Fixed	This will indicate whether the cursor-on text is going to follow the cursor (float) or remain in the top-left corner (fixed). The cursor-on text indicates the millivolt and time point the cursor is resting on.
Points Lines	Clicking “points” will remove the lines, displaying only the discrete chromatogram data points. Clicking “Lines” will add lines between the points for smoother image.
Analysis Report	Opens the Analysis Report for the currently selected chromatogram – Section 7.2 Archive Display for more details.
Forced Cal.	When clicked, the “Forced Cal.” Option automatically copies the Response Factors and Retention Times for each component into the Component Data Table (Calibration Table) for the currently selected chromatogram only.
Trace Control	Allows the user to enable/disable other traces (for use in multi-detector gas chromatographs).
Delete Analysis	Deletes the currently viewed chromatogram from the viewer only (does not delete from the analyzer memory).
Select Analysis by Number	Opens a dialog box to allow selection of another chromatogram by index number – only from chromatograms currently loaded into the viewer.

Table 34: Context Menu Options

7.0 ARCHIVES

7.1 User Archive Setup

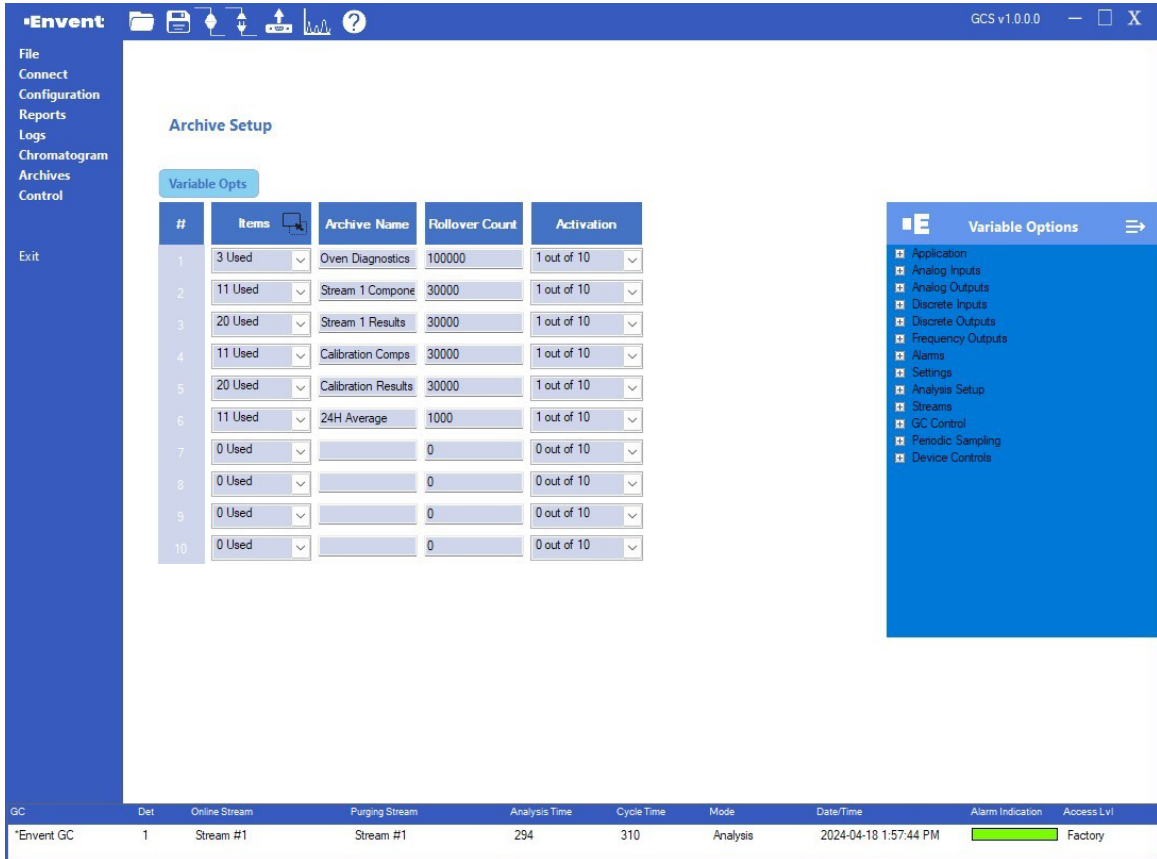


Figure 39: User Archive Setup Window

The archive setup page allows for user-configurable archives. The Envent Gas Chromatograph will ship with several archives already preconfigured.

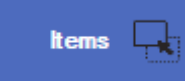
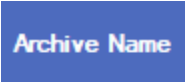
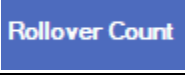
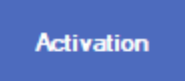
	<p>These drop-down menus contain the items in each archive. New items can be added using the “Variable Options” menu, to remove items, deselect the check box next to the item.</p>
	<p>User-assignable name to give the archive. This name will display as the tab for the archive in the Archive Display page (Section 10.2).</p>
	<p>The maximum width of the archive (number of records), before rollover begins. First in, first out.</p>
	<p>Allows for the selection of which event(s) will activate the archive, triggering a storage event. The drop-down menu will allow selection of various timed and system events (such as end of analysis, end of calibration, etc.).</p>

Table 35: User Archive Setup Options

7.2 Archive Display

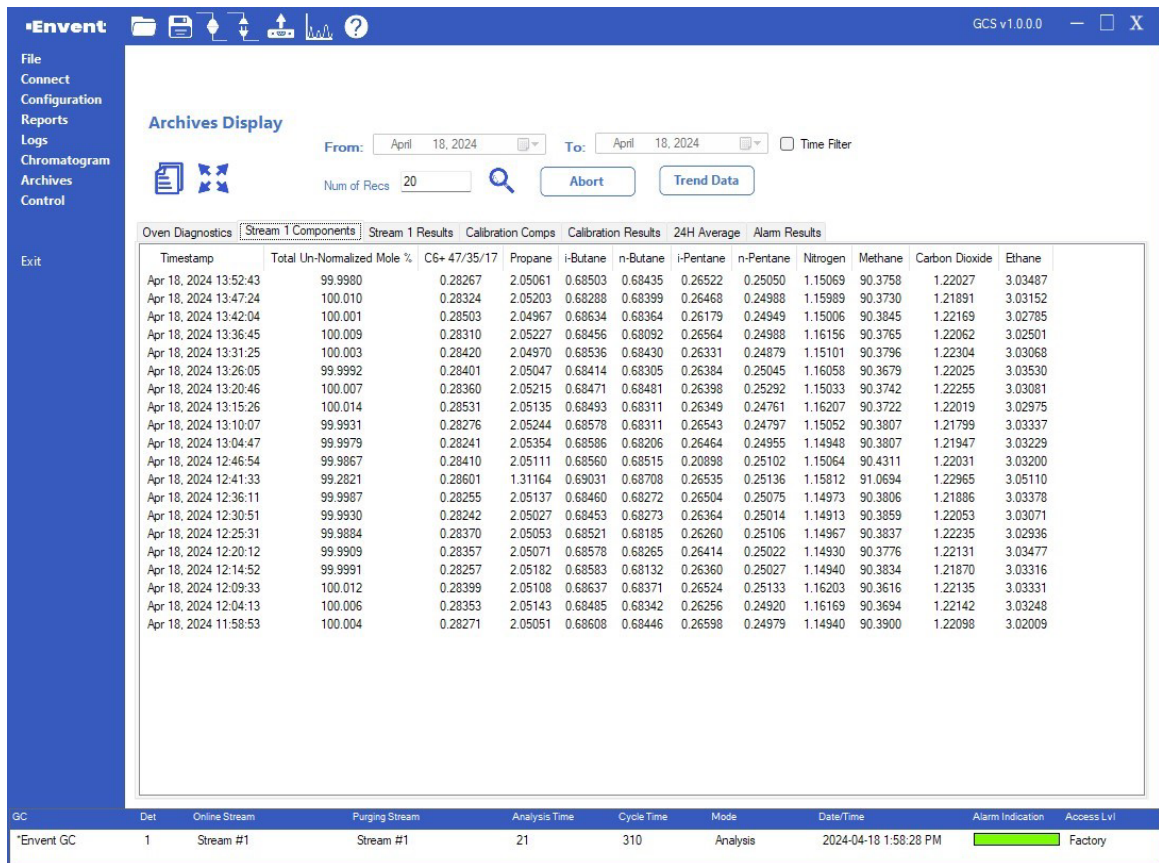


Figure 40: Archive Display Window

The Archive Display page allows the retrieval of any of the User Archives which have been configured (Section 10.1), as well as providing alternative access to the Alarms log (Section 5.3

Alarm Log). When first entering the page, Envent GCS will automatically retrieve 20 records from each archive. To request a report, select an archive using the tabs, then enter the number of records in the box and click the magnifying glass. A progress bar will indicate the progress to gathering all the records. It may take several minutes to retrieve large amounts of data.






<p># of Recs</p> <p># of Recs <input type="text" value="3"/></p>	<p>Number of records to extract from the analyzer into the report.</p>
<p>Load Button</p> 	<p>When clicked, this button will retrieve the number of records specified from the analyzer.</p>
<p>Abort Button</p> 	<p>This button will stop the software from retrieving any more records past the point that have already loaded</p>
<p>Trend Data</p> 	<p>The Trend Data button will trend all the retrieved data points onto a graph.</p>
<p>Time Filter</p> <input type="checkbox"/> Time Filter	<p>This checkbox will enable the “From:” and “To:” date selection boxes to filter out larger amounts of data.</p>
<p>Export to Excel</p> 	<p>Exports the reports directly to excel. If the computer does not have excel installed, an error message will display. (Note: depending on the number of records, it may take several minutes to open in excel).</p>
<p>Autofit</p> 	<p>Clicking this button will automatically adjust the width of the columns so that the data is viewed in its entirety.</p>

Table 36: Archives Display Options

Envent GCS allows for built-in trending capabilities. Clicking the “Trend Data” button will trend all the currently viewed data onto a single trend (top image), whereas clicking the header of a single variable will trend only that variable (bottom image).

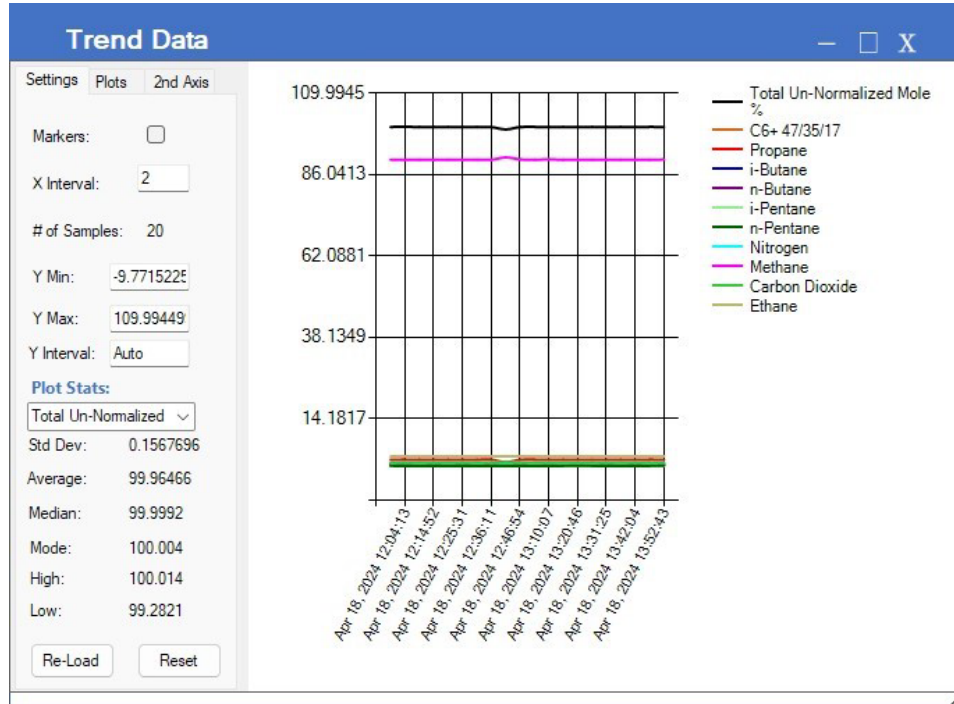


Figure 41: Trend Data for all Currently Viewed Data

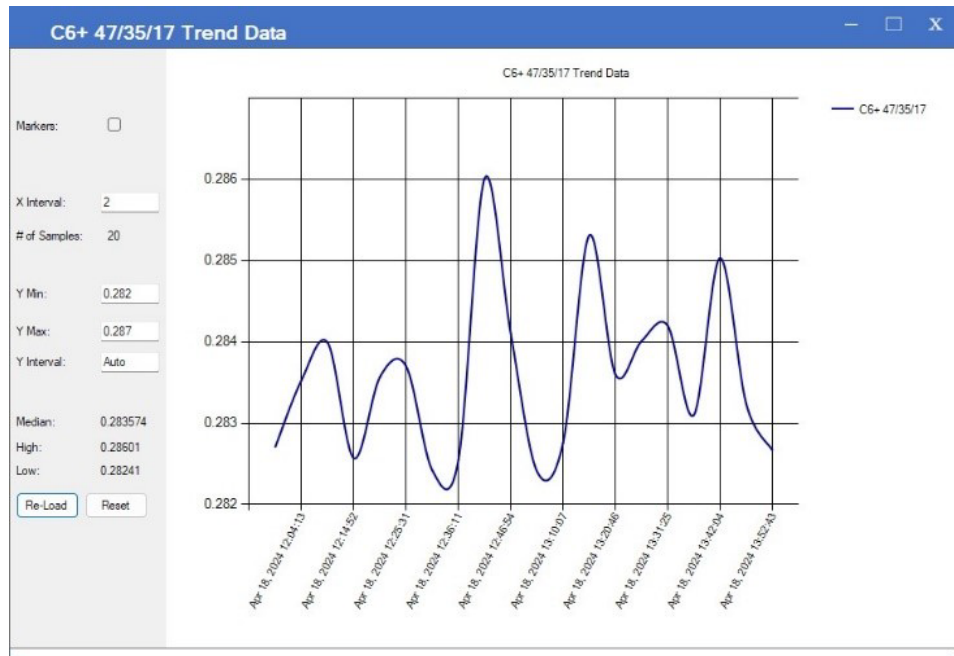


Figure 42: Single Variable Trend Data

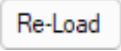

Settings Tab	Allows adjustment of the settings for the plot.
Plots Tab	When multiple variables are plotted, this tab allows variables to be displayed or not.
2nd Axis Tab	Plot one, or many, variables on a 2nd Y-Axis.
Markers	Checking this box will display individual points.
X Interval	Sets the number of samples between markers on X-Axis, otherwise automatic. Smaller number of samples create more markers.
# of Samples	Displays the number of samples in the plot.
Y Min	Sets the minimum Y-value, otherwise automatic.
Y Max	Sets the maximum Y-value, otherwise automatic.
Y Interval	Sets the increment value between two consecutive markers on the Y-Axis, otherwise automatic. Smaller increment values create more markers.
Plot Stats	Displays statistics for the selected component (drop-box menu selects between plotted components).
Reload 	Reloads the plot using the settings entered in the fields above the button.
Reset 	Resets the plot back to the original settings when the plot was first opened.

Table 37: Trend Data Settings

7.3 Periodic Samples

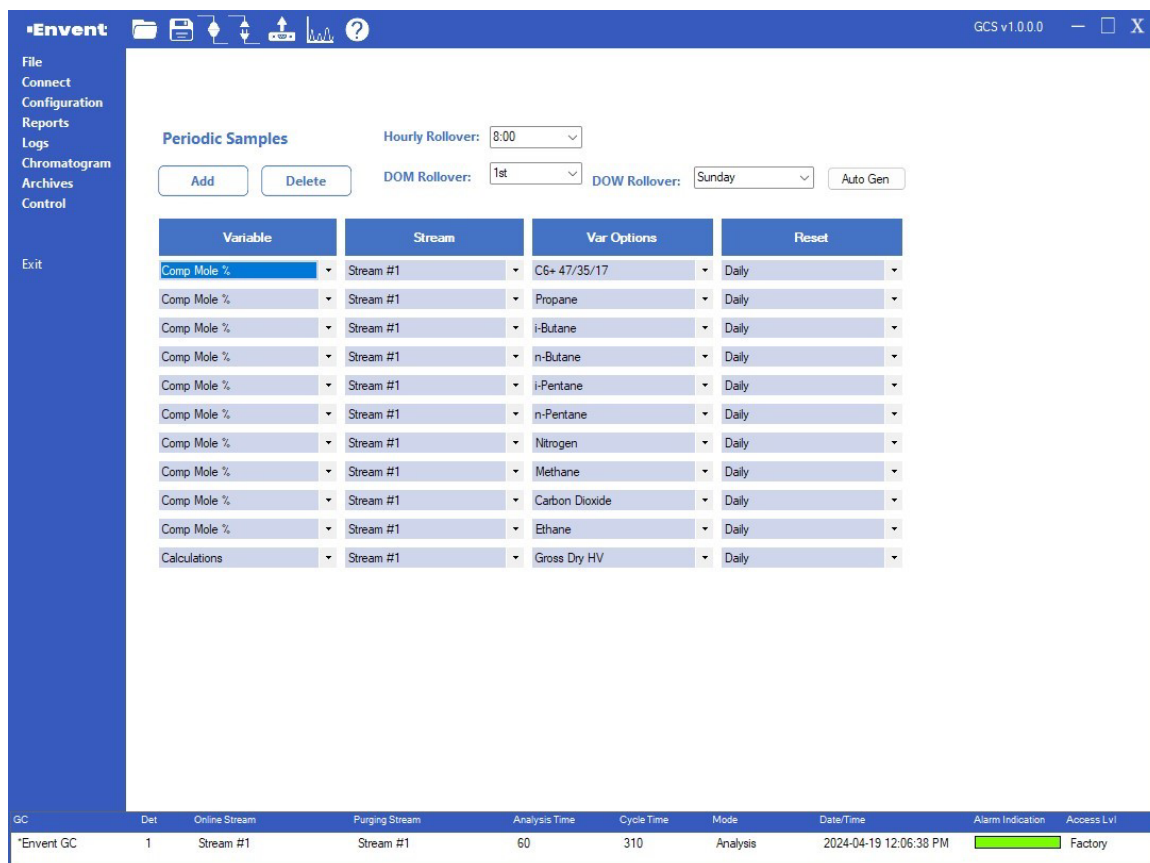


Figure 43: Periodic Samples Window

The periodic samples page allows for some more advanced data handling of the chromatograph results. When a periodic sampler is configured, it will generate the following results for each variable configured: average, minimum value, maximum value, number of samples, accumulated total, and the current value; as well as timestamps for the current value, minimum value, and maximum value. The most common use-cases are 24-hour averages, 15-minute averages, and average oven temperature per analysis.

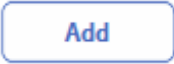
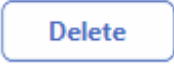
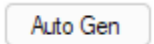
<p>Add</p> 	When clicked, this button will add a new line to the bottom of the list.
<p>Delete</p> 	When clicked, this button will remove the bottom line from the list
Hourly Rollover	The time at which daily events should rollover.
DOM Rollover	The day on which monthly events should rollover.
DOW Rollover	The day on which weekly events should rollover.
<p>Auto Gen</p> 	The Auto Gen button will automatically generate a list containing the daily periodic samples for all components in Calibration Table 1.
Variable	A drop-down menu containing a list of possible variables to sample.
Stream	A drop-down menu containing a list of possible streams to sample.
Var Options	[if applicable] A drop-down menu containing a list of options for the variable selected in “Variable”.
Reset	A drop-down menu containing a list of options indicating at what period the sampler should rollover (hourly, daily, weekly, monthly, or no reset).

Table 38: Periodic Samples Parameters

8.0 CONTROL

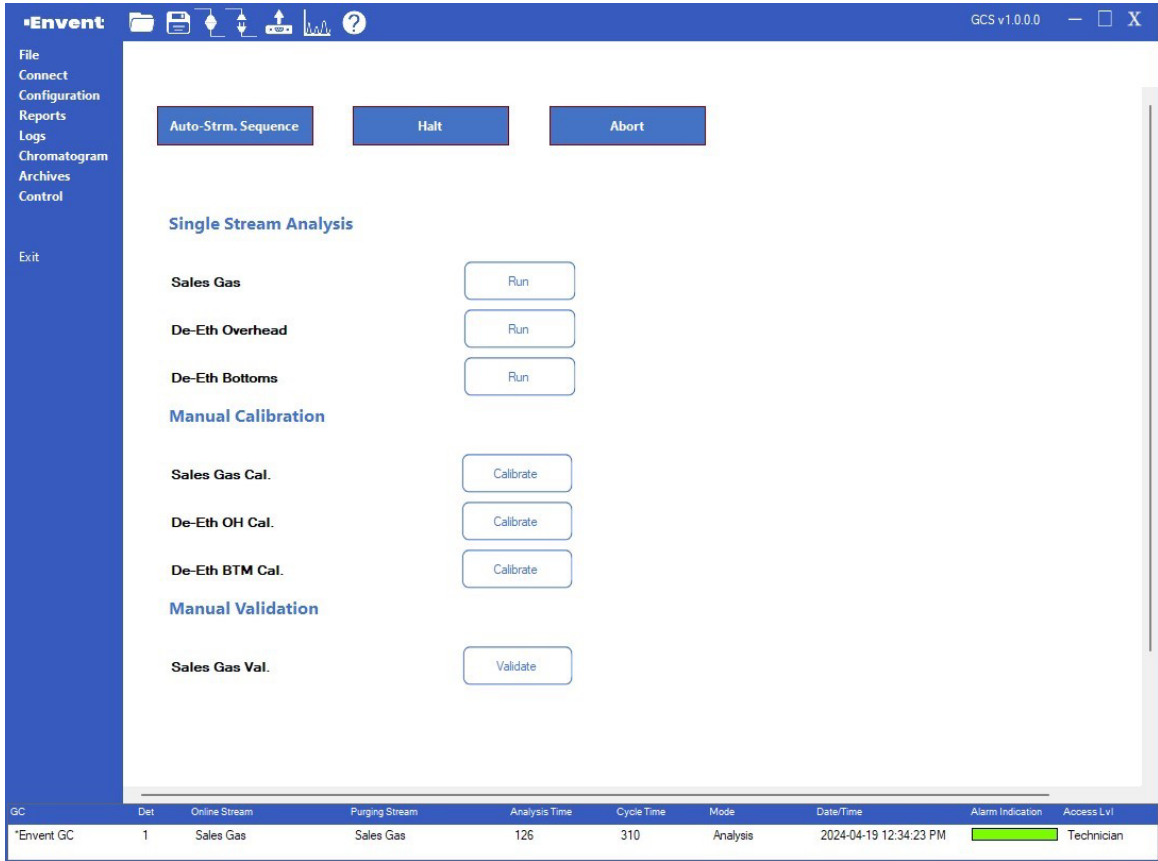


Figure 44: Control Window

The control page allows for operation of the Gas Chromatograph’s functions and stream control. Here, it is possible to halt/resume auto-sequencing, abort an analysis, start analysis stream runs, start validation runs, and start calibration runs.


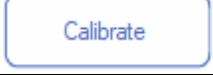

Auto-Strm. Sequence	Initiates auto-sequence according to the sequence in Configuration >> System.
Halt	Halts the analyzer after the current stream is finished.
Abort	Abort the analysis and immediately halt the GC.
Run Stream 	Initiate the analysis of a single analysis stream, either continuously or only once.
Calibrate Stream 	Initiate the analysis of a single calibration stream, either continuously, normal calibration, or forced calibration.
Validate Stream 	Initiate the validation of a single analysis stream.

Table 39: Control Settings

8.1 Auto Stream Sequence

Initiating the Auto Stream Sequencer will request that the analyzer begins analyzing streams in the sequence defined in Configuration >> System (Section 3.2 System). If the gas chromatograph is currently idle, a popup will indicate to the operator that this action will bring the analyzer out of halt mode.

8.2 Halt

Halting the gas chromatograph is required under certain conditions, such as adjustment of the detector bridge or to begin the forced calibration of a stream. When the halt command is initiated, the sequencer will pause the analyzer at the end of the current analysis and remain idle. In the idle state, the gas chromatograph holds all valves in the closed position and awaits further stream instruction. Any unexpected power failure will clear the idle condition and the gas chromatograph will attempt to initiate the auto-sequencer.

INFORMATION:



Please note that a safety interlock prevents the gas chromatograph from being halted and resumed from different interfaces. If the analyzer is halted from the display, it must be resumed from the display; likewise, if it is halted from the software, it must be resumed from the software.

8.3 Abort

The “Abort” button will immediately cancel the analysis, regardless of the timing of the run, and put the analyzer into idle mode.

CAUTION:



Extreme caution must be taken when using this button, as it can harm the operation of the analyzer since components are at an unknown position in the analytical columns/valves when the button is pressed.

8.4 Single Stream Analysis

A single stream analysis is used to interrupt the auto-stream sequencer of the gas chromatograph with the analysis of a single stream. This decision can be to run the selected stream continuously (until operator intervention) or to run the selected stream only one time. Regardless of the state of the analyzer, when a single stream analysis is completed, the analyzer will return to auto-stream sequence.

8.5 Manual Calibration

Manual calibration is used to initiate a calibration stream. When a calibration button is pressed, the operator must decide to run continuously, run normally, or force the calibration. See Section 9.1 Calibration for details.

8.6 Manual Validation

Manual validation is used to initiate the validation of an analysis stream. When a validation button is pressed, the operator must decide to run continuously or run the validation stream one time. See Section 8.6 Manual Validation for details. This is also known as running an analysis stream as an unknown.

9.0 GC OPERATIONS

9.1 Calibration

Calibration should be performed on the Gas Chromatograph at intervals specified in the User's Manual. This section does not cover individual calibration configuration and only covers the calibration methods within the software. For more information on setting up the hardware for calibration, refer to the Gas Chromatograph user's manual.

There are three calibration modes: Automatic calibration, normal calibration, and forced calibration. From the factory, calibration is designed to run 3 times and compare the last 2 runs.

INFORMATION:

Ensure that the correct pressure / flow is set up for the calibration stream that needs verification / calibration. Calibration involves adjusting measurement sensitive factors in the analyzer and will have an impact on the performance and output of the analyzer.

9.1.1 Automatic Calibration

The gas chromatograph can be programmed to run the calibration on a regular basis, automatically. The following steps outline the **general** procedure for setting up automatic calibration. Typically, the analyzer is configured from the factory. For assistance, contact Envent Support.

INFORMATION:

Automatic calibration requires specific hardware to function correctly (automatic stream switcher).


Step 1 Navigate to Configuration>>Streams (Section 3.5 Streams).

Step 2 For the desired calibration stream, check the “Auto Cal” checkbox, select the Interval required (Daily, weekly, or monthly) and select the appropriate time/day in the additional boxes.

Streams Add Delete Streams: 7/10

Name	Usage	Cal Tbl	Evt Tbl	Auto Cal	Total Runs	Ave Runs	Start Time	DOW	DOM	Interval
Sales Gas	Analysis	#1	#1							
Sales Gas Cal.	Calibrate	#1	#1	<input checked="" type="checkbox"/>	3	2	8:00			Daily
De-Eth Overhead	Analysis	#1	#1							
De-Eth OH Cal.	Calibrate	#1	#1	<input checked="" type="checkbox"/>	3	2	8:00			Daily
De-Eth Bottoms	Analysis	#1	#1							
De-Eth BTM Cal.	Calibrate	#1	#1	<input type="checkbox"/>	3	2				
Sales Gas Val.	Validate	#1	#1							

Figure 45: Auto Cal Setup

- Step 3** Once the settings are satisfactory, write the configuration to the gas chromatograph by pressing the “Write” button. .
- Step 4** The calibration will automatically do 3 runs at the specified interval and generate a calibration report when finished. If the calibration is a pass, the calibration factors will be updated, if it is a failure, they will not be updated.
- Step 5** Calibration reports can be retrieved from the analyzer as required.

9.1.2 Manual Calibration

If the analyzer is not equipped with automatic calibration or a manual calibration is desired, follow these steps.

- Step 1** Navigate to the Control Page.
- Step 2** Press the “Calibrate” button for the desired calibration stream.

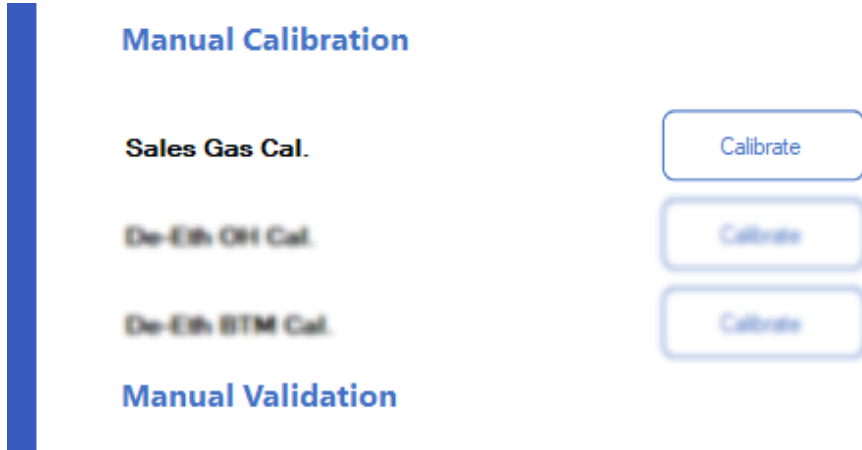


Figure 46: Manual Calibration

Step 3

A dialogue box will open for the operator to select between running a calibration or running a continuous unknown. Select “Run Calibration”, then click “Normal” on the next dialog box.

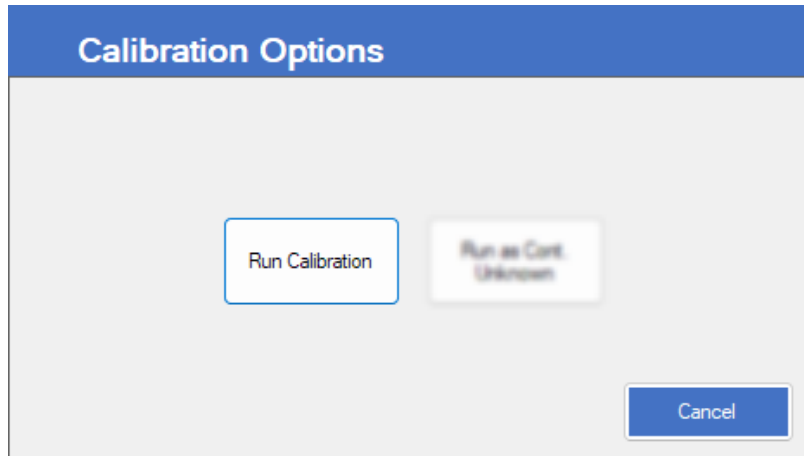


Figure 47: Run Calibration

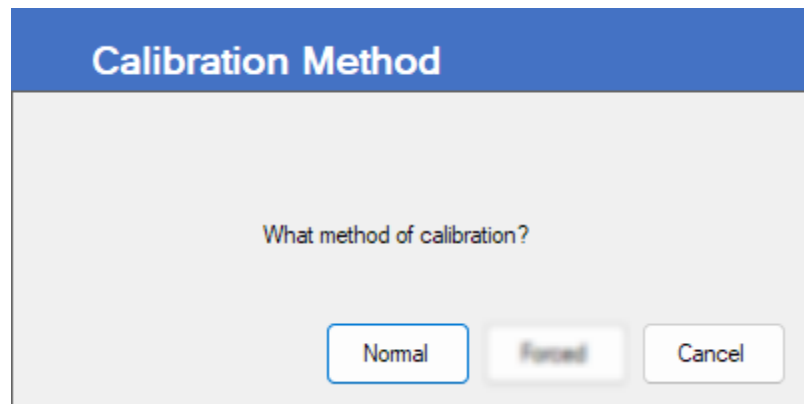


Figure 48: Calibration Method

Step 4 The calibration cycle will begin once the current analysis stream is finished (or immediately, if the GC is idle) and will perform 3 runs, then generate a calibration report when it has finished. If the calibration is a pass, the calibration factors will be updated, if it is a failure, they will not be updated.

INFORMATION:



The calibration occurs firmware-side, so the Component Data Table will need to be updated in the software. To update the CDT, disconnect/reconnect the analyzer (Section 2.2 Connecting the Analyzer to a Computer Using GCS).

Step 5 Calibration reports can be retrieved from the analyzer as required.

9.1.3 Forced Calibration

During start-up, or when large hardware changes have been made (such as different valves, columns, or calibration standard), the deviation may be too large for an automatic / normal calibration to properly calibrate the analyzer. In these situations, a forced calibration may be necessary.

CAUTION:



Please note, a forced calibration is not a solution for poor chromatography. If there is an analytical problem such as, but not restricted to, lack of carrier pressure, poor calibration standard, damaged valves, damaged columns, or a damaged sensor, then the analytical problem must be remedied before a proper calibration can take place. A forced calibration will not fix an analytical hardware error.

The process for a forced calibration is as follows:

- Run calibration standard continuously, until chromatograms are stable.
- Verify stability of chromatograms.
- Verify the positioning of each of the peaks.
- Halt the analyzer and disengage the continuous calibration stream.
- Initiate a Forced Calibration.
- Write the results into the Gas Chromatograph.

Follow the steps below to perform a forced calibration.

Step 1 Navigate to the Control page and click the “Calibrate” button for the desired calibration stream.

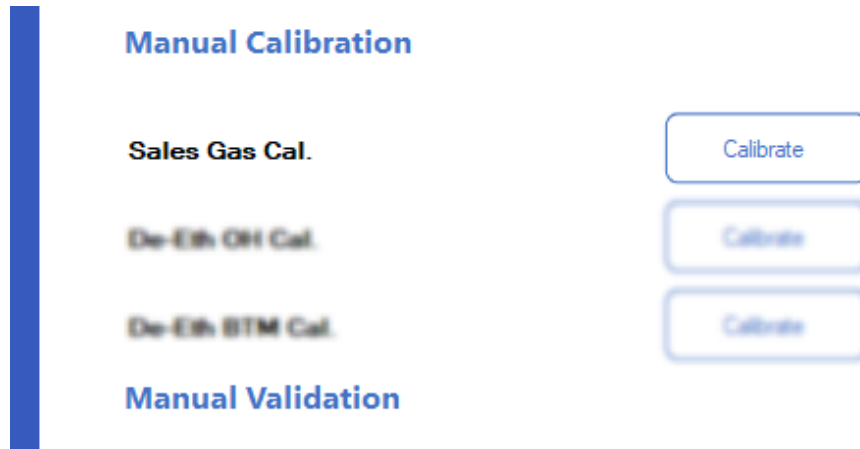


Figure 49: Manual Calibration

Step 2 A dialogue box will open for the operator to select between running a calibration or running a continuous unknown. Select “Run as Cont. Unknown”. The “Calibrate” button for that stream will illuminate blue to indicate it is currently running continuously.

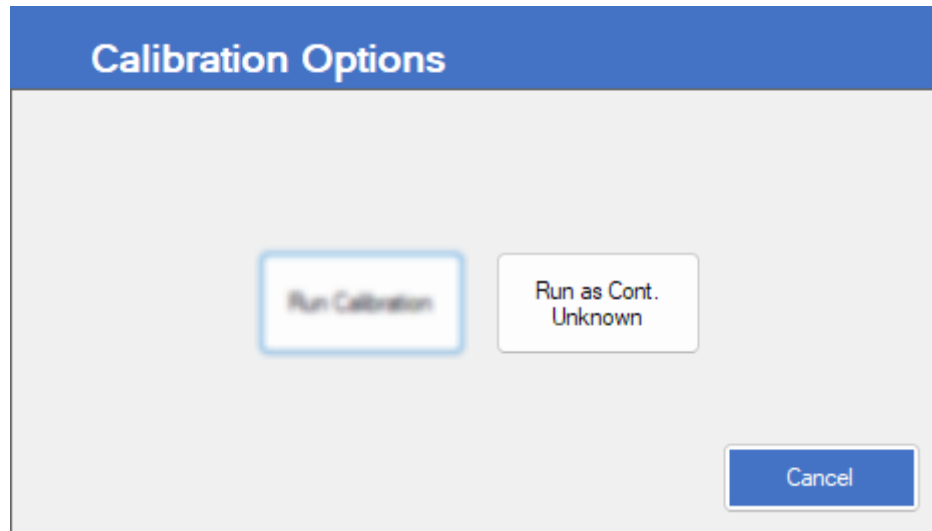


Figure 50: Run as Cont. Unknown

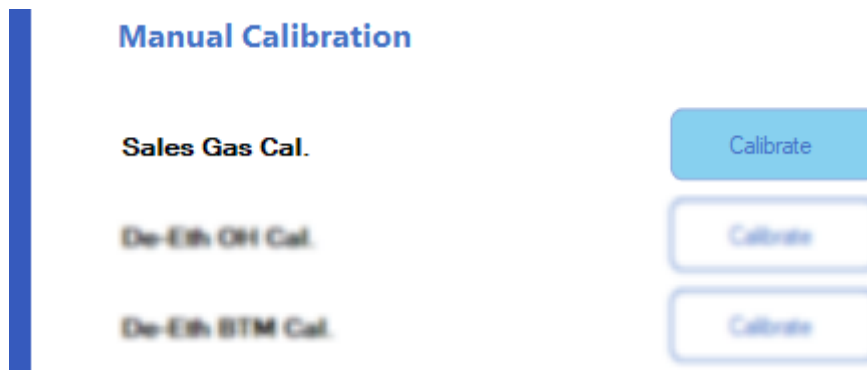


Figure 51: Continuous Run Stream

Step 3

Verify chromatogram stability after 5 or 6 runs.

[OPTIONAL] The most effective method to do this is to record 5 or 6 chromatograms to the viewer, then navigate to File >> View >> Preferences, and change the Frame Setting to “Stacked (All stacked vertically)” in the Chart Options (near the bottom of the preferences window). This will stack all the chromatograms, making any differences in them stand out.

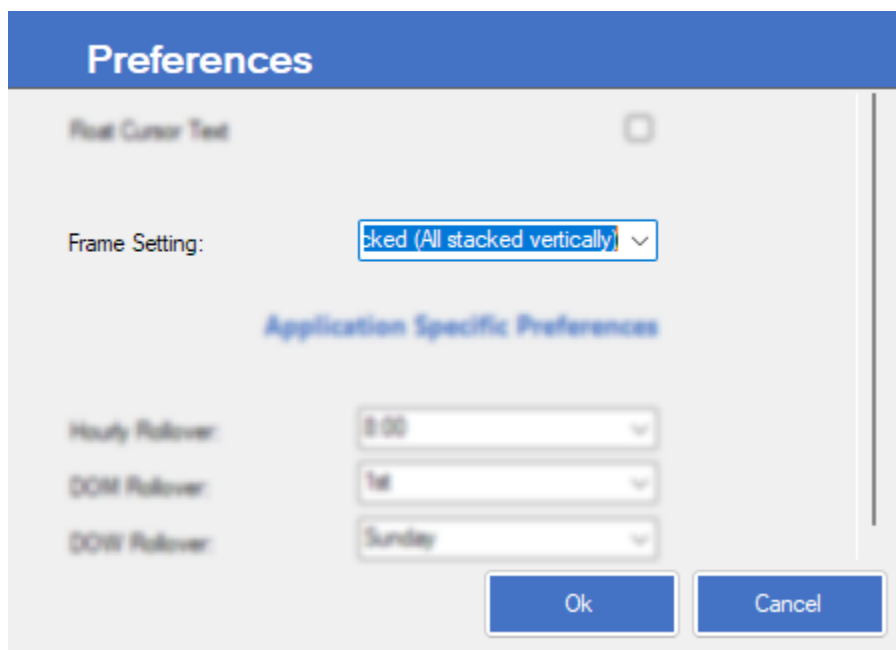


Figure 52: Frame Setting

The screenshot below shows what 5 stacked, and stable, chromatograms could look like. If there are any significant variations between the runs, then there is likely a hardware problem.

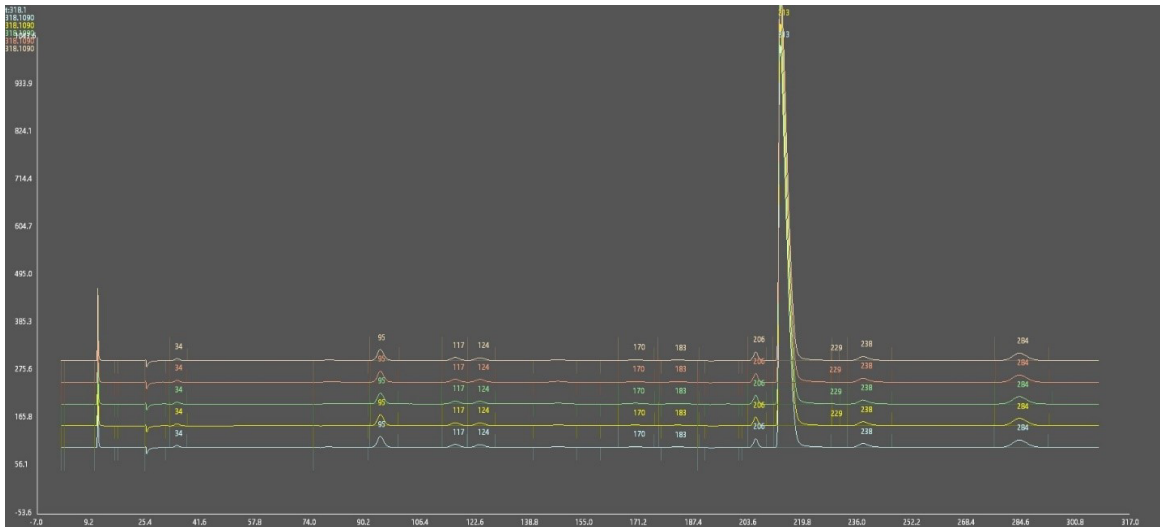


Figure 53: Chromatograms Example



INFORMATION:

The actual chromatogram depicted may be different depending on the analyzer.

- Step 4** If the chromatograms are stable continue.
If the chromatograms are not stable, contact Envent Engineering Ltd. as more troubleshooting is likely required.
- Step 5** Halt the analyzer by navigating to the Control Page and press the “Halt” button. **This action will automatically disengage the continuous hold which was placed on the calibration stream.** Wait for the analyzer to become idle before proceeding.
- Step 6** Once the Gas Chromatograph is Idle. Press the “Calibrate” button for the desired calibration stream.
- Step 7** A dialogue box will open for the operator to select between running a calibration or running a continuous unknown. Select “Run Calibration”, then click “Forced” on the next dialogue box.

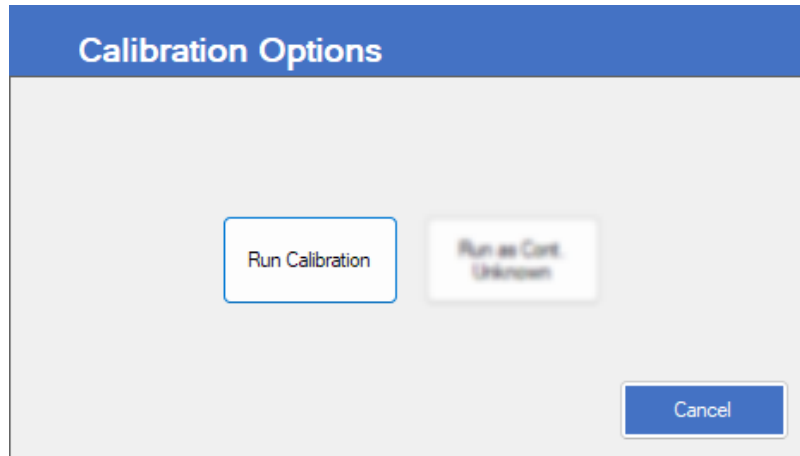


Figure 54: Calibration Options

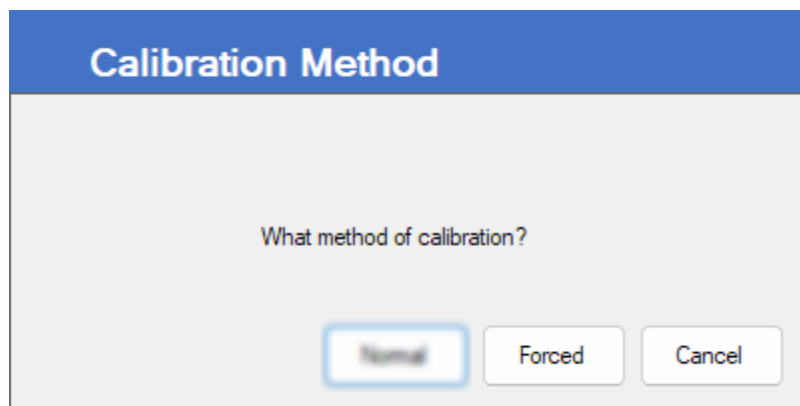


Figure 55: Calibration Method (Select Forced)

- Step 8** The calibration cycle will begin immediately and will perform 3 runs. Allow the calibration to proceed without being interrupted (the process may take 15-60 minutes).

CAUTION:



The PC must be connected to the Gas Chromatograph until the forced calibration cycle is completed. If communication is interrupted, the forced calibration will fail and must be performed again.

- Step 9** Between 0.5 – 1 minute after the forced calibration is completed, a dialog box will open indicating that the forced calibration has finished, and that the operator must write to the analyzer to update the calibration results.

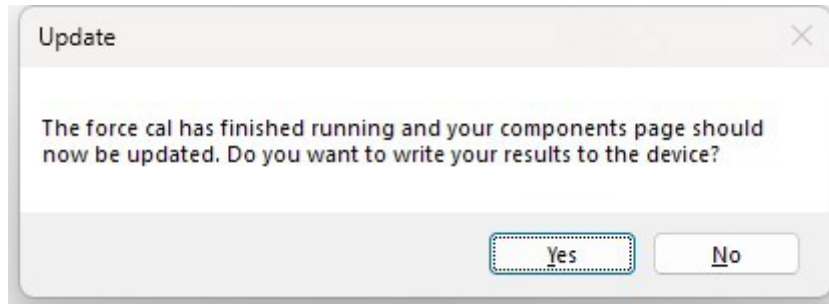


Figure 56: Update Dialog Box

- Step 10** Click “Yes” to automatically initiate a write operation which will update the Component Data Table in the firmware of the gas chromatograph.

- Step 11** Calibration reports can be retrieved from the analyzer as required.



INFORMATION:

The calibration results will always be accepted during a forced calibration, even if the report indicates that it should have failed.

9.2 Verifying Calibration Linearity

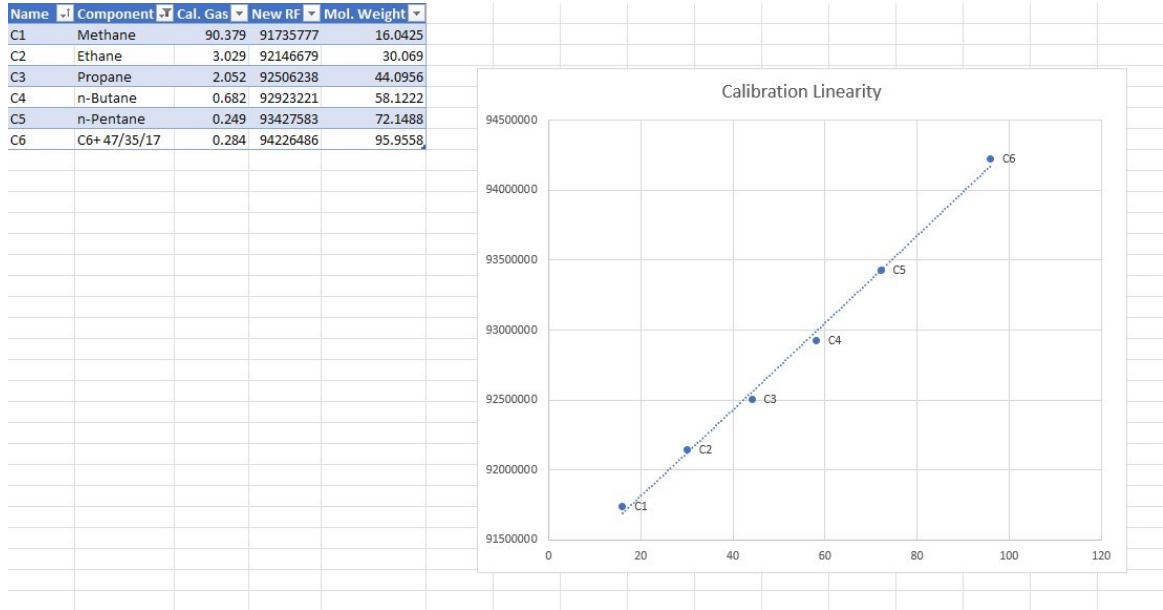



Figure 57: Calibration Linearity Plot

Envent GCS can automatically generate a calibration linearity plot (also known as a Fidelity Plot). Navigate to Reports >> Calibration and click the “Trend RFs in Excel” button. 

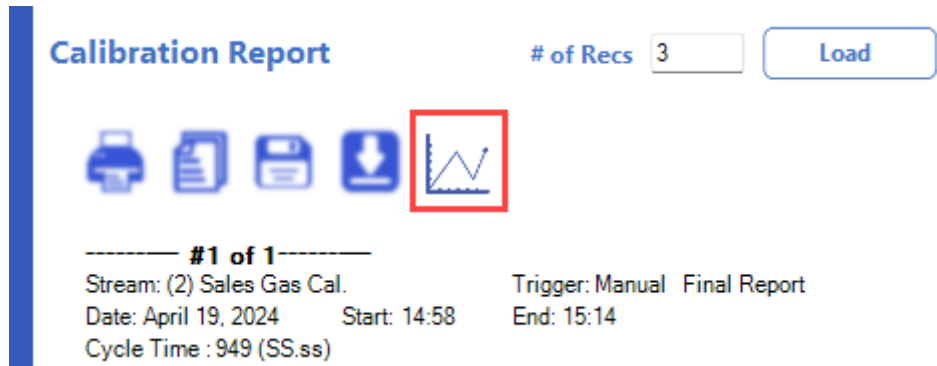


Figure 58: Trend RFs in Excel



INFORMATION:

The PC running Envent GCS must have Microsoft Excel installed for this functionality to work, if Microsoft Excel was not found, an error message will be generated.

9.3 Manual Valve Control

Under specific conditions it may be desirable to control the valve outputs manually. For example, in the case of advanced troubleshooting, specific purge requirements not met by the automatic purging system, or stream control outside the automatic, and auxiliary, stream sequencers. Great caution must be employed, because manually controlling valves can have adverse effects on measurement and reporting.

Navigate to Configuration >> Hardware and scroll down to the “Valve Outputs” section. The column labelled “Control” will allow the operator to switch between Auto, Off, or On for each valve output.

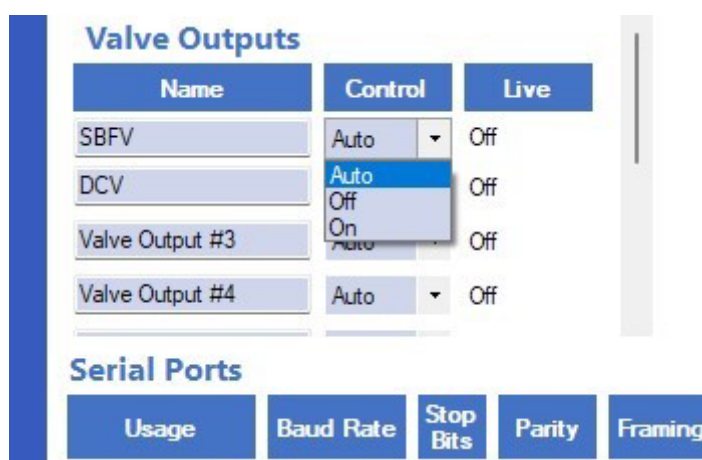


Figure 59: Valve Control

By default, the valve outputs are all set to “Auto” – indicating that they are controlled by the analyzer’s firmware. Selecting “On” will immediately switch the valve to the on or opened position. Selecting “Off” will immediately switch the valve to the off or closed position.

Once the valve control parameter is adjusted, it will remain that way indefinitely until the operator changes it again. A power cycle of the analyzer will return all valves to the “Auto” position.

CAUTION:



Leaving a valve in the On or Off position may adversely affect the operation, measurement, and reporting capabilities of the gas chromatograph. Great caution must be taken to ensure that the controls are returned to “Auto” before resuming normal operation of the gas chromatograph.

Example: An example of use is troubleshooting the dual-column-valve timing on a C6+ BTU analyzer. The dual-column-valve can be switched to the “Off” position so that the technician can locate the timing between Ethane and Propane; or for the technician to identify the location of 2,2-Dimethylbutane – which may appear on the chromatogram to be co-eluted with the analytes from Column 3.

GLOSSARY/DEFINITION OF TECHNICAL TERMS

A

ASCII American Standard Code for Information Interchange

B

baud rate It determines the number of signal changes that occur per unit of time on the physical medium. In other words, it assigns the rate at which information is being transferred typically in bits per second.

C

control Refers to a state in which a device is actively managing or influencing a system or process. Devices in “control” mode are responsible for making decisions and adjustments based on inputs or data.

D

dead band Area of a measured variable that must be compensated before the alarm condition goes to a non-alarm condition. The dead-band is used to avoid ON-OFF repeatedly if the variable value is close to the alarm setpoint

P

parity A method of error detection that involves adding an extra bit to a set of binary data bits. This extra bit is used to ensure that the total number of bits set to “1” in the data, including the parity bit, is either even or odd.

R

RTU Remote Terminal Unit

S

Sim2251 SIM_2251 refers to a predefined set of variables designed for the Modbus Interface specifically tailored for Gas Chromatographs (GCs) utilizing the Enron (Daniel mode) output protocol. Gas Transfer GCs are supplied with the SIM_2251 Modbus Interface by default. It's worth noting that contemporary flow computers inherently support this interface, enabling seamless retrieval of GC results without the need for supplementary programming.

span Refers to the range between the zero point and the max value that the measurement system can accurately measure.

Z

zero Point that corresponds to the absence or baseline condition of the quantity being measured. Used as reference from which all other measurements are made.

CONTACT US

In the event that a situation arises that is not covered by this manual, we encourage you to contact us so that we can help you resolve any issues you may have. Please have this manual readily available when calling for assistance.

For further information on our products or to access our most recently updated manuals and product catalogues, please visit our website at www.enventengineering.com.



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