Reference Manual
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MON2020 Software for Gas Chromatographs

ROSEMOUNT™

EMERSON™

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1 Getting started

Welcome to MON2020—a menu-driven, Windows-based software program designed to remotely operate and monitor the Rosemount™ XA series of gas chromatographs.

MON2020 operates on an IBM-compatible personal computer (PC) running the Windows 7® operating system or later.

MON2020 can initiate or control the following gas chromatograph (GC) functions:

- Alarm parameters
- Alarm and event processing
- Analog scale adjustments
- Analyses
- Baseline runs
- Calculation assignments and configurations
- Calibrations
- Component assignments and configurations
- Diagnostics
- Event sequences
- Halt operations
- Stream assignments and sequences
- Valve activations
- Timing adjustments

MON2020 can generate the following reports:

- Analysis (GPA)
- Analysis (ISO)
- Calibration
- Final Calibration
- Validation
- Final Validation
- Hourly Averages
- Monthly Averages
- Daily Averages
- GC Configuration
- Raw Data
- Variable Averages

- Weekly Averages
- Dew Temperature Calculation (optional)

MON2020 can access and display the following GC-generated logs:

- Alarm Log
- Event Log
- Parameter List
- Maintenance Log

1.1 MON2000 and MON2020

Users familiar with MON2000 or MON2000 Plus will find a few changes when using MON2020:

- Login security is at the gas chromatograph level instead of at the software level. This means that you no longer have to log in after starting MON2020—but you do have to log in to the gas chromatograph to which you are trying to connect. For more information, see Connect.
- An *Administrator* role has been added to the list of user roles. This new role has the highest level of authority and is the only role that can create or delete all other roles and users. For more information, see Users.
- Multiple users can connect to the same gas chromatograph simultaneously. By default, the first user to log in to the GC with *supervisor* authority will have read/write access; all other users, including other supervisor-level users, will have read access only. This configuration can be changed so that all supervisor-level users have read/write access regardless of who logs in first. For more information, see Managing the system.
- Users can display multiple windows within MON2020.
- Automatic re-connection. If MON2020 loses its connection with the GC, it automatically attempts to reconnect.
- Analytical Train Configuration. Users can configure Analytical Trains for the detectors, valves and discrete outputs enabled by selecting the checkboxes. The number of detectors, valves and discrete outputs is depenent on the installed hardware of the GC.
- Analysis Clock Configuration Users can configure/save settings of assigned analytical trains to analysis.
- Users can view multiple instances of certain windows. To aid in data processing or troubleshooting, MON2020 is capable of displaying more than one instance of certain data-heavy windows such as the Chromatogram Viewer and the Trend Data window.
- Enhanced Chromatogram Viewer. The following enhancements have been made to the Chromatogram Viewer:
  - Users can view an unlimited number of chromatograms, in any configuration. For example, a user can view an archived chromatogram and a live chromatogram. For more information, see The Chromatogram Viewer.
  - The *Keep Last CGM* option. Upon starting a new run, MON2020 can keep the most recently completed chromatogram on the graph for reference.

  - Overview window. When zoomed in to a smaller section of a chromatogram, the user can open a miniature 'overview' window that displays the entire chromatogram, for reference. For more information, see Additional plot commands.
  - Older chromatograms available. MON2020 has access to archived chromatograms as old as four or five days. For more information, see Display an archived chromatogram.
  - Full screen mode. For more information, see Options for displaying chromatograms.
  - Protected chromatograms. Chromatograms that you designate as protected will not be deleted. For more information, see Protected chromatograms.
- The *Invert Polarity* option. This feature reverses a detector's effect. For more information, see Invert the polarity of a valve and Invert the polarity of a discrete input.
- Streamlined variables-picking menu. The method for selecting variables for calculations and other purposes is contained within one simple, self-contained menu. For more information, see The context-sensitive variable selector.
- GC Time. The GC Status Bar displays the date and time based on the GC's physical location, which may be different than the PC's location. For more information, see Set the gas chromatograph's date and time.
- Daylight Savings Time. You have option of enabling a GC's Daylight Savings Time feature. Also, there are two options for setting the start and end times for Daylight Savings Time on the GC. For more information, see Set Daylight Savings.
- Baseline offsetting (700XA and 1500 XA only). In some situations that involve multiple detectors, the baseline may be displayed either too high on the graph, in which case the tops of the peaks are cut off, or too low on the graph, so that the bases of the peaks are cut off. If this occurs, it is possible to offset the baseline either up or down so that the entire peak can be displayed on the graph. This offset will be applied to all traces—live, archived, and saved—that are displayed thereafter. For more information, see Offset the baseline (700XA and1500XA only).
- Microsoft Excel-based Parameter List. The Parameter List has been expanded to offer multiple pages of information and is Microsoft® Excel-based to allow for data access outside of MON2020. The document can be imported to and exported from GCs. For more information, see The parameter list.
- Optional FOUNDATION Fieldbus variables. If your GC is installed with a FOUNDATION Fieldbus, you can map up to 64 GC variables to monitor using the AMS Suite. For more information, see Map a FOUNDATION Fieldbus variable.
- Optional local operator interface (LOI) variables. If your GC is installed with an LOI, you can configure up to 25 GC parameters to monitor using the LOI's *Display* mode. For more information, see Local Operator Interface variables.
- Access to GC-related drawings such as flow diagrams, assembly drawings, and electrical diagrams.
- Validation runs. During a validation run, the GC performs a test analysis to verify that it is working properly. For more information, see The validation data tables and Validate the gas chromatograph.

1.2 Getting started with MON2020

This section covers such issues as installing, registering, and setting up the software, as well as configuring MON2020 to meet your specific needs.

1.2.1 System requirements

To achieve maximum performance when running the MON2020 software, ensure your PC system meets the following requirements.

Compatible operating systems:

- Windows® 7, Windows® 8 or Windows® 10
- Internet Explorer® 9 or higher
  - Microsoft Edge
  - Mozillla Firefox
  - Google Chrome

Minimum hardware specifications:

- 1 gigahertz (GHz) 32-bit or 64-bit processor
- 1 gigabyte (GB) RAM (32-bit) or 2 GB RAM (64-bit)
- 1 GB available hard disk space
- Super VGA Monitor with 1024 x 768 or higher resolution
- One Ethernet Port for connecting to Gas Chromatographs
- Windows®-compatible printer for printing reports (Optional)

1.2.2 Install MON2020

You must install MON2020 from the USB drive onto your hard drive; you cannot run the program from the USB.

Double-click the **Setup** file and follow the on-screen installation instructions.

Upon successful installation, MON2020 creates a shortcut icon on the computer's desktop.

Note
MON2020 is not an upgrade to MON2000; therefore, MON2020 should be installed to its own directory, separate from the MON2000 directory.

Note
You must be logged onto the computer as an administrator to install MON2020. Windows™ 7 and Windows™ 10 users, even with administrator privileges, will be prompted by the operating system's **User Account Control** feature to allow or cancel the installation.

1.2.3 Start MON2020

To launch MON2020, double-click its desktop icon or click the **Start** button and select **MON2020**.

1.2.4 Register MON2020

Each time you start MON2020 it will prompt you to register if you have not already done so. You can also register by selecting **Register MON2020...** from the *Help* menu.

Registering your copy of MON2020 allows you to receive information about free updates and related products.

Procedure

1. Complete the appropriate fields on the *Register MON2020* window.

   Note
   The software's revision level is located on the back of its USB.

2. Click **Next** to continue.
3. Choose the desired registration method by clicking the corresponding checkbox.
4. Click **Finish**.

1.2.5 Set up the data folder

The data folder stores GC-specific files such as reports and chromatograms. The default location for the data folder is **C:\Users*user_account_name*\Documents\GCXA Data**. If you want MON2020 to store its data in a different location—on a network drive, for instance—do the following:

Procedure

1. Move the data folder to its new location.
2. Select **Program Settings...** from the **File** menu.
3. The current location of the data folder displays in the *Data Folder* field.

   To change the data folder's location, click on the **Browse** button that is located to the right of the *Data Folder* field.

4. Use the *Browse for Folder* window to navigate to the **GCXP Data** folder's new location and click **OK**.

   Note
   Another method for changing the folder location is to type the folder's location into the *Data Folder* field and press ENTER. When the "Create the folder?" message appears, click **Yes**.

5. The *Data Folder* field updates to display the new location.

1.2.6 Set up MON2020 to connect to a gas chromatograph

To configure MON2020 to connect to a GC, do the following:

Procedure

1. Select **GC Directory...** from the **File** menu.

   If this is the first time that this option was selected, you will get the following error message:

   Figure 1-1: "GC directory file not found" message

   If you get the *GC directory file not found* message, click **OK**. The *GC Directory* window appears and displays a table containing an inventory of the GCs to which MON2020 can connect.

2. If you are configuring the first GC connection for MON2020, there will be only one generic GC record listed in the window. To add another record, select **Add** from the *GC Directory* window's **File** menu. A new row will be added to the bottom of the table.
3. Click in the **GC Name** field and enter the name for the GC to which you want to connect.
4. Optionally, you can click in the **Short Desc** field and enter pertinent information about the GC to which you want to connect, such as its location. You can enter up to 100 characters in this field.
5. By default, Ethernet 1 (RJ45 connection on the backplane) is selected as the connection method. Other options are Direct and Ethernet 2 (terminal block on the backplane). Select the correct check box. Multiple connection methods can be selected. For Ethernet 1 or Ethernet 2, click the button on the bottom of the screen. The *Ethernet Connection Properties for New GC* window appears.
   a) Enable the radio button for the connection type.
      - IP address - numeric value
      - Server name - alphabetical value

   b) Select the designated port, a shared public Internet connection network address translation (NAT) using a single IP address assigned to different GCs.
      - FTP
      - Database
      - Chromatogram
      - Modbus

Note
The default address for the GC's RJ-45 port in DHCP mode is **192.168.135.100**.

Note
If you type an invalid IP address, you will get an error message when MON2020 attempts to connect to the GC.

6. Click **OK**. When the **Save changes?** message appears, click **Yes**.
7. Repeat steps 2 through 6 for any other GCs to which you want to connect.
8. To delete a GC from the GC Directory table, select the GC and then click **Delete** button from the ***File*** window.
9. To copy a GC's configuration information into a new row, select the row to be copied and then select **Insert Duplicate** from the ***File*** window.
10. To insert a row below a GC, select the GC and then select **Insert** from the ***File*** window.
11. To sort the table alphabetically, select **Sort** from the **Table**window or click **Sort** from the ***GC Directory*** window.
12. To copy the list of GCs to the clipboard to be pasted into another application, select **Copy Table to Clipboard** from the **Table** window.
13. To print the list of GCs, select **Print Table...** from the **Table** window.
14. To save the changes and keep the window open click **Save** from the ***GC Directory*** window. To save the changes and close the window, click **OK**. When the ***Save changes?*** message appears, click **Yes**.

    For more details about configuring MON2020 connections, see Configure an Ethernet port.

1.2.7 Export a GC directory

The *GC Directory*, which contains the list of networked GCs that are currently configured for your copy of MON2020, can be saved as a DAT file to a PC or other storage media such as a compact disk or flash drive.

To save the *GC Directory* to the PC, do the following:

Procedure

1. Click **Export**.
   The *Export GC Directory* window displays.
2. Select the checkbox for each gas chromatograph whose information you want to save.

   Note
   If you want to save the entire list, click **Select All**.

3. Click **OK**.
   The *Export GC Directory File* save as dialog displays.
4. Choose a save location.

The default location is **C:\Users*user_account_name*\Documents\GCXA Data**.

Note
The file is automatically given the name of **GC_DIRECTORY_EXPORT.DAT**. If you prefer a different name, type it into the *File name* field.

5. Click **Save**.

1.2.8 Import a GC Directory file

A GC Directory file can be used to restore GC directory information to your copy of MON2020, or it can be used to quickly and easily supply other copies of MON2020 that are installed on other computers with the profiles of the GCs that are in your network.

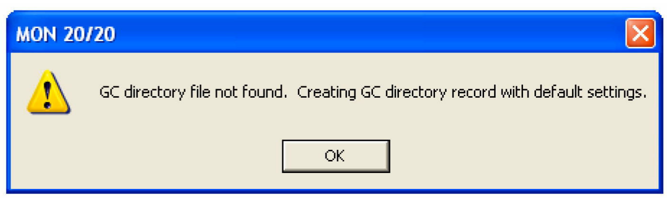
To import a GC Directory file, do the following:

Procedure

1. Select **GC Directory...** from the **File** menu.

   If this is the first time that this option was selected, you will get the following error message:

   Figure 1-2: GC directory file not found" message

   If you get the "GC directory file not found" message, click **OK**. The *GC Directory* window appears

2. Click **Import**.
   The *Import GC Directory File* dialog displays.
3. Locate the GC directory file and select it.
4. Click **Open**.
   The newly configured *GC Directory* window reappears with the list of networked GCs displayed in the *GC Directory* table.

1.2.9 Launch MON2020 from the SNAP-ON for DeltaV

This section assumes that DeltaV is installed on the PC along with MON2020.

Note
To successfully use MON2020 SNAP-ON for DeltaV, you must be familiar with using the DeltaV digital automation system.

To start MON2020, do the following:

Procedure

1. Start the DeltaV Explorer by clicking on its desktop icon or by clicking the **Start** button and selecting *DeltaV → Engineering → DeltaV Explorer*.
2. In the *Device Connection View*, open device icons by clicking once on each icon. Follow the path of connections until you locate the desired gas chromatograph icon.
3. Right-click on a connected gas chromatograph icon to display the context menu.
4. Select *SNAP-ON/Linked Apps → Launch MON2020*.
   MON2020 starts and connects automatically to the GC.

1.2.10 Launch MON2020 from the AMS Device Manager

This section assumes that DeltaV and AMS are installed on the PC along with MON2020.

To start MON2020, do the following:

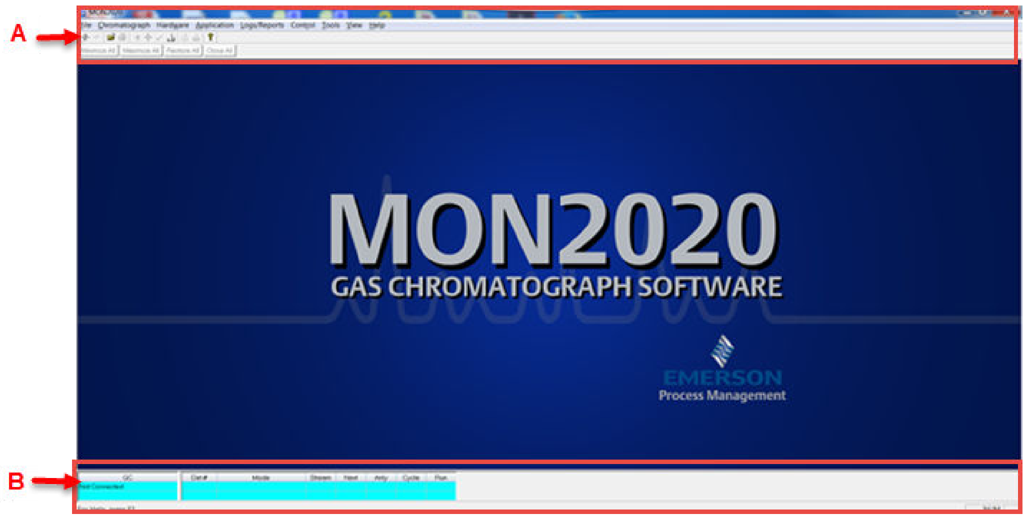
Procedure

1. Start the AMS Device Manager by clicking on its desktop icon or by clicking the **Start** button and selecting *AMS Device Manager → AMS Device Manager*.
2. In the *Device Connection View*, open device icons by clicking once on each icon. Follow the path of connections until you locate the desired gas chromatograph icon.
3. Right-click on a connected gas chromatograph icon to display the context menu.
4. Select *SNAP-ON/Linked Apps → Launch MON2020*.
   MON2020 starts and connects automatically to the GC.

1.2.11 The MON2020 user interface

MON2020 has two areas of interaction: the Control Area, at the top of the program's main window, and the GC Status Bar, located at the bottom of the program's main window.

Figure 1-3: The MON2020 window

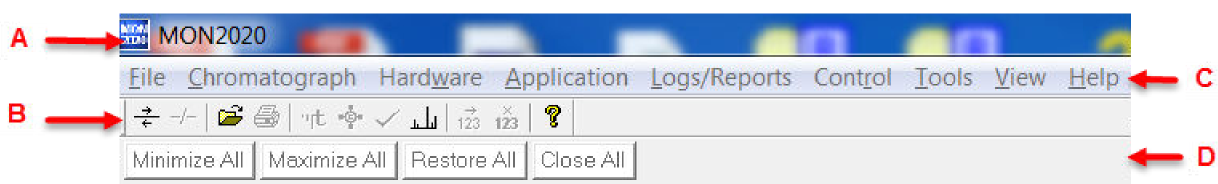


A. Control Area
B. GC Status Bar

The main user interface

The main user interface of the main window contains the menus and icons that allow you to control MON2020 and the GC to which MON2020 is connected.

Figure 1-4: The Control Area



A. Title bar
B. Toolbar
C. Menu bar
D. Dialog Control Tabs

- **Title bar** - The Title bar displays the name of the program, as well as the program's connection status. MON2020 has the following three overall status modes:
  - Not connected - If MON2020 is not connected to a GC, then *MON2020* displays in the Title bar.
  - Connected - If MON2020 *is* connected to a GC, then *MON2020 - Connected* to and the name of the GC and the connection type displays in the Title bar.

  — <u>Offline Edit</u> - If MON2020 is in offline edit mode, then *MON2020 - Offline Edit < file name*> displays in the Title bar.

- **Menu bar -** The Menu bar contains the commands that allow you to control and monitor gas chromatographs.
- **Toolbar -** The Toolbar contains shortcut icons for the most important and/or most often used MON2020 commands. From the Toolbar you can do such things as connect to and disconnect from a GC, view chromatographs, and view help files.

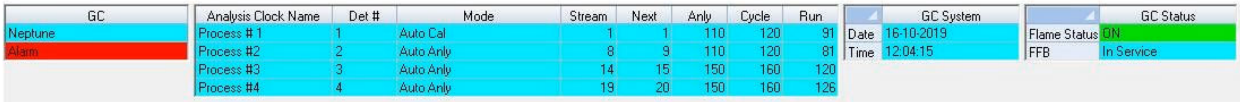
	Connect to a gas chromatograph.
	Disconnect from a gas chromatograph.
	Open a configuration file.
	Print a GC configuration report.
	View the *Timed Events* window.
	View the *Component Data* window.
	Clear or acknowledge alarms.
	Open the CGM Viewer window.
	Begin auto sequencing.
	Halt auto sequencing.
	Open the MON2020 context-sensitive Help.

- **Dialog Control Tabs bar -** The Dialog Control Tabs bar contains four buttons that allow you to manage the behavior of all windows that are open in the main window. The four buttons are **Minimize All**, **Maximize All**, **Restore All**, and **Close All**. The bar also displays a button for each open window that allows you to select or deselect that window.

You can hide or display the Toolbar and the Dialog Control Tabs bar by clicking the appropriate option from the **View** menu.

The GC Status Bar

The GC Status Bar of the main window displays useful information about the status and functioning of the gas chromatograph to which MON2020 is connected.



The GC Status Bar contains the following sections:

GC — The first row displays the name of the GC to which MON2020 is connected. If MON2020 is not connected to a GC, *Not Connected* displays in this row. If MON2020 loses its connection to the GC, *Comm Fail* displays in this row, and the program will automatically try to reconnect. The second row displays status flags such as active alarms (with red background), unacknowledged alarms (with yellow background).

Analysis Clock Name — This field displays the Analysis Clock 1 or Analysis Clock 2, Analysis Clock *N* (where *N* represents the number of the Analysis Clock). Multiple analyses can run independently to analyze multiple streams at the same time. The GC can run two or more (maximum four) analyses at a time. The number of analyses are set at factory per the mechanical configurations.

Det # — A GC can have a maximum of three detectors.

Mode — Potential modes are: Idle, Warmstart Mode, Manual Anly, Manual Cal, Manual Validation, Auto Anly, Auto Cal, Auto Validation, Auto Valve Timing, Module Validation, CV Check, Manual Purge, Auto Purge, and Actuation Purge.

Stream — The current stream being analyzed.

Next — The next stream to be analyzed.

Anly — The analysis time.

Cycle — The total cycle time, in seconds, between successive analyses.

Run — The amount of time, in seconds, that has elapsed since the current cycle began.

GC System — Displays the date and time according to the GC to which MON2020 is connected. The date and time displayed may be different from your date and time, depending on the physical location of the GC.

Foundation Field Bus FFB — Displays the status as **In Service** or **Not In Service**.

FID Flame Status — Displays the status of the FID flame. Options are **OFF** with red background, **ON** with green background, and **OVER TEMP** with red background. The FID Flame Status indicator only displays on the GC Status Bar when the GC to which MON2020 is connected has an FID detector.

You can hide or display the GC Status Bar by clicking **GC Status Bar** from the **View** menu.

1.2.12 Connect

Before connecting to a GC you must create a profile for it on MON2020. See Set up MON2020 to connect to a gas chromatograph to learn how to do this.

Also, to connect to a gas chromatograph you must log on to it first. Most of MON2020's menus and options are inactive until you have logged on to a GC.

To connect to a GC, do the following:

Procedure

1. There are two ways to start the process:
    a) On the Toolbar, click the icon.
    b) Select **Connect...** from the **Chromatograph** menu.

    The *Connect to GC* dialog, which displays a list of all the GCs to which you can connect, appears.

    Note
    If you want to edit the connection parameters for one or all GCs listed in the *Connect to GC* window, click **Edit Directory**. The *GC Directory* window appears. See Set up MON2020 to connect to a gas chromatograph for more information.

2. Click the connection method (Direct, Modem, Ethernet 1, or Ethernet 2) button beside the GC to which you want to connect.
    The *Login* dialog appears.
3. Enter a user name and user PIN and click **OK**.
    Once connected, the name of the GC appears under the *GC* column in the GC Status Bar.

    Note
    All GCs are shipped with a default user name:. The MON2020 security policy requires a user password for the first time log in. To add a user password or user name or for information about creating and edit user names in general, see Users.

    Note
    If you enter an invalid user name or password, the *Login* dialog closes without connecting to the GC.

1.2.13 Disconnect from a gas chromatograph

Disconnecting from a GC automatically logs you off of the GC.

To disconnect from a gas chromatograph, do one of the following:

- On the Toolbar, click .
- Select **Disconnect** from the **Chromatograph** menu.

Note
If you are connected to a GC and want to connect to a different GC, it is not necessary to disconnect first; simply connect to the second GC, and in the process MON2020 disconnects from the first GC.

1.3 Keyboard commands

You can use the following keyboard keystrokes throughout the program:

Arrow keys Moves cursor:
- Left or right in a data field.
- Up or down in a menu or combo box.
- Up or down (column), left or right (row) through displayed data entries.

Delete
- Deletes the character after cursor.
- Deletes selected rows from a table or return row values to the default settings.

Enter Activates the default control element (e.g., the **OK** button) in current window.

Esc Exits application or active window without saving data.

F1 Accesses context-sensitive help topics.

Insert Toggles between insert and type-over mode in selected cell.

Tab Moves to the next control element (e.g., button) in the window; to use Tab key to move to next data field, select **Program Settings...** from the **File** menu and clear the **Tab from spreadsheet to next control** check box.

Shift+Tab Moves to previous control element (e.g., button) or data field in window; see Tab description.

Space Toggles settings (via radio buttons or check boxes).

You can use the following function keys from the main window:

F2 Starts the Auto-Sequencing function. See Auto Sequence for more information.

F3 Halts the GC (e.g., an analysis run) at the end of the current cycle. See Halt an analysis for more information.

F5 Displays the Timed Events table per specified stream. See The timed events tables for more information.

F6 Displays the Component Data table per specified stream. See The component data tables for more information.

F7 Displays the chromatogram for the sample stream being analyzed. See Display a live chromatogram for more information.

F8 Displays any chromatogram stored in the GC Controller. See Display an archived chromatogram for more information.

1.4 Procedures guide

Use the following table to look up the related manual section, menu path and, if appropriate, the keystroke for a given procedure.

Table 1-1: MON2020 task list

Task or data item	Section(s)	Menu path (keystroke)
24-hour average, component(s) measured	Edit averages calculations	Application → Calculations → Averages...
Add a gas chromatograph	Set up MON2020 to connect to a gas chromatograph	File → GC Directory
Alarms, related components	The component data tables Set alarm limits Discrete outputs	Application → Component Data... **[F6]** Application → Limit Alarms → User... Hardware → Discrete Outputs...
Alarms, stream number(s) programmed	Set alarm limits	Application → Limit Alarms → User...
Analysis time	Set the cycle and analysis time	Application → Timed Events... **[F5]**
Print analysis, Average reports	Schedule the generation of reports	Logs/Reports → Printer Control...
Starting or ending auto-calibration	Streams	Application → Streams...
Auto-calibration interval	Streams	Application → Streams...
Auto-calibration start time	Streams	Application → Streams...
Auto-calibration	Streams	Application → Streams...
Analytical Train Configuration	Analytical Train Configuration	**Application → Analytical Train Configuration**
Analysis Clock Configuration	Analysis Clock Configuration	**Application → Analysis Clock Configuration**
Base pressure used for calculations	Streams	Application → Streams...
Calibration concentration	The component data tables	Application → Component Data... **[F6]**
Calibration cycle time	Set the cycle and analysis time	Application → Timed Events... **[F5]**
Calibration runs, number averaged	Streams	Application → Streams...
Calibration runs, number of	Streams	Application → Streams...
Calibration stream number	Streams	Application → Streams...
Change the default C6+ mixture ratio	**Change the default C6+ mixture ratio**	Application → Component Data Table...
Communications	Communication	Application → Communication... Application → Ethernet Ports...
Component code and name	The component data tables	Application → Component Data... **[F6]**
Component full scale (for output)	Configure the system Analog outputs	Application → System... Application → System Alarms... Hardware → Analog Outputs...

Table 1-1: MON2020 task list *(continued)*

Task or data item	Section(s)	Menu path (keystroke)
Component(s) programmed for input	Analog outputs Discrete inputs	Hardware → Analog Inputs... Hardware → Discrete Inputs...
Component(s) programmed for output	Set alarm limits Analog outputs Discrete outputs	Application → Limit Alarms → User... Hardware → Analog Outputs... Hardware → Discrete Outputs...
Component, retention time	The component data tables	Application → Component Data... [**F6**]
Component zero (for output)	Analog outputs	Hardware → Analog Outputs...
Compressibility (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Configure the valve timing	Configure the valve timing	Application → Timed Events... (Rosemount 700XA and Rosemount1500XA) Application → Timed Events... or Control → Auto Valve Timing... (Rosemount 370XA)
Current date	Set the gas chromatograph's date and time	Chromatograph → View/Set GC Time...
Current time	Set the gas chromatograph's date and time	Chromatograph → View/Set GC Time...
Cycle time	Set the cycle and analysis time	Application → Timed Events... [**F5**]
Delete alarms	Set alarm limits Alarms	Application → Limit Alarms... Logs/Reports → Alarms → Alarm Log...
Delete component from component list	The component data tables	Application → Component Data... [**F6**]
Delete inhibit, integration, peak width	The component data tables	Application → Timed Events... [**F5**]
Delete output(s)	Analog outputs Discrete outputs	Hardware → Analog Outputs... Hardware → Discrete Outputs...
Enable or disable multi-user write	Configure the system	Application → System...
Existing alarm(s)	Alarms	Logs/Reports → Alarms → Alarm Log...
Full-scale value (for input)	Manage your gas chromatograph's analog inputs	Hardware → Analog Inputs...
Generate a repeatability certificate	Generate a repeatability certificate	Logs/Reports → Repeatability Certificate...
GPM liquid equivalent (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Height or area measurement method	The component data tables	Application → Component Data... [**F6**]
High alarm	Set alarm limits	Application → Limit Alarms → User...
Analyzer I.D.	Configure the system	Application → System...

Table 1-1: MON2020 task list *(continued)*

Task or data item	Section(s)	Menu path (keystroke)
Inhibit on-off times	Set the cycle and analysis time	Application → Timed Events... [**F5**]
Input(s) being used	Manage your gas chromatograph's analog inputs Discrete inputs	Hardware → Analog Inputs... Hardware → Discrete Inputs...
Integration on-off times	Set the cycle and analysis time	Application → Timed Events... [**F5**]
Low alarm	Set alarm limits	Application → Limit Alarms → User...
Manage the GC's pressure (with Electronic Pressure Controls)	Managing the gas chromatograph's pressure	Hardware → EPC... (Rosemount 370XA)
Mole percent (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Normalization (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Outputs being used	Set alarm limits Analog outputs Discrete outputs	Application → Limit Alarms → User... Hardware → Analog Outputs... Hardware → Discrete Outputs...
Peak width, on time	Set the cycle and analysis time	Application → Timed Events... [**F5**]
Relative density (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Response factor	The component data tables	Application → Component Data... [**F6**]
Response factor, percent deviation	The component data tables	Application → Component Data... [**F6**]
Retention time, percent deviation	The component data tables	Application → Component Data... [**F6**]
Spectrum gain	Configure spectrum gain events	Application → Timed Events... [**F5**]
Stream number(s) (for output)	Set alarm limits Analog outputs Discrete outputs	Application → Limit Alarms → User... Hardware → Analog Outputs... Hardware → Discrete Outputs...
Stream sequences skipped, number	Configure the system Streams	Application → Streams... Application → Stream Sequence...
Streams analyzed, number	Configure the system Streams	Application → System... Application → Streams...
Streams analyzed, sequence	Configure the system Streams	Application → System... Application → Streams...
Valve on/off times	Configure valve events	Application → Timed Events... [**F5**]
Weight percent (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Wobbe value (on/off)	Set standard calculations by stream	Application → Calculations → Control...
Zero value (for input)	Manage your gas chromatograph's analog inputs	Hardware → Analog Inputs...

1.5 Configuration files

Use the **File** menu to edit, save, and restore configuration files.

1.5.1 Edit a configuration file

To edit a configuration file, do the following:

Procedure

1. Disconnect from the GC.
2. Select **Open Configuration File...** from the **File** menu.
   The *Open* dialog displays. Configuration files are saved with the **.xcfg** extension.
3. Locate and select the configuration file that you want to edit and click **Open**.
   MON2020 opens the file in offline edit mode.
4. Use the **Application** and **Hardware** menu commands to edit the configuration file.
   For more information on these commands, see Hardware and Application.
5. When finished editing the configuration file, click to save the changes to the configuration file and to leave offline edit mode.

1.5.2 Save the current configuration

Configuration files are saved with the .xcfg extension. To save a GC's current configuration to a PC, do the following:

Procedure

1. Select **Save Configuration (to PC)...** from the **File** menu.
   The *Save as* dialog displays.
2. Give the file a descriptive name or use the pre-generated file name and navigate to the folder to which you want to save the file.
3. Click **Save**.

1.5.3 Import a configuration file

⚠ CAUTION

The current configuration will be overwritten, so be sure to save it before importing a new or previous configuration. See Save the current configuration to learn how to save a configuration.

⚠ CAUTION

The GC must be in Idle mode while performing this task.

To import a configuration into a GC, do the following:

Procedure

1. Select **Restore Configuration (to GC)...** from the **File** menu.
   The *Open* dialog displays. Configuration files are saved with the **.xcfg** extension.
2. Locate and select the configuration file that you want to import and click **Open**.
   The file's data is loaded into the GC.

1.5.4 Restore the GC's factory settings

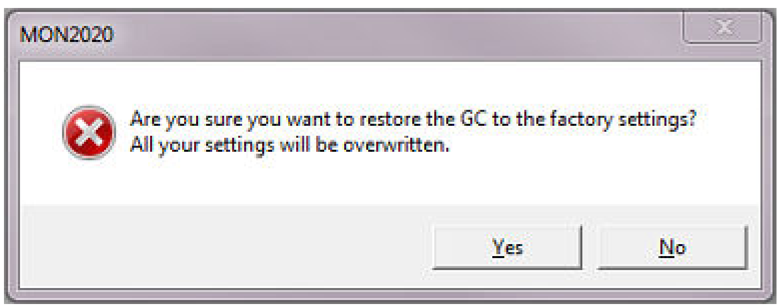
The GC's default timed event, component data and validation data tables are created at the factory and are not accessible by users. To restore these tables to their default values, do the following:

Important
The GC must be in Idle mode while performing this task. To halt an analysis, see Halt an analysis.

Procedure

1. Select **Restore to Factory Settings...** from the **File** menu.
   The following warning message displays:

   Figure 1-5: Restore to Factory Settings warning message

2. Click **Yes**.
   MON2020 restores the default values to the GC's data tables. When the process is completed, a confirmation message displays.
3. Click **OK**.

1.6 Configure your printer

Select **Print Setup...** from the **File** menu to configure the settings for the printer connected to your PC. These settings will apply to any print job queued from MON2020, such as the reports that are configured by the Printer Control. See Schedule the generation of reports for information.

The settings available depend on the printer model. Refer to the printer manufacture's user manual for more information.

Note
Your new configuration will be cleared, i.e., the settings will return to the default values, when you exit MON2020. To select a default printer, select *Devices and Printers* in the Windows™ **Control Panel**.

1.7 Online help

Currently, the online help feature contains all user information and instructions for each MON2020 function as well as the MON2020 system.

To access the online help, do one of the following:

- Press **F1** to view help topics related to the currently active dialog or function.
- Select **Help Topics** from the **Help** menu to view the help contents dialog.

1.8 Operating modes for MON2020

The Rosemount 370XA GC supports two different operating modes. Each mode allows the GC to analyze data from a given number of detectors, streams, and methods, as detailed in below.

Table 1-2: Operating Modes for MON2020

Mode ID Number	Detectors Supported	Streams Supported	Methods Supported
0	1	1	1
1	2	1	1

The Rosemount 700XA and 1500XA GCs use the **Application** → **Analyitical Train Configuration** to configure the detectors, valves, and discrete outputs.

1.9 The Physical Name column

Most MON2020 hardware windows, such as the analog inputs or the valves, contain a hidden column called *Physical Name* that lists the default name of the associated GC device. It might be useful to know a device's physical name while troubleshooting.

To view the hidden column, do the following:

Procedure

1. Select **Program Settings...** from the **File** menu.
   The *Program Settings* window displays.
2. Select the **Show Physical Names** checkbox.
3. Click **OK**.
   The *Physical Name* column now will be visible on all windows that have the column, such as the *Heater* window or the *Valves* window.

1.10 Select the GC's networking protocol

MON2020 can connect to the GC using one of two networking protocols: PPP or SLIP. If the version level of the GC's firmware is 1.2 or lower, MON2020 should be configured to use the SLIP protocol; otherwise, the PPP protocol should be used.

To select the GC's networking protocol, do the following:

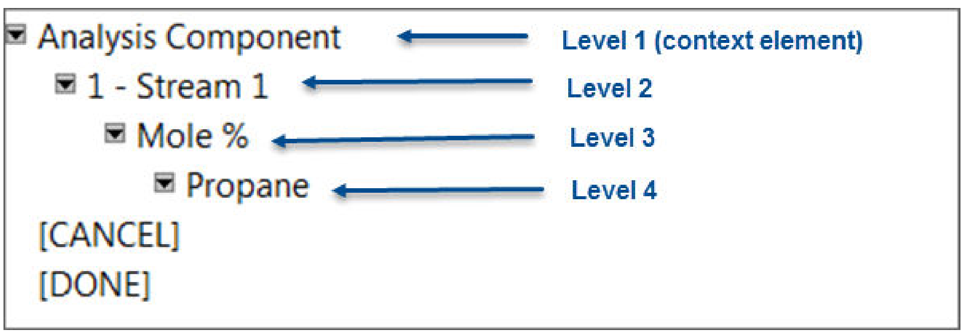
Procedure

1. Select **Program Settings...** from the **File** menu.
   The *Program Settings* window displays.
2. To use the PPP protocol, make sure the **Use PPP protocol for serial connection (use SLIP if unchecked)** checkbox is selected; to use the SLIP protocol, make sure the **Use PPP protocol for serial connection (use SLIP if unchecked)** checkbox is not selected.
3. Click **OK**.

1.11 The context-sensitive variable selector

The MON2020 method for selecting variables for calculations and other purposes is based on a simple, self-contained system. You may access the context-sensitive variable selector from several different screens. The variables you see are dependent on the screen from which you are viewing them. One screen that has a context-sensitive variable selector is the Averages Calculations screen. To access this screen, go to **Application** → **Calculations** → **Averages.**.

Figure 1-6: Example of a context-sensitive variable selector



The context-sensitive variable selector consists of a first-level element, called the *context element*, that is followed by a series of tiered, dropdown lists. The options available from the dropdown lists depend upon the context element.

The following example explains how to use the context-sensitive variable selector to select a gas component:

Procedure

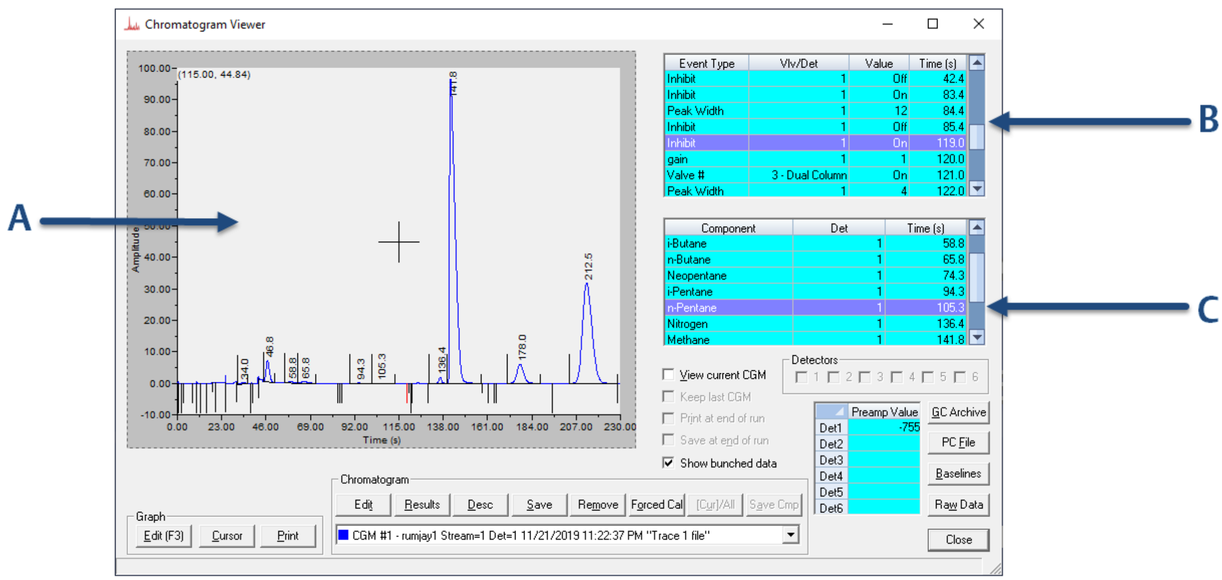
1. Click the **first-level** dropdown list.
   The full list of available categories displays.

2. Select the category you want to analyze.
3. Click the **second-level** dropdown list.
   The full list of available streams displays.
4. Select the stream you want to analyze.
5. Click the **third-level** dropdown list.
   The full list of available variables displays.
6. Select the variable you want to analyze.
7. Click the **fourth-level** dropdown list.
   The full list of available components displays.
8. Select the component you want to analyze.
9. Click **[Done]**.
   The context-sensitive variable selector closes and the variable displays in the **Variable** field. In the example shown in Figure 1-6, the **Variable** field would display: .

2 Chromatograms

When it comes to viewing and managing chromatograms, MON2020 is flexible and straightforward. This chapter shows you how to access the *Chromatogram Viewer*, as well as how to use the viewer to display, print, and manipulate live, archived (stored on the GC), or saved (stored on the PC) chromatograms. There is no limit to the number of archived and saved chromatograms that can be displayed at once. The *Chromatogram Viewer* can display all three types of chromatograms together, alone, or in any combination.

Figure 2-1: The Chromatogram Viewer

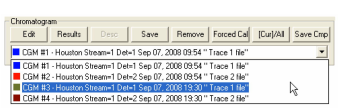


A. Chromatogram window
B. Time events table
C. Component data table

A chromatogram displays in the ***Chromatogram*** window.

Each trace that displays is color-coded; use the **Chromatogram** drop-down list to select a specific trace.

Figure 2-2: Chromatogram drop-down list



The list of GC events associated with the production of the chromatogram, along with each event's status and time, displays in the *Timed Events* table to the right of the chromatogram display window. The *Component Data* table, to the lower right of the chromatogram display window, lists the components measured during the analysis.

Note
When displaying a live chromatogram, by default, the timed events and component data tables are configured to scroll to and highlight the next occurring event in the analysis cycle. To disable this feature, right-click on one of the tables and uncheck the **Auto Scroll** option on the pop-up menu.

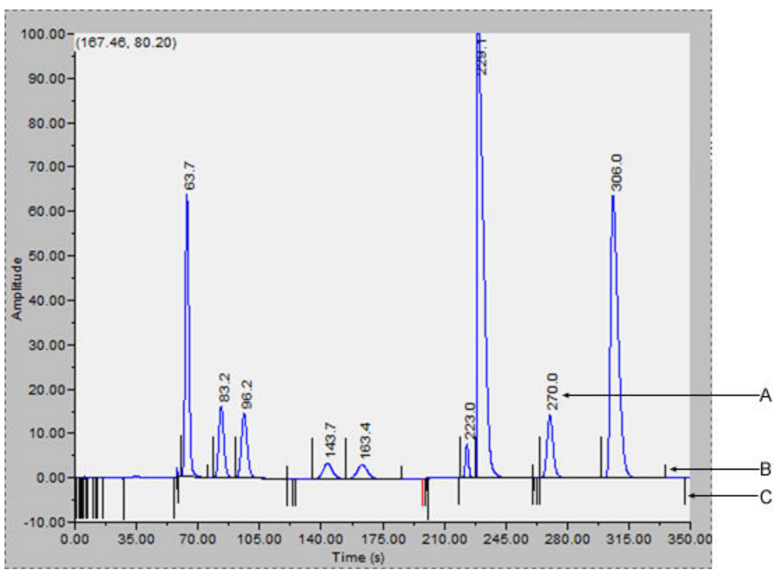
2.1 The Chromatogram Viewer

Use the *Chromatogram Viewer* to display and print live, archived, or saved chromatograms. There is no limit to the number of archived and saved chromatograms that can be displayed at once; however, to maximize performance, the number of chromatograms displayed should be limited to 25 or less. The *Chromatogram Viewer* can display all three types of chromatograms together, alone, or in any combination.

The *Chromatogram Viewer* contains a host of information about both current and past GC analyses, and it contains just as many ways of editing and manipulating that data.

2.1.1 Data displayed in the chromatogram window

Figure 2-3: The Chromatogram window



A. *Retention time*
B. *Peak detection marker*
C. *Timed event marker*

The following elements are displayed in the chromatogram window:

The chromatogram	A *trace* is the graphical representation of the detector output from a single detector; a *chromatogram* is the collection of all traces and associated data that are generated by a gas chromatograph's detector or detectors. Each trace displays in a different color.

Retention times The retention time, which displays above each component's peak, is the time that elapses between the start of an analysis and the sensing of the maximum concentration of that component by the detector.

Baselines The baseline extends from the beginning to the end of a peak. You can turn the baseline on or off by clicking **Baselines**.

Timed event markers These markers, which correspond to events from the Timed Events table, display on the chromatogram as black vertical lines below the trace-line. There are three types of timed event markers:

- Valve events display as long vertical lines.
- Integration events display as medium vertical lines.
- Spectrum gain events display as short vertical lines.

Peak detection markers These markers display on the chromatogram as black vertical lines above the trace-line. Each peak has two peak detection markers: one at its beginning and one at its end.

2.1.2 Display a live chromatogram

To view a live chromatogram, do the following:

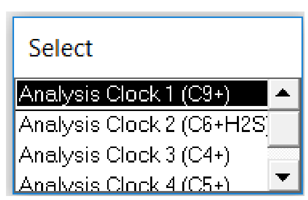
Procedure

1. Connect to the GC.
2. Select **Chromatogram Viewer...** from the **Chromatograph** menu.

   Note
   Another way to display the Chromatogram Viewer is to click , which is located on the Toolbar.

   ---

3. From the *Chromatogram Viewer* window, select the **View current CGM** check box.
4. If the GC has multiple clocks, select which clock/analysis Chromatogram you would like to view.



2.1.3 Display an archived chromatogram

Archived chromatograms are stored on the GC, so you must be logged in to access them.

Archived chromatograms are sorted and displayed on four tabbed panes:

Chromatograms This view displays the last five runs for each stream by default. Click *All* to display all the files that are stored on the GC and sorted by time.

Protected chromatograms	Protected chromatograms are never deleted from the GC. To protect a chromatogram, see Protected chromatograms. **Note** Protected chromatogram files have a *lock* icon (🔒) displayed beside them.
Final Calibration chromatograms	As long as there is space, MON2020 stores all final calibration chromatograms; once space runs out, MON2020 deletes the oldest non-protected final calibration chromatogram for each new final calibration chromatogram that is created. If multiple final calibration chromatograms are created on the same day, the last chromatogram created is archived, unless MON2020 has been configured to archive all final calibration chromatograms. **Note** See Managing the system to learn how to configure MON2020's archiving behavior.
Final Validation chromatograms	These chromatograms are treated in the same manner as final calibration chromatogram files.

To view one or more archived chromatograms, do the following:

Procedure

1. From the **Chromatograph** menu, select **Chromatogram Viewer**.
2. Click **GC Archive**.
   The *Select archive file(s)* window appears. The files can be sorted by date, file name, analysis type, time, or stream number by clicking the appropriate column header. By default, they are sorted by date, with the newest file listed first.

   Note
   By default, only recent chromatograms—that is, the last five runs for each stream—are displayed. To view all archived chromatograms, click **All**. To return to viewing only recent chromatograms, click **Recent**.

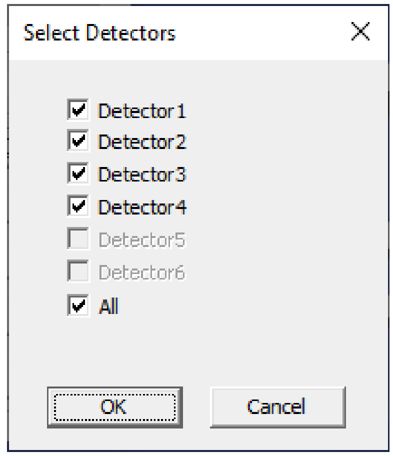
3. Select one or more archive files by clicking them.

   Use the **SHIFT** and **CTRL** keys to make multiple selections.

   Note
   To save the selected files to the PC without displaying them first, select the **Download and save selected chromatograms** checkbox and click **Download & Save**.

4. Click **Download & Show**.
   The *Select* window displays for each chromatogram that contains data from more than one detector.

Figure 2-4: The Select window



5. For each chromatogram, double-click **Detector 1**, **Detector 2**, or **Both** from the *Select* window.
   MON2020 plots the archived chromatogram(s) and the corresponding data displays in the timed event and component data tables.

2.1.4 Protected chromatograms

By default, archived chromatograms are not saved indefinitely. Once the GC's storage capacity for archived chromatograms has been reached, the oldest archived chromatograms are deleted to make room for the newest archived chromatograms.

If you have a chromatogram that you would like to preserve, it is possible to *protect* it. Protected chromatograms will not be deleted to accommodate newer chromatograms. MON2020 saves up to 100 protected chromatograms.

Note
Protected chromatograms have a *lock* icon ( ) displayed beside them.

Note
To protect an archived chromatogram you must be logged in as a supervisor or administrator.

To protect a chromatogram, do the following:

Procedure

1. Click **GC Archive**.
   The *Select Archive File(s)* window appears. The chromatograms can be sorted by date, file name, analysis type, time, or stream number by clicking the appropriate column header. By default, they are sorted by date, with the newest chromatogram listed first.

   Note
   By default, only recent chromatograms—that is, the last five runs for each stream—are displayed. To view all archived chromatograms, click **All**. To return to viewing only recent chromatograms, click **Recent**.

2. Make sure the *Chromatogram* tab is selected and then select the appropriate archived chromatogram by clicking it. Use the SHIFT or CTRL key to make multiple selections.
3. Click **Protect**.
   The *Edit Description* window displays.
4. Enter any information that you would like to have associated with the chromatogram and then click **OK**.
   MON2020 places a *lock* icon ( ) beside the selected chromatogram to verify its protected status. You can also click on the *Protected Chromatograms* tab to view your newly protected archived chromatogram.

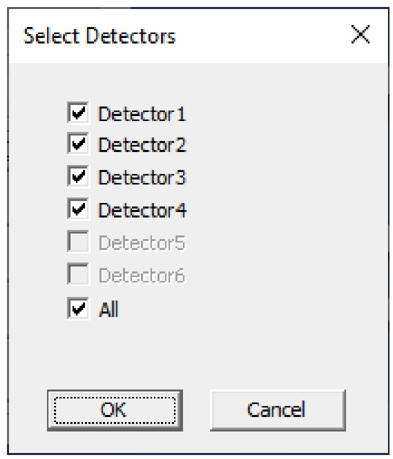
2.1.5 Display a saved chromatogram

To view a chromatogram that was saved to disk, do the following:

Procedure

1. Click **PC File**.
   The **Open** dialog appears.
2. Navigate to the desired .xcgm file or .xcmp comparison file and select it.
   To make multiple selections, use the SHIFT or CTRL key.
3. Click **OK**.
   The *Select* window displays for each chromatogram that contains data for more than one detector.

Figure 2-5: The Select window



4. For each chromatogram, double-click the chromatogram from the *Select* window.
   MON2020 plots the archived chromatogram(s) and the corresponding data displays in the timed event and component data tables.

2.2 Options for displaying chromatograms

Right-clicking on the graph brings up the following commands:

Command Name	Shortcut	Description
Zoom In	+ (NUMPAD)	Zooms in on the entire graph. **Note** Another way to zoom in is by clicking and dragging your mouse to select the region of the graph that you want to zoom in on.
Zoom Out	- (NUMPAD)	Zooms out from the entire graph.
Zoom X In	**6** (NUMPAD)	Zooms in on the X axis.
Zoom X Out	**4** (NUMPAD)	Zooms out from the X axis.

Command Name	Shortcut	Description
Zoom Y In	**8** (NUMPAD)	Zooms in on the Y axis.
Zoom Y Out	**2** (NUMPAD)	Zooms out from the Y axis.
Save State	**CTRL + HOME**	Saves current or archived display settings for the selected chromatogram. **Note** The Save State function is available only when viewing a live or archived chromatogram.
Restore State	**HOME**	Restores the last saved display settings for the selected chromatogram. **Note** Pressing **HOME** returns the user to the saved state.
Toggle Full Screen	**F11**	Toggles the display of the Chromatogram Viewer's tables and buttons and maximizes the chromatogram window.
Cursor to Nearest Point	**F8**	Snaps the cursor to the nearest point on the chromatograph in both the X and Y directions.
Toggle Coarse/Fine Cursor	**F4**	Toggles the cursor from coarse and less accurate to fine and more accurate.
Toggle Lines/Dots Displays	**F9**	Toggles the chromatographs from lines to dots, or dots to lines.
Toggle Mouse Position Tip	**CTRL + F4**	The graph's cursor follows the movement of the mouse while a hovering tooltip displays the exact coordinates of the current point.
Toggle Nearest Position Tip	**CTRL + F9**	The graph's cursor follows the movement of the mouse cursor.
Print	**CTRL + P**	Prints the chromatogram.
Copy to clipboard	**CTRL + C**	Copies from the graph the raw detector data that was used to plot the selected chromatogram. This data can be pasted into another application such as Microsoft Word or Microsoft Excel.
Paste from clipboard	**CTRL + V**	Plots a range of points copied from another application such as Microsoft Word or Microsoft Excel.

2.3 Configure the appearance of the chromatogram

MON2020 allows you to change the appearance of many of the chromatogram's elements, such as its X-axis and Y-axis values, the color of the chromatogram's background, and the display status of its labels.

2.3.1 The Graph bar

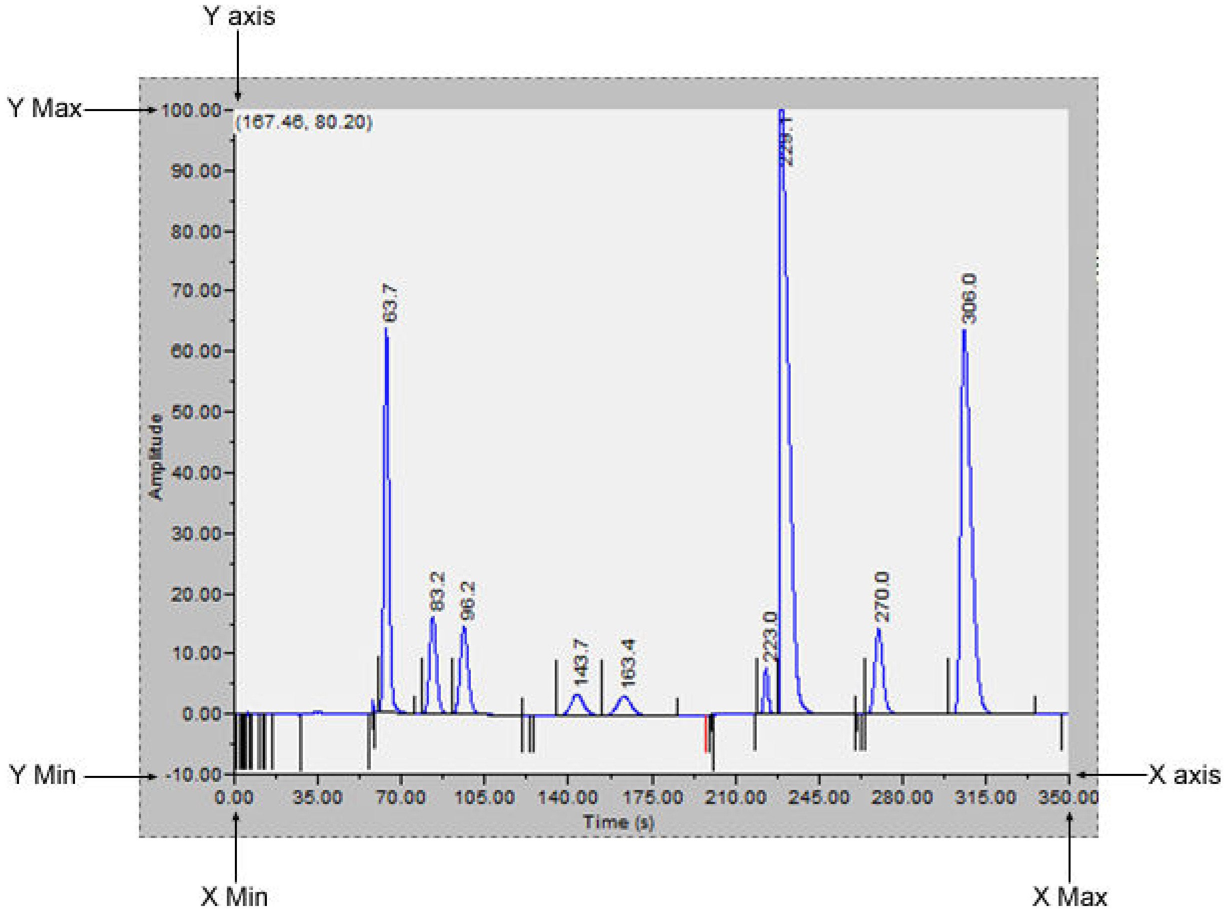
Use the Graph bar buttons to change the display parameters of the chromatogram.

Click **Edit** from the **Graph** bar. The *Edit Scales* window displays.

The following table lists the parameters that can be edited:

Command	Description	Default value
X Min	Sets the minimum value, in seconds, for the X-axis.	0
X Max	Sets the maximum value, in seconds, for the X-axis. This value is determined by the *Timed Events* table.	100
Y Min	Sets the minimum value for the Y-axis.	-10
Y Max	Sets the maximum value for the Y-axis.	100
Print Speed	Sets the number of inches per second for the X-axis while printing a chromatogram, similar to an XY plotter.	0
X Intervals	Sets the number of intervals to be displayed on the graph for the X-axis.	10
Y Intervals	Sets the number of intervals to be displayed on the graph for the Y-axis.	11
Display Option	Determines whether the chromatograph is displayed as a solid line or as a dotted line.	Lines
Show labels	Toggles the display of the graph labels.	Checked
Scroll newest X	Determines whether the graph's window moves to focus on the most recent data point along the X-axis. **This feature only applies to live chromatograms.**	Unchecked

Figure 2-6: A chromatogram



To see how your changes affect the graph, click **Apply**. To accept your changes, click **OK**.

- Click **Cursor** to toggle the cursor size from coarse movement (less accurate) to fine movement (more accurate).
- Click **Print** to print the chromatogram window.

2.3.2 Additional plot commands

In addition to the **Graph** bar, there are a few other commands available that allow you to manipulate the look and feel of the graph. To access the additional plot commands menu, right-click the *Chromatogram Viewer* anywhere except on the graph or the timed event and component data tables. The additional commands are:

Set Plot Area Color	Changes the color of the graph's background. This may be necessary to make the chromatograms more visible. The default RGB color values are 236, 233, and 216.
Auto Resize Series	Scales down the X-axis and the Y-axis to fit the entire chromatogram onto the window.

Show Mini Plot	Toggles the display of a smaller version of the chromatogram in a separate, smaller, and resizable window. This allows you to keep an overview of the entire graph at all times, especially when zoomed in. This window automatically displays whenever you zoom in on the original chromatogram.
Rearrange Series	Resizes and offsets two or more traces so that they can both be fully displayed on the graph. To offset a trace means to raise its Y-axis relative to the Y-axis of the previous trace so that one trace is not drawn over the other but instead one trace is drawn above the other.
Trace Offset Settings	Indicates the amount of offset between two or more traces. To offset a trace means to raise its Y-axis relative to the Y-axis of the previous trace so that one trace is not drawn over the other but instead one trace is drawn above the other. If two detectors are in use, each set of traces can be offset independently -- that is, the traces for one detector can be offset relative to each other, but independent of the traces from the second detector.

2.4 Change how a chromatogram displays

Figure 2-7: The Chromatogram bar

The **Chromatogram** bar contains a row of buttons that allows you to manipulate a single chromatogram. Below the row of buttons is the **Chromatogram** bar's dropdown list, which contains a list of all of the currently displayed chromatograms/traces. Before you can work with a chromatogram you must first select it from the dropdown list.

2.4.1 Edit a chromatogram

You can use the Edit function to change the X and Y offset values for a trace, as well as its color. These changes may be necessary to make the trace more distinguishable from those that surround it or to align a trace with a different trace for comparison.

To edit a trace, do the following:

Procedure

1. Select the trace that you want to edit from the Chromatogram pull-down menu.
2. Click **Edit**.
   The *Edit Chromatogram* dialog appears.

X Offset	Enter a positive number to move the trace to the right, or a negative number to move the trace to the left.
Y Offset	Enter a positive number to move the trace up, or a negative number to move the trace down.
# points	Number of data points in the trace. This field is read-only.
Color	Assigns a color to the trace.

3. To see how your changes affect the trace, click **Apply**. To accept your changes, click **OK**.

2.4.2 Display chromatogram results

To display a table of calculation results for a chromatogram, do the following:

Procedure

1. From the **Chromatogram** bar's dropdown list, select the appropriate trace.
2. Click **Results**.
   A window appears displaying the calculation results for the selected trace.

- Click **Save** to save these results in one of the following formats: tab-delimited (.txt), comma-delimited (.csv), Microsoft Excel (.xls), HTM (.htm), or XML (.xml).
- Click **Clipboard** to copy the data to the Windows® clipboard, where it can be pasted into another document.
- Click **Print** to print a tab-delimited version of the results.

2.4.3 Save a chromatogram

To save a chromatogram, do the following:

Procedure

1. From the **Chromatogram** bar's dropdown list, select the trace that you want to save.
2. Click **Save**.

   The **Save As** window displays.

   For convenience the file is given an auto-generated file name that includes the trace’s creation date and time; however, you can give the file any name that you choose.

3. Click **Save**.

2.4.4 Remove a chromatogram from the Chromatogram Viewer

To remove a live trace from the chromatogram window, do one of the following:

- If you want to remove all live traces, click the **View current CGM** checkbox to uncheck it.
- If you want to remove a single live trace, click the appropriate detector checkbox beside the **View current CGM** checkbox.

To remove a saved or an archived chromatogram from the chromatogram window and to close the file, do the following:

Procedure

1. From the **Chromatogram** bar'sdropdown list, select the trace that you want to remove.
2. Click **Remove**.

2.4.5 Initiate a forced calibration

The Forced Cal command uses an archived chromatogram’s raw data to calibrate the GC. The calculation results are stored in the component data table for the corresponding stream.

A major benefit of a forced calibration is increased efficiency. Using a **previously validated** chromatogram removes the necessity for the GC to perform a calibration and a validation before performing an analysis.

To perform a forced calibration, do the following:

Procedure

1. From the **Chromatogram** bar's dropdown list, select the trace that you want to use to calibrate the GC.
2. Click **Forced Cal**.

2.4.6 Chromatogram Viewer tables

MON2020 can display two levels of information in the *Chromatogram Viewer's* timed events and component data tables:

- All timed events and all components for all open chromatograms.
- Timed events and components for the currently selected chromatogram.

By default, the two tables show only the timed events and components for the currently selected chromatogram.

Figure 2-8: Timed events and component data tables showing data for a currently selected trace

Event Type	Vlv/Det	Value	Time (s)
gain	1	3	0.0
gain	1	3	0.0
Valve #	2 - Valve 2	On	0.0
Inhibit	1	On	0.0
Valve #	3 - Valve 3	On	2.0
Slope Sens	1	20	3.0
Valve #	1 - Valve 1	On	5.0
Valve #	4 - Valve 4	On	6.0

Component	Det	Time (s)
Propane	1	45.8
i-Butane	1	61.3
n-Butane	1	71.7
Neopentane	1	79.0
i-Pentane	1	109.8
n-Pentane	1	125.6
Nitrogen	1	148.2

Figure 2-9: Timed events and component data tables showing data for all open traces

CGM#	Event Type	Vlv/Det	Value	Time (s)
1	gain	1	3	0.0
1	gain	1	3	0.0
1	Valve #	2 - Valve 2	On	0.0
2	Inhibit	2	On	0.0
1	Inhibit	1	On	0.0
2	Slope Sens	2	10	2.0
1	Valve #	3 - Valve 3	On	2.0
1	Slope Sens	1	20	3.0

CGM#	Component	Det	Time (s)
1	Propane	1	45.8
1	i-Butane	1	61.3
1	n-Butane	1	71.7
1	Neopentane	1	79.0
1	i-Pentane	1	109.8
1	n-Pentane	1	125.6
1	Nitrogen	1	148.2

Note
The brackets ([ ]) on the **Cur/All** button indicate which mode is being displayed in the tables.

Procedure

1. To view the data for a different chromatogram, select the trace from the **Chromatogram** bar's dropdown list.
2. To view all timed events and all components for all open chromatograms, click **Cur/All**.
3. To toggle back to viewing only the timed events and components for the currently selected chromatogram, click **Cur/All** again.

2.4.7 Open a comparison file

A comparison file contains two or more chromatograms and their associated data. To open a comparison file, do the following:

Procedure

1. Click **PC File**. The *Open* dialog displays.
2. Select **XA CMP Files (*.xcmp)** from the **Files of type** dropdown list.
3. Navigate to the folder that contains the comparison file that you want to open and select the file.
4. Click **Open**.

2.4.8 Save a comparison file

A comparison file allows you to save your current view, including all open chromatograms, for later review and reuse. To save a comparison file, do the following:

Procedure

1. Click **Save Cmp**.
   The *Save As* dialog appears.
2. Navigate to the folder in which you want to save the file.

   Note
   For convenience the file is given an auto-generated file name that includes the current date and time; however, you can give the file any name that you choose.

3. Click **Save**.

2.5 Miscellaneous commands

The series of checkboxes to the right of the graph have the following functions:

Figure 2-10: Miscellaneous options

Keep last CGM	When viewing a live chromatogram, upon starting a new run, MON2020 keeps the most recently completed chromatogram on the graph for comparative purposes.
Print at end of run	Prints the chromatogram to the PC's default printer at the end of the run and is unchecked by default.
Save at end of run	Saves the chromatogram to the GC's **Data** folder at the end of the run and is unchecked by default.
Show bunched data	If this box is unchecked, then all of the raw data points are plotted to the chromatogram window; if this box is checked, which is the default option, then each point plotted on the graph represents the average of a group of raw data values. The size of the data group is determined by the peak width value listed in the Timed Events table.

2.5.1 The Chromatogram Viewer's Timed Events table

Event Type	Vlv/Det	Value	Time (s)
Inhibit	2	On	0.0
Inhibit	1	On	0.0
Peak Width	2	8	0.0
Slope Sens	2	24	0.0
gain	1	4	0.0
gain	2	4	0.0
Valve #	4 - SSO_1	On	0.0
Valve #	5 - SSO_2	On	1.0

The *Chromatogram Viewer* displays a compact version of the Timed Events table, located on the upper right side of the window. The events displayed in the table are sorted by time. See The timed events tables for more information.

The Timed Event table displays the following data for each event:

Event Type The type of timed event. These events are mapped to the Time Events window and include Valve, Integration, and Gain events.

Vlv/Det Identifies which valve or detector is involved in the event.

Value Setting of the event; for example, a valve was turned ON, or the gain was set to **4**.

Time (s) The number of seconds into the cycle that the event occurred or will occur.

Timed events from live or archived chromatograms can be edited from the Chromatogram Viewer by double-clicking on the Timed Events table. The changes will affect the next analysis run. The following commands are available by right-clicking on the table:

Auto Scroll When checked, if a live trace has been selected from the Chromatogram bar's pull-down menu, the Timed Event table will keep its focus on the event closest in time by highlighting that event in dark blue.

Save Sheet Allows you to save the table to the PC in one of the following formats: TXT, CSV, XLS, HTM, or XML.

Copy to Clipboard Allows you to copy the table to the clipboard.

This data can be pasted into another application such as Microsoft Word or Microsoft Excel.

Print Sheet Allows you to print the table to your default printer.

2.5.2 Launch the Timed Events table from the Chromatogram Viewer

To launch the *Timed Events* dialog directly, right-click on the *Chromatogram Viewer's* **Timed Events** table and select **Edit Timed Events Table**. The *Timed Events* dialog displays. See The timed events tables for more information.

2.5.3 Edit timed events from the Chromatogram Viewer

To edit timed events from the *Chromatogram Viewer*, do the following:

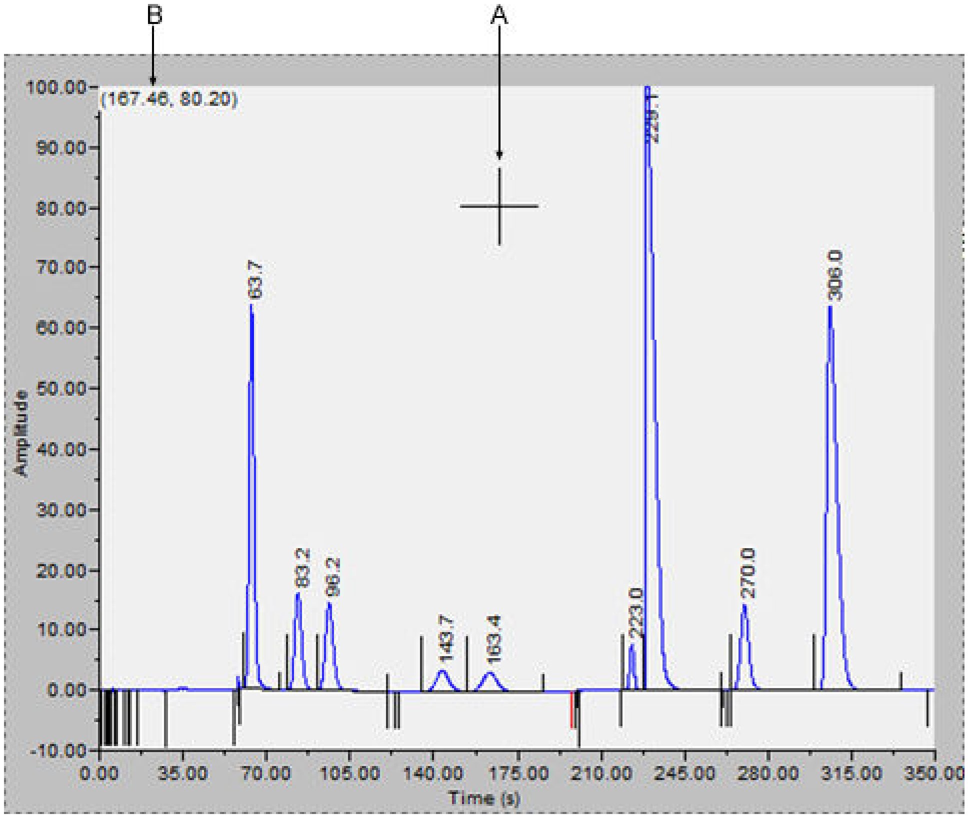
Procedure

1. From the **Chromatogram** bar's dropdown list, select the chromatogram whose timed events you want to edit.
2. Right-click the **Timed Events** table and select **Edit** or double click the `Timed Events` table.
   The cells that can be edited turn white.
3. Edit the appropriate event.
4. Right-click on the Timed Events table and select **Save Changes**.
   The data are saved, and the table's cells turn blue, indicating that they are read-only. The changes will affect the next analysis run.

   Note
   To return to the Timed Events table *without* saving your changes, select **Discard Changes**.

2.5.4 Use the Chromatogram Viewer’s cursor to update a Timed Event

Figure 2-11: Chromatogram cursor



The *Chromatogram Viewer's* cursor (A) can be dragged to any point on the graph, or it can be relocated by double-clicking within the boundaries of the graph.

As the cursor moves across the chromatogram, the **Timed Events** table automatically scrolls to the event that corresponds to the cursor’s coordinates. The cursor’s coordinates (B) display in the upper left corner of the graph.

The cursor can be useful if you want to change a timed event based on the data displayed by the chromatogram.

To update a timed event based on the location of the *Chromatogram Viewer’s* cursor, do the following:

Procedure

1. Select the live or archived trace that you want to use as the source for changing the timed event.
2. Drag the cursor to the desired location.

   You can track the cursor's location by watching the coordinates that display in the upper left corner (B). The X-coordinate represents the analysis time in seconds. When you see the desired time displayed, stop dragging the cursor.

Note
To toggle the cursor's size between coarse movement (less accurate) and fine movement (more accurate), click the **Cursor** button on the **Graph** bar.

3. Go to the **Time Events** table and right-click on the appropriate event.
4. Select **Update Time from Cursor**.
   The event's time will be changed to match the cursor's time (X-coordinate).
5. To save your changes, right-click the **Timed Events** table and select **Save Changes**.
   The changes will affect the next analysis run.

Note
To return to the **Timed Events** table without saving your changes, select **Discard Changes**.

2.5.5 The Chromatogram Viewer's Component Data table

The *Chromatogram Viewer* displays a compact version of the **Component Data** table beneath the **Timed Events** table. See The component data tables for more information.

The **Component Data** table displays the following data for each component:

Component	The name of the component.
Det	Identifies the detector associated with the component.
Time (s)	The retention time for the component.

Retention times for components from live or archived chromatograms can be edited from the *Chromatogram Viewer* by double-clicking on the Component Data table. The changes will affect the next analysis run. The following commands are available by right-clicking on the table:

Auto Scroll	When checked, if a live trace has been selected from the **Chromatogram** bar's dropdown list, the **Component Data** table keeps its focus on the component closest in time by highlighting it in dark blue.
Save Sheet	Allows you to save the table to the PC in one of the following formats: .txt, .csv, .xls, .htm, or .xml.
Copy to Clipboard	Allows you to copy the table to the clipboard . This data can be pasted into another application such as Microsoft Word or Microsoft Excel.
Print Sheet	Allows you to print the table.

2.5.6 Edit retention times from the Chromatogram Viewer

To edit the retention time for a component, do the following:

Procedure

1. Double-click the **Component Data** table or right-click the table and select **Edit Retention Times**.

The **Ret Time** column turns white, indicating that its cells are editable.

2. Click the appropriate cell for the component that you want edit, and enter a new retention time, in seconds. The value must be less than the analysis time.
3. To save your changes, right-click on the table and select **Save Changes**.
   The changes affect the next analysis run.

Note
To return to the **Component Data** table without saving your changes, select **Discard Changes**.

2.5.7 Display raw data from the Chromatogram Viewer

Use the **Raw Data** button to display the **Raw Data** table for the selected trace.

Procedure

1. Use the **Chromatogram** bar's pull-down menu to select a specific trace.

Note
Even though you are selecting a *trace*, the data that is displayed will be for the *chromatogram*, which may include more than one trace.

2. Click **Raw Data**.
   The *Raw Data* window displays and shows the raw data for the selected chromatogram. The following data displays for each peak from the trace:

No.	Numerical identifier for the peak, listed by the order of discovery.
Ret Time	Time, in seconds, that the component eluted.
Peak Area	The area under the peak.
Peak Height	The maximum height of the peak.
Det	The detector associated with the peak.
Method	Method of peak end detection. Options are: • 1 (Baseline) • 2 (Fused Peak) • 3 (Last Fused Peak) • 4 (Tangent Skim) • 100 (Inhibit) • 300 (Forced Integration) • 500 (Summation)
Baseline Start	The raw detector counts at the start of an integration.
Baseline End	The raw detector counts at the end of an integration.
Integ. Start	Time, in seconds, when integration started.
Integ. Stop	Time, in seconds, when integration stopped.
Peak Width Half Height	The width of the peak taken at half of the peak's height.
Partial Peak	If Yes, then the Partial Peak value is used in the summation calculation; if No, then the Partial Peak value is not used in the summation calculation.

2.6 Set the gas chromatograph's date and time

When MON2020 connects to a gas chromatograph, the **Status** bar displays the gas chromatograph's date and time.

Note
The date and time displayed for the GC may be different from your date and time, depending on the physical location of the GC.

To set the gas chromatograph's date and time, do the following:

Procedure

1. Select **View/Set Date Time...** from the **Chromatograph** menu.

The *View/Set Date Time* window displays.

2. Use the drop-down menus to set the date and time.

   To enable or adjust daylight savings, see Set Daylight Savings.

3. Click **OK**.

2.6.1 Set Daylight Savings

Daylight Savings Time is the practice of temporarily advancing clocks so that afternoons have more daylight and mornings have less. Typically clocks are adjusted forward one hour near the start of spring and are adjusted backward in autumn. Since the use of Daylight Savings Time is not universal, you have the option of enabling or disabling it in MON2020.

To configure MON2020 to use Daylight Savings Time, do the following:

Procedure

1. Select **View/Set Date Time...** from the **Chromatograph** menu.
   The *View/Set Date Time* window displays.

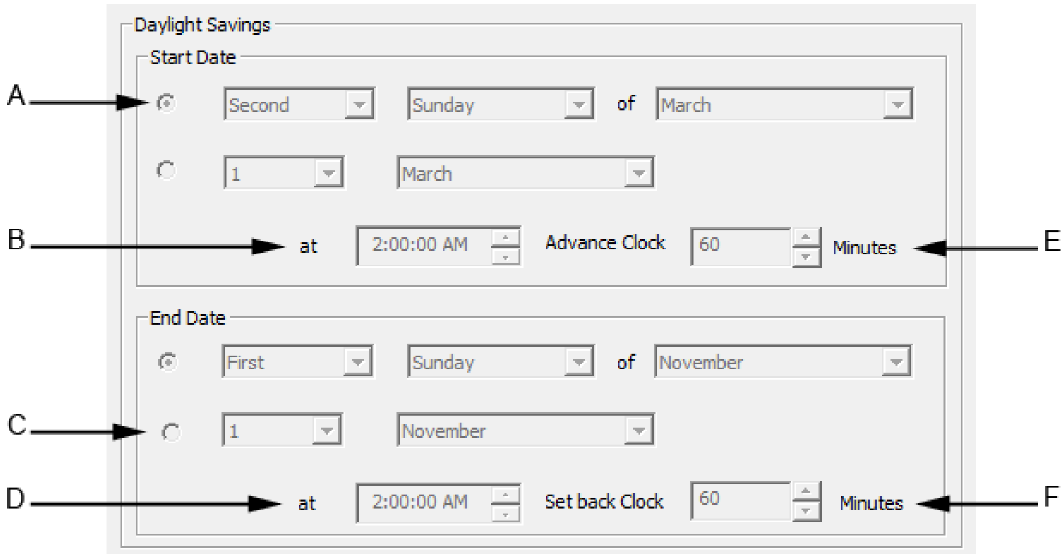
   Note
   Make sure the GC is set to the current date and time before enabling the Daylight Savings feature.

2. Click the **Enable Daylight Savings** checkbox.
   The *Daylight Savings* section will be enabled, giving you the following two options for setting the start and end times for Daylight Savings:

   - Week format. You can specify on which week day, of what week, and of what month Daylight Savings Time to start and end.
   - Month/Day format. You can specify the exact day of the month and the month number for which you want Daylight Savings Time to start and end.

   Note
   These formats can be used interchangeably; for example, the Week format can be used to specify the start date, and the Month/Day format can be used to specify the end date.

Figure 2-12: The Daylight Savings options



A. Week format
B. Start time
C. Month/day time
D. End time
E. Advance time
F. Set back time

3. Set the start date for Daylight Savings Time.
4. Set the start time and the advance time.
5. Set the end date for Daylight Savings Time.
6. Set the end time and the setback time.
7. Click **OK** to implement your changes and close the *View/Set Date Time* window.

Note
To implement your changes without closing the *View/Set Date Time* window, click **Save**.

Note
Daylight Savings Time should be configured each time the feature is enabled; thereafter, each year MON2020 will automatically compute the start and end times based on the initial configuration.

3 Hardware

Many of a gas chromatograph's hardware components—such as its heaters, valves, and discrete outputs—can be easily managed through MON2020 by clicking **Hardware** on the menu bar.

This chapter shows you how to view and administer each of a gas chromatograph's major hardware components.

This chapter also shows you how to view an inventory of all of a gas chromatograph's installed hardware components.

3.1 Heater configuration

MON2020 allows you to do the following from the *Heaters* window:

- Name each heater.
- Monitor the heaters' performance.
- Set a target temperature.

3.1.1 Set the temperature of the gas chromatograph's heaters

You can set a heater's desired temperature or fix its power output by selecting **Heaters...** from the **Hardware** menu. Use the **Switch** drop-down menuv to select each heater to set to one of the following modes:

Auto Allows you to set the desired temperature for the heater.

Fixed On Allows you to set the power output for the heater without regard to temperature.

Not Used Removes the heater from service.

3.1.2 Rename a heater

To assign an identifying label to a heater, do the following:

Procedure

1. Select **Heaters...** from the **Hardware** menu.
   The *Heaters* window displays.
2. Double-click on the appropriate row under the **Label** column for the heater that you want to name.
3. Type in a descriptive name for the heater. This name must be unique; two heaters cannot share the same label.
4. Click **OK**.

3.1.3 Set a heater's voltage type

To set a heater's voltage type, do the following:

Procedure

1. Select **Heaters...** from the **Hardware** menu.
2. Click on the appropriate **Heater Type** cell and select **AC** or **DC** from the drop-down list.
3. Click **OK** to save the changes and close the window.

Note
To save the changes without closing the window, click **Save**.

3.1.4 Monitor the temperature of a heater

To check a heater's temperature, select **Heaters...** from the **Hardware** menu.

The current temperature of each heater displays under the **Temperature** column, and updates in real time. The percentage of the GC's power output that is being used by each heater displays under the **Current PWM** column.

3.1.5 Monitor the operational status of a heater

To check a heater's status, select **Heaters...** from the **Hardware** menu.

The status of each heater displays under the **Status** column. There are four possible statuses, and their meanings are as follows:

OK	The heater's control card is installed and is working correctly.
Not Installed	The heater's control card is not installed.
Out of Control	The heater is running and is in the process of reaching its temperature set point.
Error	The GC cannot communicate with the heater.

3.1.6 Set the desired temperature

To set the desired temperature for a heater, do the following:

Procedure

1. Select **Heaters...** from the **Hardware** menu.
   The *Heaters* window displays.
2. For each heater that you want to set, select **Hadware** → **Heaters** → **Auto** from the pull-down menu from the appropriate row under the **Switch** column.
3. For each heater that you want to set, double-click on the appropriate row under the **Setpoint** column, and enter the desired temperature, in degrees Celsius. You can enter a value between **20**and **500**.

   Note
   Heaters 1 and 2 should never exceed 302 °F (150 °C).

4. To exclude a heater from the warm start process, select its **Ignore Warm Start** check box.

   Note
   A *warm start* occurs when the GC restarts after having been shut down during an auto sequence analysis run. The GC activates the **Heaters** and waits until they reach their setpoints and the temperature stabilizes; the GC then resumes the auto sequence run.

5. The appropriate rows under the **PID Gain**, **PID Integral**, and **PID Derivative** columns can also be edited by double-clicking and entering a new value. The value ranges for each column is as follows:

PID Gain	0 - 500
PID Integral	0 - 500
PID Derivative	0 - 50,000

   Note
   You should not deviate from the default settings for these variables, which were determined by experienced personnel.

6. Click **OK** to save the changes and close the window.

   Note
   To save the changes and leave the window open so that you can monitor the heaters' statuses, click **Save**. The current temperature of each heater displays in the **Temperature** column and is updated in real time.

3.1.7 Set PWM output

Note
Pulse-width modulation (PWM) is a technique for providing intermediate amounts of electrical power between fully on and fully off.

A heater needs voltage to operate. The amount of voltage that is delivered to a heater can be controlled manually when the heater is set to *Fixed On* mode. Setting a heater to *Fixed On* mode can be useful when troubleshooting heater issues.

⚠ CAUTION

Fixed On mode is not recommended for general GC operations. Switching a heater to *Fixed On* mode removes its ability to maintain a constant temperature because the power delivered to the heater will not fluctuate based on the temperature setpoint, but will instead remain at the level set by you.

To set a heater's PWM Output, do the following:

Procedure

1. Select **Heaters...** from the **Hardware** menu.
   The *Heaters* window displays.
2. For each heater that you want to set, select **Fixed On** from the appropriate row under the **Switch** column.
3. For each heater that you want to set, double-click on the appropriate row under the **Fixed PWM Output** column, and enter the desired percentage of output. You can enter a decimal value between **0** and **100**.
4. Click **OK** to save the changes and close the window, .

   Note
   To save the changes and leave the window open so that you can monitor the heaters' status, click **Save**. The current temperature of each heater displays in the **Temperature** column and is updated in real time.

3.1.8 Take a heater out of service

To remove a heater from service, do the following:

Procedure

1. Select **Heaters...** from the **Hardware** menu.
   The *Heaters* window displays.
2. For each heater that you want to set, select **Not Used** from the appropriate row under the **Switch** column.
   The row turns turquoise, indicating that it is no longer in service.
3. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

3.2 Valve configuration

MON2020 allows you to do the following from the *Valves* window:

- Assign identifying labels to each valve.
- Monitor valve operation.
- Control the operation modes for each valve.

3.2.1 Rename a valve

Give each valve a descriptive label to avoid confusing one valve for another. To assign an identifying label, do the following:

Procedure

1. Select **Valves...** from the **Hardware** menu.
   The *Valves* window displays.
2. Double-click on the appropriate row under the *Label* column for the valve that you want to name.

   Note
   The valves are labeled **Valve 1 - Valve N** by default, where **N** equals the total number of valves available to the GC.

   ---

3. Type in a new descriptive name for the valve.
4. Click **OK**.

3.2.2 Set a valve's operational mode

A valve has three operational modes: *Auto*, *On*, and *Off*.

- Setting the valve to *Off* means that the valve turns off and remains off until the operational mode is changed.
- Setting the valve to *Auto* means that the valve turns on and off according to the **Timed Events** table.
- Setting the valve to *On* means that the valve turns on and remains on until the operational mode is changed.

Note
The GC's switch panel overrides MON2020's valve settings.

To set a valve's operational mode, do the following:

Procedure

1. Select **Valves...** from the **Hardware** menu.
   The *Valves* window displays.
2. Select the desired mode from the drop-down menu under the **Switch** column for the valve.
3. Click **OK** to save the changes and close the window.

   Note
   To save the changes and leave the window open so that you can monitor the valve's progress, click **Save**. The current state of the valve displays in the *State* column, and is updated in real time.

3.2.3 Monitor the operational status of a valve

To check a valve's status, select **Valves...** from the **Hardware** menu.

The status of each valve displays under the **Status** column. There are five possible status readings, and their meanings are as follows:

OK	The valve is installed and is working correctly.
Not Installed	The valve is not installed.
Under/Over Current Error	Unable to switch the solenoid on or off. There is a potential problem with the solenoid.
Error	The Heater/Solenoid board is installed but the GC cannot communicate with it.

3.2.4 Invert the polarity of a valve

The **Invert Polarity** option reverses the effect of switching a valve on or off. By default, the **Invert Polarity** option is unchecked. This means that switching the valve to ON activates it, and switching the valve to OFF deactivates it. Checking the **Invert Polarity** box means that switching a valve to ON *deactivates* it, and switching the valve to OFF *activates* it.

To set the polarity of a valve, do the following:

Procedure

1. Select **Valves...** from the **Hardware** menu.
   The *Valves* window displays.
2. If the **Invert Polarity** checkbox is selected, switching a valve to **ON** *deactivates* it, and switching a valve to **OFF** *activates* it. Deselect the checkbox if you want switching the valve **ON** to activate it and switching the valve **OFF** to deactivate it.

3.2.5 Set the usage mode for a valve

A valve's usage mode determines its general function, or role, during an analysis run. A valve can be assigned one of the following usage modes:

- Unused
- FID H2 Valve (700XA and 1500XA only)
- Stream
- Analyzer01 ... Analyzer016

The usage mode is set at the factory and under ordinary circumstances it should not be changed.

To set the usage mode for a valve, do the following:

Procedure

1. Select **Valves...** from the **Hardware** menu.
   The *Valves* window displays.
2. Select the desired mode from the dropdown list under the **Usage** column for the valve.
3. Click **OK** to save the changes and close the window.

   Note
   To save the changes and leave the window open so that you can monitor the valve's progress, click **Save**. The current state of the valve displays in the **State** column, and is updated in real time.

3.3 Managing the gas chromatograph's pressure

MON2020 allows you to do the following from the **Hardware** → **EPC** menu (for Rosemount 370XA GCs only):

- Change the carrier pressure set point
- Monitor the EPC's status
- Switch EPC modes

3.3.1 Change the carrier pressure set point

Note
This feature only works with the Rosemount 370XA GCs only.

Procedure

1. Select **Hardware** → **EPC** menu.
   The **EPC** window opens.
2. Double-click the **Set Point** field and enter the desired value.

   Note
   If the field does not become active after double-clicking it, make sure the **Switch** field is set to **Auto**.
3. Click **OK**.
   The new set point will be accepted and the *EPC* window will close.

3.3.2 Check the status of the EPC

Note
This feature only works with Rosemount 370XA GCs.

Select **Hardware** → **EPC** menu. The *EPC* window opens.

Check the **Status** column to learn the current state of the EPC:

State	Description
OK	EPC is working normally and controlling the pressure to the set point.
Pressure Low	The carrier pressure is too low.
Out of range	The EPC is not able to control the pressure to the desired set point.

3.3.3 Switch to a different EPC mode

Note
This feature only works with the 370XA.

Procedure

1. Select **EPC** on the **Hardware** menu.
   The *EPC* window opens.
2. Click the **Switch** field.
   A dropdown list opens.
3. Select the appropriate mode.

Option	Description
Auto	Let's the GC control and maintain its pressure at the desired set point.
Fixed On	Allows you to control the power output for the EPC valve by entering a value, in the **Fixed PWM Output** field.
Not Used	Shuts off the EPC.

4. Click **OK**.
   The EPC switches modes and the *EPC* window closes.

3.4 Detectors

Use the *Detectors* window to monitor the activity and status of the GC's detectors.

To view the *Detectors* window, select **Detectors...** from the **Hardware** menu.

Note
Before making any modifications to this window, halt the analysis. See Halt an analysis for more information.

Note
Blue cells display read-only data; white cells display editable data.

The following data displays for each detector:

Det # Numerical identifier for the detector to which the following data applies.

Detector Options, which depend on your GC's configuration, are *TCD*, *FPD FPD G2 (integral FPD)*, *FID* or *FID G2 (integral FID)*.

Flame Temp RTD Select the appropriate RTD from the drop-down list. The RTD measures the temperature of the FID flame.

H2 Valve Optional carrier shut-off valve

Flame Ignition Select **Manual** if you want to control the ignition of the FID; select **Auto** if you want the GC to control the ignition of the FID.

Ignition Attempts	Indicates the number of times the GC will try to light the flame. If an *Auto* FID ignition sequence fails to light the flame after the specified number of attempts, the GC will close the hydrogen valve, switch the ignition parameter to **Manual**, and set an active alarm.
Wait Time Bet Tries	Indicates the amount of time, in seconds, the GC will wait between ignition attempts.
Igniter On Duration	Indicates the length of time that the igniter will remain on.
Flame On Sense Temp	The flame ignites when the butner internal temperature exceeds the value set in this field.
Flame Out Sense Temp	The flame is extinguished when the burner internal temperature falls below the value set in **Flame On Sense Temp**.
FPD Flame Status DI	Allows you to select from a list of available digital inputs. The digital input that is selected will receive the FPD's flame status value.
Preamp Val	Detector count. Read-only. See Auto-zero (Auto-Zero) for more information.
Flame Temperature	Temperature of the burner flame as read by the RTD. Read-only.
Flame Status	Options are: *Off*, *On*, and *Over Temperature*. Read-only.
H2 Valve Cur State	Options are: *Open* and *Closed*. Read-only.
Scaling Factor	Preamp calibration factor.
Igniter Status	Options are: *Off* and *On*. Read-only.
Electrometer Voltage	Output at first stage of FID/FPD preamp. Read-only.
Pre Amplifier Voltage	Output at second stage of FID/FPD preamp. Read-only.
Polarizing Voltage	Igniter voltage. Read-only.
Gain Status	Options are: *Low* and *High*.
Status	Options are: *OK*, *Not Installed*, and *Internal Error*. Read-only.

3.4.1 Gain High

The FID/FPD gain status displays on the **Hardware** → **Detectors**, which can be either *Low* or *High*.

Procedure

1. If the gain status is *Low* and you want to set it to *High*, click **Gain High** button.
2. If the gain status is *High* and you want to change it to *Low*, click **Gain Low**.

Related information

Detectors

3.4.2 Ignite the burner flame

If the **Flame Ignition** field on the **Detectors** window is set to **Manual**, and if the **Flame Status** field is set to **Off**, do the following to restart the flame:

Procedure

1. Click **Open H2 Valve**.
   The **H2 Valve Cur State** field changes to **Open**.
2. Click **Ignite**.
   The **Flame Status** field changes to **On** when the internal flame temperature exceeds the value set in the **Flame On Sense Temp** field.

   Note
   If the **Flame Ignition** field is set to **Auto**, the GC will automatically restart the flame if it goes out.

Related information

Detectors

3.4.3 Open H2 Valve

To manually ignite the FID/FPD, the H2 valve must open.

Procedure

1. Click **Hardware** → **Detectors** and set the **Flame Ignition** field is set to **Manual**
2. Select the **Open H2 Valve** button.
3. The **H2 Valve Cur State** field changes to **Open**.

Related information

Detectors

3.4.4 Null Electrometer

The **FID/FPD Detector's NULL Electrometer** feature is used to reset the electromer.

Procedure

1. Click **Hardware** → **Detectors**.
2. Click the **NULL Electrometer** button to reset the FID/FPD electrometer.

Related information

Detectors

3.4.5 Offset the baseline (700XA and1500XA only)

Note
In GC Firmware version 2.1.X and later, the bridge is automatically balanced by the firmware.

In some situations that involve TCD detectors the baseline may be displayed either too high on the graph, in which case the tops of the peaks are cut off, or too low on the graph, so that the bases of the peaks are cut off. If this occurs it is possible to offset the baseline either up or down so that the entire peak can be displayed on the graph. This offset will be applied to all traces—live, archived and saved—that are displayed thereafter.

To offset the baseline, do the following:

Procedure

1. Select **Detectors...** from the **Hardware** menu.
   The *Detectors* window displays.
2. Select the appropriate detector. It may be necessary to return to the *Chromatogram Viewer* to learn which detector is the source of the trace that needs to be offset.
3. Balance the preamp:
   - To *lower* the baseline, click **Lower Baseline (*N*)**. Each time this button is clicked, *N* is incremented by -1. For example, if this is the first time the button has been clicked, **Lower Baseline(0)** is incremented to **Lower Baseline(-1)**, and the baseline is lowered one step. If **Raise Baseline(*N*)** was clicked previously, then that button is incremented by -1 first, until it reaches **RaiseBaseline(0)**; at that point, **Lower Baseline(*N*)** is incremented by -1.

     Note
     To reset the baseline to its original setting, click **Raise Baseline(*N*)** and **Lower Baseline(*N*)** until they read **Raise Baseline(0)** and **Lower Baseline(0)**.

   - To *raise* the baseline, click **Raise Baseline(*N*)**. Each time this button is clicked, *N* is incremented by 1. For example, if this is the first time the button has been clicked, **Raise Baseline(0)** is incremented to **Raise Baseline(1)**, and the baseline is raised one step. If **Lower Baseline(*N*)** was clicked previously, then that button is incremented by 1 first, until it reaches **Lower Baseline(0)**; at that point, **Raise Baseline(*N*)** is incremented by 1.

     Note
     To reset the baseline to its original setting, click **Right(*N*)** and **Left(*N*)** until they read **Raise Baseline(0)** and **Lower Baseline(0)**.

4. After the baseline has been raised or lowered to your satisfaction, click **OK**.

3.4.6 Auto-zero

To automatically adjust the baseline, click **Auto-Zero**. This only applies to FID or FPD detectors.

Related information

Detectors

3.4.7 Setting the Detector Gain

The **Detector** window displays the detector's gain status, which can be either Low or High.

Procedure

1. If the detector's gain status is **Low** and you want to set it to **High**, click **Gain High**.
2. If the detector's gain status is **High** and you want to change it to **Low**, click **Gain Low**.

3.4.8 Resetting the Electrometer

To reset the detector's electrometer, do the following.

Procedure

1. From the **Hardware** → **Detector** menu, click **NULL Electrometer**..
2. Click **OK** to apply your edits.

3.5 Discrete inputs

You can use MON2020 to assign labels to the GC's discrete inputs and to control the discrete inputs' operational modes. The number of discrete inputs available depends on the GC.

3.5.1 Rename a discrete input

Give each discrete input a descriptive label to avoid confusing one unit for another. To assign an identifying label, do the following:

Procedure

1. Select **Discrete Inputs...** from the **Hardware** menu.
   The *Discrete Inputs* window displays.
2. Double-click on the appropriate row under the *Label* column for the discrete input that you want to rename.

   Note
   The discrete inputs are labeled **Discrete Input 1 - Discrete Input** ***N*** by default, where ***N*** equals the total number of discrete inputs available to the GC.

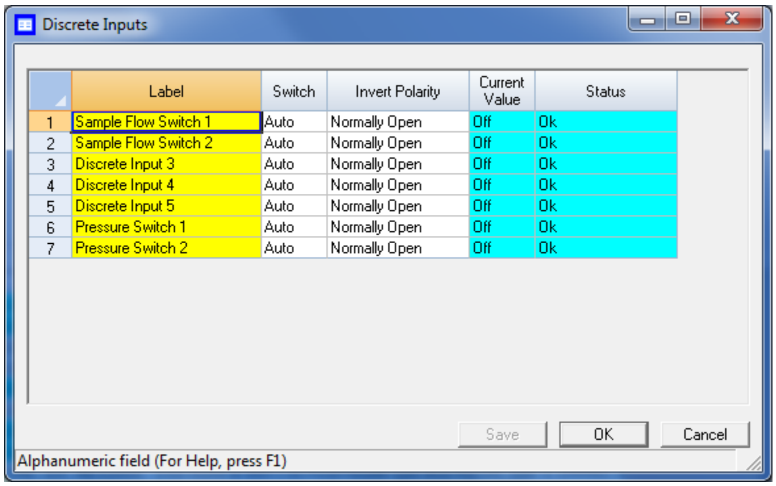
3. Type in a new descriptive name for the discrete input.

4. Click **OK**.

Note

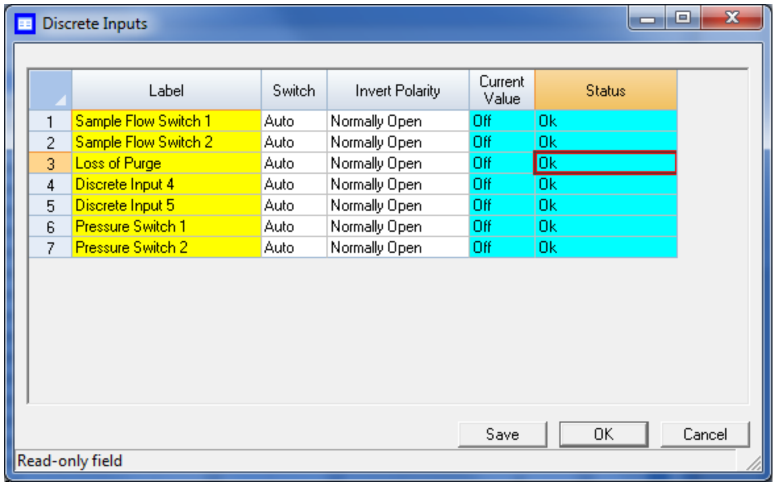
Several of the discrete inputs on the 700XA/1500XA GCs are pre-defined and mapped by default to System Alarms. Renaming these discrete inputs does not remove the underlying system alarm. You will need to disable the associated system alarm before renaming the discrete input. View System Alarms describes how to edit system alarms.

On the 700XA, the following discrete inputs are mapped to System Alarms by default.



Discrete Input	DI Description	System Alarm Name
1	Sample Flow Switch 1	No Sample Flow 1
2	Sample Flow Switch 2	No Sample Flow 2
6	Pressure Switch 1	Low Carrier Pressure 1
7	Pressure Switch 2	Low Carrier Pressure 2

On the 1500XA, the following discrete inputs are mapped to System Alarms by default.



Discrete Input	DI Description	System Alarm Name
1	Sample Flow Switch 1	No Sample Flow 1
2	Sample Flow Switch 2	No Sample Flow 2
3	Loss Of Purge	Loss Of Purge
6	Pressure Switch 1	Low Carrier Pressure 1
7	Pressure Switch 2	Low Carrier Pressure 2

3.5.2 Set a discrete input’s operational mode

A discrete input has three operational modes: **Auto**, **On**, and **Off**.

- Setting the discrete input to **Off** means that it will interpret all incoming signals as OFF, despite the true nature of the signal.
- Setting the discrete input to **Auto** means that it will analyze the incoming signal to determine whether it is ON or OFF.
- Setting the discrete input to **On** means that it will interpret all incoming signals as ON, despite the true nature of the signal.

To set a discrete input’s operational mode, do the following:

Procedure

1. Select **Discrete Input...** from the **Hardware** menu.
   The *Discrete Input* window displays.
2. Select the desired mode from the drop-down list under the **Switch** column for the discrete input.
3. To save the changes and leave the window open so that you can monitor the discrete input’s progress, click **Save**. The current state of the discrete input displays in the **State** column, and is updated in real time.
4. To save the changes and close the window, click **OK**.

3.5.3 Monitor the operational status of a discrete input

Procedure

To check a valve's status, select **Discrete Input...** from the **Hardware** menu.
The status of each discrete input displays under the **Status** column. There are three possible status readings, and their meanings are as follows:

OK	The discrete input is installed and is working correctly.
Not Installed	The discrete input is not installed.
Error	The Heater/Solenoid board is installed but the GC cannot communicate with it.

3.5.4 Invert the polarity of a discrete input

The **Invert Polarity** option reverses the way a voltage signal is interpreted by the discrete input. By default, the **Invert Polarity** option is set to **Normally Open**, which means that a high voltage signal is interpreted by the discrete input as **ON**, and a low voltage signal is interpreted by the discrete input as **OFF**. Setting **Invert Polarity** to **Normally Closed** means that a high voltage signal is interpreted by the discrete input as **OFF**, and a low voltage signal is interpreted by the discrete input as **ON**.

To set the polarity of a discrete input, do the following:

Procedure

1. Select **Discrete Input...** from the **Hardware** menu.
   The *Discrete Inputs* window displays.
2. Select **Normally Open** or **Normally Closed** from the drop-down menu under the **Invert Polarity** column.

3.6 Discrete outputs

You can use MON2020 to assign labels to the GC's discrete outputs and to control the discrete outputs' operational modes. The number of discrete outputs available depends on the GC.

3.6.1 Rename a discrete output

Give each discrete output a descriptive label to avoid confusing one unit for another.

To assign an identifying label, do the following:

Procedure

1. Select **Discrete Outputs...** from the **Hardware** menu.
   The *Discrete Outputs* window displays.
2. Double-click on the appropriate row under the **Label** column for the discrete output that you want to rename.

Note
The discrete outputs are labeled **Discrete Output 1 - Discrete Output** ***N*** by default, where *N* equals the total number of discrete outputs available to the GC.

3. Type in a new descriptive name for the discrete output.
4. Click **OK**.

3.6.2 Set a discrete output's operational mode

A discrete output has three operational modes: **Auto**, **On**, and **Off**.

- Setting the discrete output to **Off** means that the discrete output will turn off and remain off until the operational mode is changed.
- Setting the discrete output to **Auto** means that the discrete output will turn on and off according to the **Timed Events** table or the **Discrete Outputs** table.
- Setting the discrete output to **On** means that the discrete output will turn on and remain on until the operational mode is changed.

To set a discrete output's operational mode, do the following:

Procedure

1. Select **Discrete Output...** from the **Hardware** menu.
   The *Discrete Output* window displays.
2. Select the desired mode from the drop-down menu under the **Switch** column for the discrete output.
3. Click **OK** to save the changes and close the window.

Note
To save the changes and leave the window open so that you can monitor the discrete output's progress, click **Save**. The current state of the discrete output displays in the **State** column, and is updated in real time.

3.6.3 Monitor the operational status of a discrete output

Procedure

To check a discrete output's status, select **Discrete Output...** from the **Hardware** menu. The status of each discrete output displays under the **Status** column. There are three possible status readings, and their meanings are as follows:

OK	The discrete output is installed and is working correctly.
Not Installed	The discrete output is not installed.
Error	The Heater/Solenoid board is installed but the GC cannot communicate with it.

3.6.4 Set the usage mode for a discrete output

A discrete output's usage mode determines which signals are routed to it via the Limited Alarm and Discrete Alarm functions. A discrete output can be assigned one of the following usage modes:

- DO
- Common Alarm
- FID/FPD H2 valve
- Stream
- Analyzer01

  ...
- Analyzer016
- Calibration
- Calibration on Analysis Clock(*N*)
- Maintenance
- Calibration or Maintenance
- Validation
- Calibration or Validation or Maintenance

To set the usage mode for a discrete output, do the following:

Procedure

1. Select **Discrete Output...** from the **Hardware** menu.
   The *Discrete Output* window displays.
2. Select the desired mode from the drop-down menu under the **Usage** column for the discrete output.

   Options are:

   - Calibration on Analysis Clock 1
   - Maintenance
   - Calibration or Maintenance on Analysis Clock 1
   - Validation on Analysis Clock 1
   - Calibration or Validation or Maintenance on Analysis Clock 1
   - Calibration on CC2
   - Calibration or Maintenance on CC2
   - Validation on CC2
   - Calibration or Validation or Maintenance on CC2
   - Calibration on CC3
   - Calibration or Maintenance on CC3

- Validation on CC3
- Calibration or Validation or Maintenance on CC3
- Calibration on CC4
- Calibration or Maintenance on CC4
- Validation on CC4
- Calibration or Validation or Maintenance on CC4

3. If you select **DO** for **Usage**, then you must also set the **Start Time** and **Duration**.
    a) Click on the appropriate row under the **Start Time** column and enter the time that the digital output should be turned on.
    b) Click on the appropriate row under the **Duration** column and enter the amount of time (in Hour:Minute:Second format) that the digital output should remain on.
    c) Click on the appropriate row under the **Interval** column and enter the amount of time, in hours, that should pass before the digital output turns on again.
4. Click **OK** to save the changes and close the window.

Note
To save the changes and leave the window open so that you can monitor the discrete output's progress, click **Save**. The current state of the discrete output displays in the *State* column, and is updated in real time.

3.6.5 Invert the polarity of a discrete output

To set the polarity of a discrete output:

Procedure

1. Select **Discrete Output...** from the **Hardware** menu.
   The *Discrete Outputs* window displays.
2. Check or uncheck the box under the **Invert Polarity** column.
   With **Invert Polarity** unchecked:

DO current value	Normally open terminals	Normally closed terminals
On	Closed	Open
Off	Open	Closed

   With **Invert Polarity** checked:

DO current value	Normally open terminals	Normally closed terminals
On	Open	Closed
Off	Closed	Open

3.7 Manage your gas chromatograph's analog inputs

With MON2020 you can control analog inputs in the following ways:

- Assign identifying labels.
- Assign scale ranges.
- Calibrate analog inputs for zero and full scale values.
- Code
- Analog Input 4-20 mA external loop power

Note
Electrical current signals ranging from 4 to 20 mA (±10%) are accepted as analog inputs.

3.7.1 Rename an analog input

Give each analog input a descriptive label to avoid confusing one unit for another. To assign an identifying label, do the following:

Procedure

1. Select **Analog Inputs...** from the **Hardware** menu.
   The *Analog Inputs* window displays.

2. Double-click on the appropriate row under the *Label* column for the analog input that you want to rename.

   Note
   The analog input devices are labeled **Analog Input 1** and **Analog Input *N*** by default, where *N* equals the total number of analog inputs available to the GC.

3. Type in a new descriptive name for the analog input.
4. Click **OK**.

3.7.2 Set an analog input's operational mode

An analog input has the following operational modes:

- **Var_Standard**: The analog input will be set automatically, based on the signal it receives.
- **Var_Namur_NE43**: Namur_NE43 uses the 3.8 to 20.5 mA signal range for measurement information, with ≥21 mA or ≤3.6 mA to indicate diagnostic failures.
- Setting the switch to **Fixed** means that the analog input will be set to the value that you enter in the appropriate row under the **Fixed Value** column. This is the default setting.

To set an analog input's operational mode, do the following:

Procedure

1. Select **Analog Inputs...** from the **Hardware** menu.
   The *Analog Input* window displays.
2. Select the desired mode from the drop-down menu under the **Switch** column for the analog input.
3. Click **OK** to save the changes and close the window.

   Note
   To save the changes and leave the window open so that you can monitor the analog input, click **Save**. The current value of the analog input signal displays in the **Current Value** column, and is updated in real time.

3.7.3 Set the scale values for an analog input device

To set the zero scale and full scale, which are used when converting the analog input value, do the following:

Procedure

1. Select **Analog Input...** from the **Hardware** menu.
   The *Analog Input* window displays.
2. Double-click on appropriate row under the **Zero Scale** column and enter a zero scale value.
3. Double-click on appropriate row under the **Full Scale** column and enter a full scale value.

4. Click **OK** to save the changes and close the window.

Note
To save the changes and leave the window open so that you can monitor the analog input, click **Save**.

3.7.4 Assign an Analog Inputs code

Sets the unique code for each available analog input system variable.

The same code value is outputted via Modbus to differentiate the analog inputs.

Procedure

1. Use the **Hardware** → **Analog Input** menu.
2. Select the **Code** column and enter the code for the analog input.

3.7.5 Set the type of analog input signal

The GC's analog inputs can receive a 4-20 mA current. To set the type of signal generated by the analog input device, do the following:

Procedure

1. Select **Analog Inputs...** from the **Hardware** menu.
   The *Analog Inputs* window displays.
2. Select **Switch** and use the pull-down menu to choose the input type.
   - Setting the switch to **Variable** means that the analog input will be set automatically, based on the signal it receives.
     - Options are: **Var_Std**
     - **Var_Namur_NE43**
   - Setting the switch to **Fixed** means that the analog input will be set to the value that you enter in the appropriate row under the **Fixed Value** column.
3. Click **OK** to save the changes and close the window.

Note
To save the changes and leave the window open so that you can monitor the analog input's progress, click **Save**. The type of signal being generated displays in the **mA/Volts** column, and is updated in real time.

3.7.6 Monitor the status of an analog input

To check an analog input's status, select **Analog Input...** from the **Hardware** menu.

The operational status of each analog input displays under the **Status** column. There are three possible status readings, and their meanings are as follows:

OK The analog input is installed and is working correctly.

Not Installed	The analog input is not installed.
Error	The analog input is installed, but the GC cannot communicate with it.

This window also displays other types of data, such as the following:

mA	The type of analog input signal being received.
mA	If **mA** displays in the **mA** column, then this column displays the amount of current being received, in milliamperes.
Cur Val	The current value of the analog input signal.

3.7.7 Calibrate an analog input

To calibrate an analog input, do the following:

Procedure

1. Select **Analog Input...** from the **Hardware** menu.
   The *Analog Input* window displays.
2. Click the analog input that you want to calibrate.
3. Set the analog input's **Zero Scale** by entering its minimum anticipated value.
4. Set the analog input's **Full Scale** by entering its maximum anticipated value.
5. Click **AutoCal...(F4)** or press **F4**.
   The *Analog Input Calibration Assistant* runs.
6. Click **Next**.
   Step 2 of the *Analog Input Calibration Assistant* displays.
7. Click **Next**.
   Step 3 of the *Analog Input Calibration Assistant* displays.
8. Click **Next**.
   Step 4 of the *Analog Input Calibration Assistant* displays.
9. Click **Finish**.
   The calibration is complete.

3.8 Analog outputs

With MON2020 you can control the analog outputs in the following ways:

- Assign identifying labels.
- Assign scale ranges.
- Calibrate analog outputs for zero and full scale values.
- Analog Input 4-20 mA external loop power

3.8.1 Rename an analog output

Give each analog output a descriptive label to avoid confusing one unit for another. To assign an identifying label, do the following:

Procedure

1. Select **Hardware** → **Analog Outputs...** from the menu.
   The *Analog Outputs* window displays.
2. Double-click on the appropriate row under the **Label** column for the analog output that you want to rename.

   Note
   The analog output devices are labeled **Analog Output 1 - Analog Output *N*** by default, where *N* equals the total number of analog outputs available to the GC.

3. Type in a new descriptive name for the analog output.
4. Click **OK**.

3.8.2 Set an analog output's operational mode

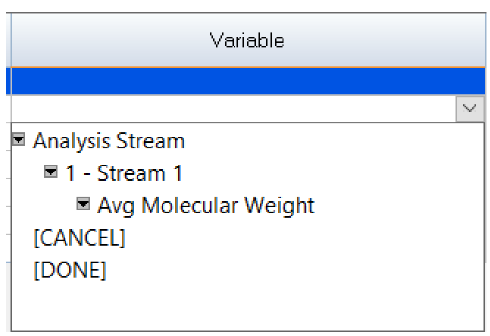
An analog output has the following operational modes:

- **Var_Standard**: Setting the switch to **Var_Standard** means that the analog output will be proportional to the variable selected in from the **Variables** column.
- **Var_Namur_NE43**: **Namur_NE43** uses the 3.8 to 20.5 mA signal range for measurement information, with ≥21 mA or ≤3.6 mA to indicate diagnostic failures.
- **Fixed**: Setting the switch to **Fixed** means that the analog output will be set to the value that is entered in the appropriate row under the **Fixed Value** column. This is the default setting.

To set an analog output's operational mode, do the following:

Procedure

1. Select **Analog Output...** from the **Hardware** menu.
   The *Analog Output* window displays.
2. Select the desired mode from the drop-down menu under the **Switch** column for the analog output.
3. Click the drop-down menu in the **Variable** column.



4. Double click the **Variable** name and click to configure the selected opton.

5. Click **Save** to save the changes and leave the window open so that you can monitor the analog output.

Note
To save the changes and close the window, click **OK**. The current value of the analog output displays in the **Cur Val** column, and is updated in real time.

3.8.3 Set the scale values for an analog output device

To set the zero scale and full scale, which are used when converting the analog output value, do the following:

Procedure

1. Select **Analog Output...** from the **Hardware** menu.
   The **Analog Output** window displays.
2. Click on appropriate row under the **Zero Scale** column and enter a zero scale value.
3. Click on appropriate row under the **Full Scale** column and enter a full scale value.
4. Click **OK** to save the changes and close the window.
   To save the changes and leave the window open so that you can monitor the analog output's progress, click **Save**.

3.8.4 Map a system variable to an analog output

To select the system variable on which to base the signal level of the analog output, do the following:

Procedure

1. Select **Hardware** → **Analog Output...** from the menu.
   The *Analog Output* window displays.
2. Select a new variable by clicking on the appropriate drop-down list under the **Variable** column.

   For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.
3. Click **OK** to save the changes and close the window.

Note
To save the changes and leave the window open so that you can monitor the analog output's progress, click **Save**.

3.8.5 Monitor the status of an analog output

To check an analog output device's status, select **Analog Output...** from the **Hardware** menu.

The operational status of each analog output displays under the **Status** column. There are three possible status readings, and their meanings are as follows:

OK The analog output device is installed and is working correctly.

Not Installed The analog output device is not installed.

Error The Heater/Solenoid board is installed but the GC cannot communicate with it.

This window also displays other types of data, such as the following:

mA The amount of current being generated in milliamperes.

Loop Power Loop power can be configured as Internal or External ,

- Internal – This uses internal power from GC power supply and this is default setting.
- External – This uses external power supply

The 4-20 mA loop current is changed by varying the opposition (resistance) to current flow on the loop. Used to measure the process variables.

Current Value The current scaled value of the analog output signal.

Related information

Hardware menu

3.8.6 Calibrate an analog output

To automatically calibrate an analog output, do the following:

Procedure

1. Select **Analog Output...** from the **Hardware** menu.
   The *Analog Outputs* window displays.
2. Click the analog output that you want to calibrate.
3. Click **AutoCal...(F4)** or press **F4**.
   The *Analog Output Calibration Assistant* runs.
4. Select the checkbox for the unit of measure you want to use for the calibration and then click **Next**.
   Step 2 of the *Analog Output Calibration Assistant* displays.
5. Enter the **Zero Scale Adjustment** value and then click **Next**.
   If the value entered is within tolerance, it is accepted and Step 3 of the *Analog Output Calibration Wizard* displays. If the value is not within tolerance, an error icon ( ) appears beside the field. Tolerance is set to ±1 mA of the analog output's default zero adjustment setting, which is 4 mA. Enter a different value and try again.

6. Enter the **Full Scale Adjustment** value and then click **Next**.
   If the value entered is within tolerance, it is accepted and Step 4 of the *Analog Output Calibration Wizard* displays. If the value is not within tolerance, an error icon () appears beside the field. Tolerance is set to ±1 mA of the analog output's default full adjustment setting, which is 20 mA. Enter a different value and try again.
7. Click **Finish**.
   The calibration is complete.

Related information

Hardware menu

3.9 Installed Hardware

MON2020 can compile an inventory table of all hardware that is installed on the GC. To view this table, select **Installed Hardware...** from the **Hardware** menu.

The type of hardware installed is listed under the **Device Description** column. The other types of information available on this screen are the following:

IO Function Describes the function of the device.

Slot Number Describes the location of the hardware in the GC. The slot number refers to the card cage assembly, which is located in the GC's Electronics enclosure. For the Rosemount 700XA and Rosemount 1500XA, the slots are labeled:

- Expansion Slot 1
- Expansion Slot 2
- Slot 1
- Slot 2
- Slot 3
- Slot 4
- Base IO
- Foundation Field Bus
- LOI
- Expansion Slot 3
- Expansion Slot 4
- FID1
- FPD1
- Slot 5
- FPD G2 Slot 1
- FPD G2 Slot 2
- FID G2 Slot 1

- FID G2 Slot 2
- EPC G2 Slot
- FPD G2 Slot 3
- FPD G2 Slot 4
- FID G2 Slot 3
- FID G2 Slot 4

There are no slots in the 370XA, therefore this column will display *Analyzer* for all hardware.

Revision The revision number of the backplane.

Device Description Describes data for a field device.

4 Application

Many of the variables that a gas chromatograph uses during an analysis run—such as timed events, stream sequence, and calculation types—can be easily managed through MON2020.

This chapter explains how to do the following:

- View and edit general information about the GC to which MON2020 is connected, such as name, model, and default stream sequence.
- View and edit component data, validation data, and timed event tables.
- View and change control, average, and user-defined calculations.
- View and edit limit alarm data.
- View and change stream data.
- View and edit the stream sequence.
- View and edit communication and ethernet port data.
- View and map LOI status variables.
- View and map the FOUNDATION fieldbus process variables.

4.1 System

Use this feature to select the default GC stream sequence and to set or edit system-wide variables such as the GC's name, serial number, and system description.

The following information displays on this window:

Name	Description
Analyzer Name	Defines the GC name that a the Status Bar on the main window when MON2020 is connected to the GC. Can contain up to twelve characters.
System description	A place to record miscellaneous reference information to fur identify the currently connected system. Can contain up to twenty-eight characters
Site Id	Holds customer-defined identification information.
Company Name	The name of the company that operates the GC.
Location	The physical location of the GC.
Model	The model number of the GC.
Serial No.	Serial number of the GC. This is a unique identifier that is given to the GC at the factory.
Firmware Version	Revision level of firmware of the GC and its associated firmware checksum.
Standard Component Table Version for GPA	Indicates which version of the GPA's standard component table is being used.
Standard Component Table Version for ISO	Indicates which version of the standard component table is being used.

Name	Description
CGM FCAL Archive	Sets he storage behavior for final calibration chromatograms. The options are: 1. Keep Last FCAL Per Day - the last final calibration chromatogram of the day. 2. Keep All FCAL Per Day - Saves all final calibration chromatograph.
CGM FVAL Archive	Sets the storage behavior for final validation chromatograms. The options are: 1. Keep Last FVAL Per Day - Saves only the la validation chromatogram of the day. 2. Keep FVAL Per Day - Saves all final validation chromatograms.
Date Format	Defines how the date will be displayed. Th are: • MM$$DD$$YYYY • MMDDYY • DDMMYYYY • DDMMYY • YYYYMMDD • YYMMDD $ is the **Date Field Separator**
Date Field Separator	Defines the text symbol that will be used as the separator when displaying he options are: • / • - • .
Time Format	Defines how will be displayed. The options are: • HH:M • HH:MM
Time Notation	Defines the cycle of time to use when displaying the time: The options are: • 12 Hr • 24 Hr
Synchronize with FF Timing	Sets the GC's time to match the Foundation Fieldbus' time. Enabled by selecting the checkbox.
Show Advanced System Variables	Determines whether advanced system variables will be displayed along with basic system variables. Advanced system variables can be customized and may include: • Anaylzer Name • System Description • Company Name • Location • Chromatograph ID
Allow Multiple Writers	Determines whether all supervisor-level users that connect to the GC have write access, or just the first supervisor-level user to connect. Options are **True** and **False**.
Maintenance Mode	Switches the GC to maintenance d triggers an alarm that the GC is down for maintenance.

Name	Description
Max Warm start Delay	This is the maximum time, (in Hours) after a GC recovers power failure during normal operation, that the GC will wait for and electronic pressure controller to reach their respective set and stabilize before triggering the Warm start Failure alarm.
Energy Value Check	If enabled, the GC analyzes the calibration gas as an unknown stream and computes its energy value. The GC then compares this value to the Cal Gas Cert CV and determines if the calibration gas' energy value is within the CV Check Allowed Deviation. If it isn't, the GC triggers the Energy Value Invalid alarm. The following conditions must be met before the GC can perform a EV Check: • The EV Check flag in the System window must be enabled. • At least one stream must be set up in the Streams window as a calibration stream and the Auto flag for this stream must be enabled. The EV Check is performed under any of the following circumstances: • During a warm start that follows a power failure during normal operation. The GC waits for the heater and electronic pressure controller to reach their respective set points and stabilize. It then analyzes the calibration gas as an unknown stream and identifies the peaks. If all the component peaks are identified, the GC computes the calibration gas' energy value and performs the EV Check. • After a successful calibration, the GC computes the gas' energy value with the new response factors and performs the EV Check.
Sales Order Number	The sales number for the GC. When contacting Customer Support, you may be asked to provide this number to the Customer Support agent.
Calibration Retry on Failure	A calibration fails, the GC will re-run the calibration sequence.
Calibration Repeatability Check	If enabled, the GC will check of the repeatability of calibration runs to the limits specified in ISO6974-6:2002(E), Table 1. If the calibration fails to meet the conditions set forth in the table, then the calibration is deemed to have failed and the GC will rerun the calibration sequence.
Metrology Type	Shows the metrology type that the GC is configured for.
GC Id	This field can be used to store a unique text string that will be associated with the GC and that can be displayed on reports.
Identification Number	This field can be used to store a unique text string that will be associated with the GC and that can be displayed on reports.
Configuration Checksum at Lockout	The checksum of the configuration fields that is calculated when the security switch is locked.
Current Configuration Checksum	The GC will periodically recalculate and update the configuration checksum. This *current* value will be the latest calculated value.
Checksum Update Time	The time that the configuration checksum was last updated.
Chromatograph ID	A three character string value which is unique across all installed GCs. The first character must be a letter, and the second and third characters may be either numbers or letters. Special characters are not allowed in the Chromatograph ID.
Chromatograph Site ID	A float value; you can set any float value to differentiate the GCs.

Name	Description
Keep Last Good Average	A checkbox column. 1. If you uncheck this option, then a zero value will be logged in the archive records during times when the alarm is not averaging. 2. If you check this option st average value will be logged in the archive records when the alarm is not averaging. In this case, the number of samples is set to zero while the average archive records.
Ext. Modbus® Calibration Archive Data	A dropdown list with the following options (the selected option will be used by the Calibration and Final Calibration data types in the Modbus Map Editor for the 700XA series registers): 1. Circular Buffer (default): If you select this archived calibration, data will be logged as a circular buffer and will store a maximum of 35 calibration records. 2. Contract Day: If you select this option, the calibration data will be for each contract day and will store a maximum of one month of calibration data. This option will be selected for El Paso type applications.
GC Mode	**(370XA only)**. Allows you to select an operating mode for the GC.
Modbus® Stream Alarm Bit Association	**(370XA only)**. Modbus® Stream Alarm Bit Association defines the behavior of how stream specific alarms are encoded into **Analysis Stream → Active Low Alarm Status** and **Analysis Stream → Active High Alarm Status** system variables. Possible values for this column: • **0 - SIM2251 Emulation** - [Default] status (active or inactive). If you select this option, the only one stream will be displayed. The first alarm configured for a particular stream in the Limit Alarms screen will be conveyed through Bit 0 Status (active or inactive). The second alarm configured for a particular stream will be conveyed through Bit 1, and so on. The status for up to 32 limit alarms per stream can be transmitted if a 32 bit register is used. • **1 - Limit Alarm Row Position** -The row position in the Limit Alarms screen determines which bit is used to convey status. If you select this the statuses of up to 32 alarms selected in the Limit Alarms screen will be displayed. Status (active or inactive) of Limit Alarm 1 is conveyed it 0. Status (active or inactive) of Limit Alarm 2 is conveyed through Bit 1, so on. The status for up to 32 limit alarms per stream can be transmitted if a 32 bit register is used.
Default Stream Sequence	**(370XA only)**. Sets the default sequence to be used by the indicated detector during auto-sequencing. To create a new stream sequence or to edit an already-created sequence, click Stream Sequence.
Calculate Checksum	Click **Calculate Checksum** to calculate the current configuration checksum of the input file and the number of bytes the file contains.

1. Press **Calculate Checksum** at the bottom of the *System* window to compute a 32-bit checksum of the configuration that can be compared to the *Configuration Checksum at Lockout* field to determine if the analyzer's configuration has been modified.
2. The checksum that is calculated is stored in the *Current Configuration Checksum* field and the date and time of the calculation is stored in the *Checksum Update Time* field.

Note
If you receive a **Configuration checksum calculation failed** error message after pressing **Calculate Checksum**, contact your local Rosemount Customer Care Representative.

Related information

Application
Create a stream sequence for a detector

4.2 The component data tables

MON2020 allows you to view and edit the component data tables. The number of available component data tables depends on the GC unit configuration.

To assign a component data table to a stream, see Link a valve with a stream.

Procedure

1. To view a component data table, select **Component Data...** from the **Application** menu.

   The *Component Data Tables* window appears, displaying a list of available component data tables.

   Note
   You can also access the component data tables by pressing **F6** or by clicking from the Toolbar.

2. Select the table that you want to view.

   The selected component data table displays.

   Note
   To see a different table, select it from the **Choose table** dropdown list.

   Note
   To sort the list of components by detector, and then by retention time, click **Sort RT**.

4.2.1 Edit a component data table

Note
Table cells with a white or yellow background are editable; table cells with a turquoise background are not editable.

To edit a cell, do the following:

Procedure

1. Click the **Cell**.
   Depending on the cell type, you are either required to select a value from a dropdown list, or you can type in the value directly.
2. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

   The following table lists all of the editable parameters available on the **Component Data Table** window. The standard values for these parameters were taken from the second editions of the *Orifice Metering of Natural Gas and Other Related Hydrocarbon Fluids* and the *Compressibility Factors of Natural Gas and Other Related Hydrocarbon Gases*.

Component	This drop-down list contains the complete catalog of available components for the selected stream.
Usr Std	Indicates the source of the component: • **Usr -** The component was edited or defined by the user. • **Std -** The component was selected from the standard list of components and no changes were made to its standard data.
Det #	The component's detector number.
Ret Time	Time in seconds before the apex of the component's peak will appear. The retention time can be set from **0** to **3600** seconds. **⚠ CAUTION** Ensure that the component retention times do not exceed the analysis time, as defined by the Timed Events table. MON2020 does not automatically prevent the user from defining excessive component retention times.
Resp Factor	A component's response factor is equal to the raw data of the component's peak divided by the component's concentration. The maximum value is 1.0E+38.
Calib Type	MON2020 can perform six types of calibrations: • **Single-Level -** Uses the standard calibration in which the response factor is needed to determine the mole percentage during the calibration. • **Fixed -** During the calibration, the response factor is not updated. • **Relative -** Calibration in which a reference component is used to compute the mole percentage. • **Multi-Level -** Uses a polynomial equation to compute the mole percentage during the calibration. Values must be entered in the **Multi-level Calib a**, **Multi-level Calib b**, **Multi-level Calib c**, and **Multi-level Calib d** cells. • **2-pt Calib -** Uses an exponential power fit using two different points to address non-linear detector response. Two calibration gases - *Low* and *High* with different calibration concentrations are required. By doing a single-level (or linear) calibration on these individual streams, the GC computes the coefficients for the 2-pt exponential power fit. To set up an Analysis/Validation stream to use 2-pt calibration, see Set up an Analysis/Validation stream to use 2 point calibration (700XA and 1500XA only).

- **From CDT X (X = 1 to 8) -** Allows you to copy calibration factors (Response Factor and Retention Time) from another CDT. This is used when two or more calibration gases are required to generate response factors and retention times for all the components that are to be analyzed. At the end of a successful calibration, response factors and retention time will be copied from the alternate CDT.

Calib Conc The amount, in mole %, parts per million (ppm), parts per billion (ppb), or mg/m^3 of the component that is present in the calibration gas.

Unit Indicates the unit of measure used when calculating and displaying the component's calibration concentration. Options are **Mole%**, **ppm**, **ppb**, and **mg/m^3**.

Cal Conc Uncertainty For the 370XA only, uncertainty values from the calibration gas's certificate. Default value is 2.

Anly Meth Defines how the component concentration is computed. The analysis method can take one of the following values:

- **Area -** Calculates the component concentration by dividing the peak area by the response factor.
- **Height -** Calculates the component concentration by dividing the peak height by the response factor.
- **Fixed -** The component concentration equals the component's calibration concentration displayed in the *Calib Conc* column of the component data table. No calculation is performed using the response factor.
- By Difference **-** All components except one (*n*) are added up and then subtracted from 100%. *n* is 100 **-** (sum of all other components).
- **Analog Input -** The GC reads the analog input channel, scales the raw milliampere value to engineering values that were set in the *Analog Inputs* window, and uses this value as the component concentration. No calculation is performed using the response factor.

RT Secs Dev The maximum acceptable deviation time, in seconds, of the new retention time from the current retention time.

RT Upd Meth Determines when the retention time will be updated. Options are:

- **Cal -** Updates the retention time only during the final calibration run.
- **Anly -** Updates after each analysis.

Resp Fact % The maximum acceptable percent of deviation between the new response factor and the current response factor.

Gross Dry BTU	Gross energy content per cubic foot (ft^3), assuming no water is present.
Net Dry BTU	Net energy content per cubic foot, assuming no water is present.
Gross Dry BTU per lb	Gross energy content per pound, assuming no water is present.
HV Sup MJ/m^3	Gross heating value in megajoules per cubic meter.
HV Inf MJ/m^3	Net heating value in megajoules per cubic meter.
HV Sup MJ/kg	Gross heating value in megajoules per kilogram.
HV Inf MJ/kg	Net heating value in megajoules per kilogram.
Sum Factor Pri	Used to calculate the compressibility factor. See Streams for more information.
Sum Factor Sec	Used to calculate the compressibility factor. (the ratio of the actual volume of a real gas to the volume predicted by the ideal gas at the same temperature and pressure).
CV Superior KJ/mol - Pri	Gross caloric value per kilojoule/mol (kJ/mole %).
CV Inferior Pri	Net caloric value per kilojoule/mol (kJ/mole %).
CV Superior KJ/mol - Sec	Gross caloric value per kilojoule/mole (kJ/mole %).
CV Inferior Sec	Net caloric value per kilojoule (kJ/mole %).
Hydrogen Atoms	Displays the number of hydrogen atoms for a component.
Gals/1000 SCF	Liquid equivalent volume in gallons/1000 ft^3.
Reid Vapor	The component's vapor pressure in pounds per square inch (psia) at 100.0 °F (38 °C)
Lbs/Gallon	Liquid density for the component at base conditions.
Rel Dens Gas	The relative density of the gas phase for the component at base conditions.
Rel Dens Liquid	The relative density of the liquid phase for the component at base conditions.
Mole Weight	The molecular weight of the component, which is used to calculate the weight percent of each component in the sample.
Carbon Weight	The molecular weight of the carbon atoms in the component.
AGA 8 Component	The name of the component according to the American Gas Association, which is used in the AGA 8 compressibility calculation.

Ref Comp	The component not found in the calibration gas but in the sample gas for indirect calibration. If *none*, normal (direct) calibration is used. Not editable unless the calibration type is set to **Relative**.
Rel Resp Fact	A fixed multiple of the response factor of the component found in the sample gas for indirect calibration. Not editable unless the calibration type is set to **Relative**.
Rel Dens Liquid 15C	The relative density in kilograms per cubic meter (kg/m^3) of the liquid phase for the component at 15 °C.
Molar Mass	The mass of one mole of the component.
Multi-level Calib a	Third-order polynomial coefficient for multi-level calibrations. Not editable unless the calibration type is set to **Multi-Level**. See Multi-Level Calibration.
Multi-level Calib b	Second-order polynomial coefficient for multi-level calibrations. Not editable unless the calibration type is set to **Multi-Level**.
Multi-level Calib c	First-order polynomial coefficient for multi-level calibrations. Not editable unless the calibration type is set to **Multi-Level**.
Multi-level Calib d	Zero-order polynomial coefficient for multi-level calibrations. Not editable unless the calibration type is set to **Multi-Level**.
Component Code (UK)	An index number that corresponds to the standard component numbers taken from the American Gas Association. Up to 20 components can be defined per data table.
Component Code (US)	An index number that corresponds to the standard component numbers taken from the American Gas Association. Up to 20 components can be defined per data table.
2 Pt Calib Low CDT	The component data table associated with a low calibration gas (700XA and 1500XA only).
2 Pt Calib High CDT	The component data table associated with a high calibration gas (700XA and 1500XA only).
2 Pt Exp	Value calculated from the 2 pt Calib Low CDT and the 2 Pt Calib High CDT (700XA and 1500XA only). See Set up an Analysis/Validation stream to use 2 point calibration (700XA and 1500XA only) for more information on 2-pt. calibration.

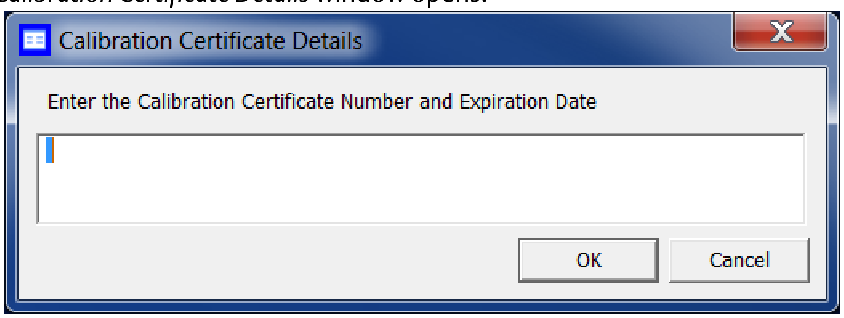
Related information

Add a Component to a Component Data Table
Remove component from CDT
View raw data

View standard values
Enter Energy Value
Change the default C6+ mixture ratio

4.2.2 Editing a calibration certificate details

Procedure

1. To access the *Calibration Certificate Details* screen, you may either click the **Edit Calib Certificate Details** button in the *Component Data Table* window (see The component data tables or press F8.
   The *Calibration Certificate Details* window opens.
   

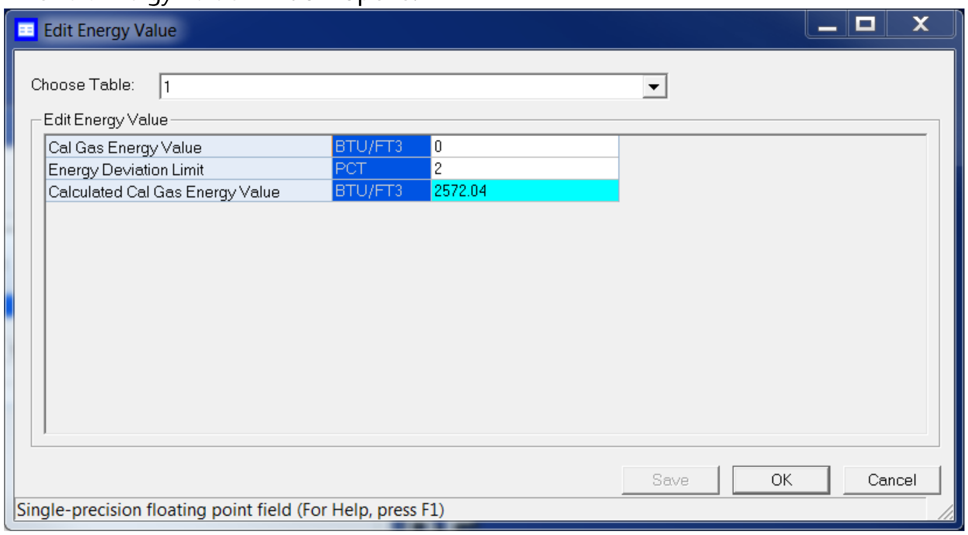
2. Enter the calibration certificate number and expiration date.
3. Click **OK** to save your changes and close the *Calibration Certificate Details* window.

4.2.3 Editing energy value

Procedure

1. To access the *Edit Energy Value* window, you may either click the **Edit Energy Value** button in the *Component Data* window (see The component data tables) or press **F7**.

   The *Edit Energy Value* window opens.

2. Choose a table from the **Choose Table** dropdown list.
3. Enter the **Cal Gas Energy Value** and the **Energy Deviation Limit** in the appropriate fields.

   The **Calculated Cal Gas Energy Value** field cannot be edited.

4. Click **Save** to save your changes without closing the *Edit Energy Value* window. Click **OK** to save your changes and close the *Edit Energy Value* window. Click **Cancel** to close the *Edit Energy Value* window without saving your changes.

4.2.4 View the standard values for a component

If you have changed component's values, it is still possible to view the standard values for that particular component. To view the standard values for a component, do the following:

Procedure

1. Select **Component Data...** from the **Application** menu.
   The *Component Data Tables* window appears, displaying a list of available component data tables.

   Note
   You may also access the component data tables by pressing **F6** or by clicking from the Toolbar.

   ---

2. Select the table that you want to view.
   The selected component data table displays.

   Note
   To sort the list of components by detector and then by retention time, click **Sort RT**.

   ---

3. Click **Std Values (F3)**.
   The *Standard Component Values* window displays.
4. When you are finished viewing the window, click **Close**.

4.2.5 Display raw data from the Component Data table

To view the raw data for the displayed component data table, do the following:

Procedure

1. Select **Component Data...** from the **Application** menu.
   The *Component Data* window displays.
2. Click **Raw Data (F4)** or press **F4**.
   The *Select* dialog displays, listing the streams that are associated with the component data table.
3. Double-click the desired stream.

   The *Raw Data* window appears, listing the peak raw data from the last run of the stream represented by the component data table.

   The following data displays for each peak:

Peak No.	Numerical identifier for the peak, listed by the order of discovery.
Ret Time	Time, in seconds, that the component eluted.
Peak Area	The area under the peak.
Peak Height	The maximum height of the peak.
Det	The detector associated with the peak.

Method	Method of peak end detection. Options are: • **1 (Baseline)**: Baseline termination occurs when the absolute values of twelve successive slope calculations are less than the slope sensitivity. • **2 (Fused Peak)**: A fused peak is found if a peak onset is detected subsequent to the discovery of a peak crest and before the baseline termination is detected. • **3 (Last Fused Peak)**: The last peak in a group of fused peaks. • **4 (Tangent Skim)**: Baseline termination occurs when the current level is lower than the Start Baseline value and the slope at the point is negative and smaller in magnitude than the average slope from the beginning of the peak. • **100 (Inhibit)**: An **Inhibit On** event in the **Timed Events** table caused the peak to be terminated. • **300 (Forced Integration)**: An **Integration Off** event in the **Timed Events** table caused the peak to be terminated. • **500 (Summation)**: A **Summation Off** event in the **Timed Events** table caused the peak detection logic to sum together the peak areas under multiple peaks between the **Summation On** and **Summation Off** events and to add an entry for an artificial peak with its area set to the composite area under the constituent peaks.
Baseline Start	The raw detector counts at the start of an integration. For example, if the peak starts at 10 seconds, then the raw detector counts at 10 seconds becomes the **Baseline Start** value.
Baseline End	The raw detector counts at the end of an integration. For example, if the peak ends at 35 seconds, then the raw detector counts at 35 seconds becomes the **Baseline End** value.
Integration Start	Time, in seconds, when integration started.
Integration End	Time, in seconds, when integration stopped.
Peak Width @ Half Height	The width of the peak taken at half of the peak's height.
Partial Peak	If **Yes**, then the Partial Peak value is used in the summation calculation; if **No**, then the **Partial Peak** value is not used in the summation calculation.

4. Click **Close** to return to the *Component Data* window.

4.2.6 Change the default C6+ mixture ratio

The C6+ component that is detected by the GC is actually a mixture of up to four heavy hydrocarbons - from hexane and above. When the energy value and other physical properties are calculated for the mixture, the GC assumes a ratio of heavy hydrocarbon components is used for the C6+ value. By default, there are four pre-defined ratios:

Component	C6/C7/C8 percentages
C6+ 47/35/17	47.466/35.34/17.194
C6+ GPA 2261-99	60.0/30.0/10.0
C6+ 57/28/14	57.143/28.572/14.285
C6+ 50/50/0	50.0/50.0/0

To define a different ratio, do the following:

Procedure

1. Select **Component Data** on the **Application** menu.
   The *Component Data* window opens.

   Note
   You can also click **F6** to open the *Component Data* window.

2. Click the **C6+ component** field, which displays one of the four ratios described above.
   A dropdown list opens.
3. Select **C6+ (User Def.)** from the dropdown list.
4. Click **Edit Percentage (F5)**.
   The *C6+ User Def.* window opens.
5. Enter a composition percentage for each component.
   The **Total Percentage**, which must equal 100 and is displayed on the window's title bar, updates with the sum of the four ratios.
6. Click **OK**.
   The *Component Data* window closes. The edited row on the component data table is updated based on the new ratio.
7. Click **Save** to accept the changes without closing the window; click **OK** to accept the changes and to close the window.

4.2.7 Set up an Analysis/Validation stream to use 2 point calibration (700XA and 1500XA only)

Procedure

1. In the component data table (CDT) associated with the **Analysis/Validation** stream, perform the following:
   a) Change the **Calibration Type** for a component to **2 Pt Calib**.

b) Change the **2 Pt Calib Low CDT** to select CDT associated with **Low** calibration gas.

c) Change the **2 Pt Calib High CDT** to select CDT associated with **High** calibration gas.

2. Run **Single Stream** on the stream associated with the *Low* calibration gas until the readings stabilize.
3. Run **Forced Calibration** on the **Low** stream.
4. Run **Normal Calibration** on the **Low** stream.
5. Run **Single Stream** on the stream associated with the *High* calibration gas until the readings stabilize.
6. Run **Forced Calibration** on the **High** stream.
7. Run **Normal Calibration** on the **High** stream.
   If the Normal Calibrations on the **Low** and **High** streams in Step 4 and Step 7 are successful, the GC is ready to analyze the Analysis/Validation stream using 2-pt calibration constants that are gathered during the *Low* and *High* calibration runs.

   For more information about how 2 pt. calibration works, see How a 2 point calibration works.

How a 2 point calibration works

This section explains what happens in MON2020 and the GC when you select **2 pt. calibration**.

1. When the GC does a calibration on the **Low** stream, it copies the response factor (RF) and calibration concentration (CC) for each component to the columns marked **Multi-Level Calib a** and **Multi-Level Calib b** in the CDT associated with the Analysis/ Validation stream.

2. When the GC does a calibration on the **High** stream, it copies the RF and CC for each component to the columns marked **Multi-Level Calib c** and **Multi-Level Calib d** in the CDT associated with the Analysis/Validation stream.

3. It then computes 2-pt Exponent and RF values for each component using the following formulas and stores them in the **2pt_exp** and **Response Factor** columns in the CDT.

$$\text{2pt exp} = \frac{\ln(d) - \ln(b)}{\ln(c*d) - \ln(a*b)}$$

where

a = Multi-level calib a

b = Multi-level calib b

c = Multi-level calib c

d = Multi-level calib d

4. The **Retention Time** for each component in the **Analysis/Validation CDT** is an average of the retention time from the **Low** and **High** CDTs.
5. During analysis/validation, the concentration is calculated using the formula:

$$RF = \frac{\mathrm{POWER}(c*d,2pt\_exp)}{d}$$

where POWER (y , x) is the power of function y**x

4.2.8 Add a component to a component data table

Note
Modbus registers use row indices instead of component names to extract component-based results. If you add a component in the Component Data Table, the row indices for all the components that elute after the added component shift down by one position. Similarly, if you delete a component, the row indices for all the components after the deleted component shift up by one position. Modbus registers mapped to per-component analysis results should be adjusted so that they use the correct row index.

To add a component to a component data table, do the following:

Procedure

1. Select **Component Data...** from the **Application** menu.
   The *Component Data Tables* window appears, displaying a list of available component data tables.

   Note
   You can also access the component data tables by pressing **F6** or by clicking from the Toolbar.

2. Select the table that you want to view.
   The selected component data table displays.

   Note
   To sort the list of components by detector, and then by retention time, click **Sort RT**.

3. To add the new component below the currently selected component, click **Insert after**.

4. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.2.9 Remove a component from a component data table

To remove a component from a component data table, do the following:

Procedure

1. Select **Component Data...** from the **Application** menu.
   The *Component Data Tables* window appears, displaying a list of available component data tables.

   Note
   You can also access the component data tables by pressing **F6** or by clicking ✚ from the Toolbar.

2. Select the table that you want to view.
   The selected component data table displays.

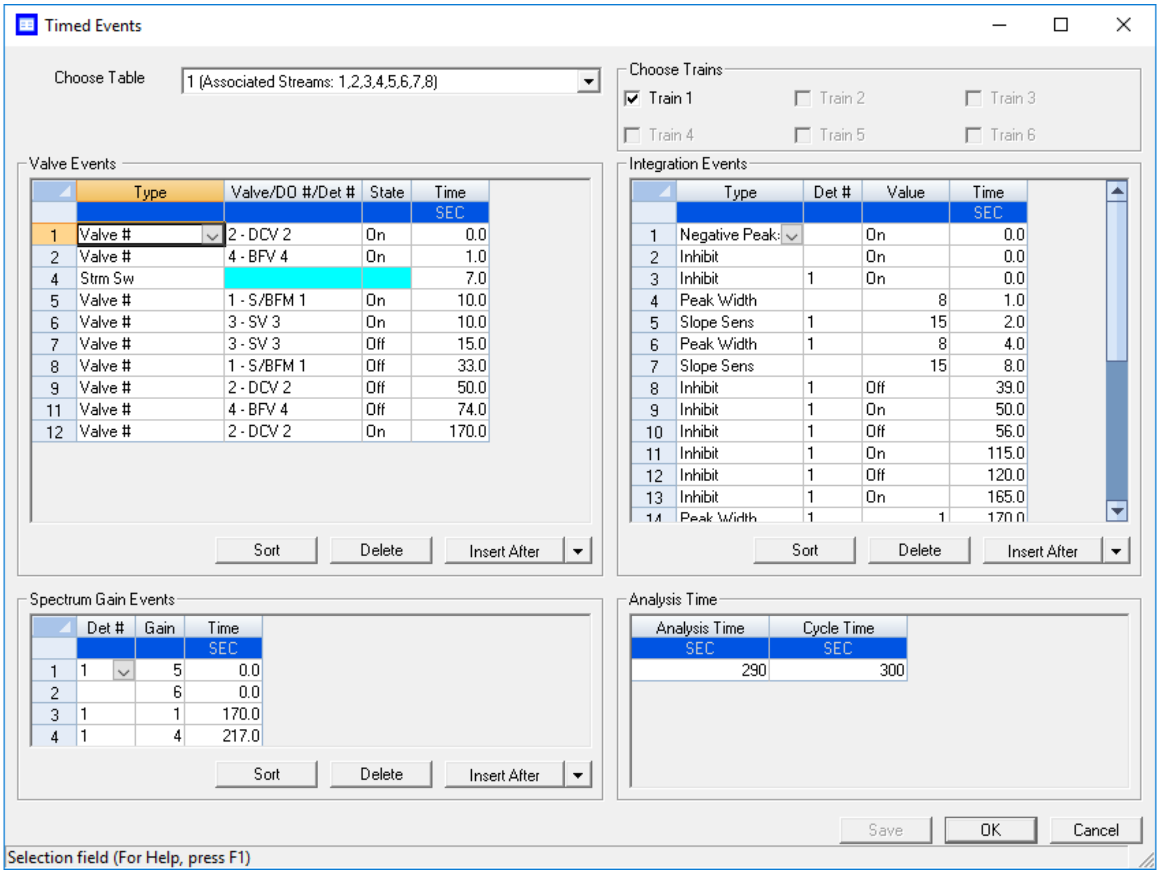
   Note
   To sort the list of components by detector, and then by retention time, click **Sort RT**.

3. Select the component that you want to remove.
4. Click **Delete**.
5. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.3 The timed events tables

Use this function to view and/or edit the timed events tables assigned to and used by particular gas streams. The number of available timed events depends on the GC unit configuration. The standard GC application contains eight timed events tables. The 370XA contains two timed events table.



Note

See Launch the Timed Events table from the Chromatogram Viewer for more information about editing timed events from the Chromatogram Viewer. To assign a timed events table to a stream, see Link a valve with a stream.

Procedure

1. Select **Timed Events...** from the **Application** menu. The *Timed Events Tables* selector window appears, displaying a list of available timed events tables.

   Note

   You can also access the timed event tables by pressing **F5** or by clicking from the Toolbar.

   Note

   If only one timed events table is available, it displays immediately, bypassing the *Timed Events Tables* selector window.

   ---

2. Select the table that you want to view.
   The selected timed events table displays.

   Note
   To sort events by time, click the appropriate **Sort** button.

3. Choose the **Analysis Train** associated with timed event.
4. To see a different timed events table, select it from the *Choose table* dropdown list.

Related information

Edit timed events from the Chromatogram Viewer
Link a valve with a stream

4.3.1 Configure valve events

Valve-related events are grouped on the upper left side of the **Timed Events** window. To edit valve-related events, do the following:

Procedure

1. Select **Timed Events...** from the **Application** menu.
   The **Timed Events Tables** selector window appears, displaying a list of available timed events tables.

   Note
   You can also access the timed event tables by pressing **F5** or by clicking from the Toolbar.

   Note
   If only one timed events table is available, it will display immediately, bypassing the *Timed Events Tables* selector window.

2. Select the table that you want to view.
   The selected timed events table displays.

   Note
   To sort events by time, click the appropriate **Sort** button.

3. Click the cell that you want to edit.
   Depending on the cell type, you are either required to select a value from a dropdown list, or you can type in the value directly. The following list describes the valve-related parameters that are available on the *Timed Events* window.

   Type The type of device associated with the event. You have the following choices:
   - **Valve # -** Valve number.
   - **DO # -** A discrete output.
   - **Strm Sw -** Switches to the next stream in the sequence.

- **FID Gain -** Changes the gain of the FID detector. Available options are **Low** and **High**.
- **FID Auto Zero -** Resets the baseline of the FID detector.
- **Cal Gas Save -** Sets the start or end time for the Cal-Gas Saver™ feature.
- **Hardware Inhibit -** Set to **Off** to start to look for a peak; set to **On** to stop looking for a peak for the valve, discrete output nuumber, or detector number.

Valve/DO # /Det #
Use the drop-down menu to select the specific valve or discrete output that should be used for the event.

This column does not apply if **Strm Sw** was selected from the **Type** column.

State
Turns the valve or discrete output on or off, or sets the FID to high or low.

This column does not apply if **Strm Sw** was selected from the **Type** column.

Time
Indicates the time, in seconds, that the event should occur during the analysis. Enter a value between **0.0** and **3600.0**.

Note
Event times must be less than the analysis time.

4. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.3.2 Configure integration events

Integration-related events are grouped on the upper right side of the Timed Events window. To edit integration-related events, do the following:

Procedure

1. Select **Timed Events...** from the **Application** menu.
The *Timed Events Tables* selector window appears, displaying a list of available timed events tables.

Note
You can also access the timed event tables by pressing **F5** or by clicking from the Toolbar.

Note
If only one timed events table is available, it displays immediately, bypassing the **Timed Events Tables** selector window.

2. Select the table you want to view.

The selected **Timed Events Tables** displays.

Note
To sort events by time, click the appropriate **Sort** button.

---

3. Double-click the cell that you want to edit.
   Depending on the cell type, you will either be required to select a value from a drop-down list, or you will be able to type in the value directly. The following list describes the integration-related parameters that are available on the timed events window.

   Type The type of integration event. You have the following options:

   - Inhibit: Set to **Off** to start to look for a peak; set to **On** to stop looking for a peak.
   - Integrate: Set to **On** and **Off** to set a region in which the area under the trace is computed as a peak regardless of peak onset discovery. The resulting area is added to the raw data as a peak with the retention time set to the integration off time.
   - Summation: Set to **On** and **Off** to set a region in which the area of all peaks found will be added together to create a single summed value. The peaks that contribute to the summation are marked as partial peaks in the raw data table, and the summation total is added to the raw data as a new peak with the retention time set to the summation off time.
   - Slope Sens: The peak starts when the slope of six consecutive points is greater than the slope sensitivity value that is displayed in the **Value** column; the peak ends when the slope of six consecutive points is less than the slope sensitivity value that is displayed in the **Value** column.
   - Peak Width: Each point displayed on the graph represents the average of *N* raw data points, where *N* is the value displayed in the corresponding **Value** column.
   - Single Base: Determines how the baseline is drawn under a peak.
     - **Off**: The baseline is drawn from the point of peak onset to the point of peak termination. This is not necessarily horizontal and if fact usually has a slight slope. (Default)
     - **Bgn**: Draws a horizontal baseline from the point of peak onset to a point above or below the peak termination.
     - **End**: Draws a horizontal baseline from a point above or below the peak onset to the point of peak termination.
   - Fused Ovrrd: Determines how the baseline is drawn when two or more peaks are *fused* together.
     - **Off**: A single baseline is drawn from the onset of the first peak of the fused group to the termination of the last peak of the group. (Default)

   — **On**: Causes a separate baseline to be drawn for each peak in the fused group.

- Negative Peak: Determines whether peak detection will detect inverted peaks, which are peaks that point downward from the baseline. At any given moment you can detect positive or negative peaks but not both at once.
   — **Off**: Detect positive peaks. (Default)
   — **On**: Detective negative peaks.
- SW Auto Zero: Re-zeros the baseline of the trace at the specified time for the specified detector. Used after a FID gain change event or a spectrum gain change event.

Note
The **Single Base** and **Fused Override** events can act together to produce multiple horizontal baselines, at different heights, for a fused peak group.

Det # The ID number of the detector that will be affected by the event. Valid values are:

- 1 - 4 (1500XA)
- 1 - 3 (700XA with integral FPD)

Value The values available depend on the integration type selected from the **Type** column.

- Slop Sens: Enter the number of points, between **1** and **99999**, to be used.

Note
The peak starts when the slope of six consecutive points is greater than the slope sensitivity value that is displayed in the Value column; the peak ends when the slope of six consecutive points is less than the slope sensitivity value that is displayed in the Value column.

- Peak Width: Enter the number of points, between **1** and **99**, to be used.
- Single Baseline: Select **Off**, **End**, **Bgn**.
- SW Auto Zero: No options.
- All other integration types: Select **On** or **Off**.

Time Indicates the time, in seconds, that the event should occur during the analysis. Enter a value between **0.0** and **3600.0**.

Note
Event times must be less than the analysis time.

4. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.3.3 Configure spectrum gain events

The spectrum gain feature graphically magnifies the size of a chromatogram's peaks. The data itself is not affected, only the presentation of the data. This feature can be useful for viewing peaks that are otherwise too small to examine or so large that the top of the peak can not be seen.

Spectrum gain-related events are grouped on the lower left side of the *Timed Events* window. To edit spectrum gain-related events, do the following:

Procedure

1. Select **Timed Events...** from the **Application** menu.
   The *Timed Events Tables* selector window appears, displaying a list of available timed events tables.

   Note
   You can also access the timed event tables by pressing **F5** or by clicking from the Toolbar.

   Note
   If only one timed events table is available, it displays immediately, bypassing the *Timed Events Tables* selector window.

2. Select the table that you want to view.
   The selected timed events table displays.

   Note
   To sort events by time, click the appropriate **Sort** button.

3. Click n the cell that you want to edit.
   Depending on the cell type, you are either required to select a value from a dropdown list, or you can type in the value directly. The following list describes the spectrum gain-related parameters that are available on the timed events window.

   Det # The ID number of the detector that will be affected by the event. Select **1** or **2**.

   Gain Enter a value between **0** and **64**. This is the exponent value in the following expression: $2^{gain\ value}$. For example, a value of 0 means no gain is applied; a value of 5 means the gain is increased to 32 times it's original value.

   Time Indicates the time, in seconds, that the event should occur during the analysis. Enter a value between **0.0** and **3600.0**.

   Note
   Event times must be less than the analysis time.

4. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.3.4 Set the cycle and analysis time

To set the cycle and analysis time, do the following:

Procedure

1. Select **Timed Events...** from the **Application** menu.
   The *Timed Events Tables* selector window appears, displaying a list of available timed events tables.

   Note
   You can also access the timed event tables by pressing **F5** or by clicking on the toolbar.

   Note
   If only one timed events table is available, it displays immediately, bypassing the *Timed Events Tables* selector window.

   ---

2. Select the table that you want to view. The selected timed events table displays. The **Analysis Time** section is located on the lower right side of the *Timed Events* window.

   Note
   To sort events by time, click the appropriate **Sort** button.

   ---

3. Click the **Analysis Time** cell and enter a value, in seconds, between **0** and **3600**.
4. Click the **Cycle Time** cell and enter a value, in seconds, between **0** and **3620**.

   Note
   The cycle time must be at least 10 seconds greater than the analysis time.

   ---

5. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.3.5 Add an event to the Timed Events Table

To add an event to one of the **Valve Events**, **Integrate Events**, or **Spectrum Gain Events** tables on the *Timed Events* window, do the following:

Procedure

1. Select **Timed Events...** from the **Application** menu.
   The *Timed Events Tables* selector window appears, displaying a list of available timed events tables.

Note
You can also access the timed event table by pressing **F5** or by clicking on the toolbar.

Note
If only one timed events table is available, it will displays immediately, bypassing the *Timed Events Tables* selector window.

2. Select the table you want to view.
   The selected timed events table displays.

   Note
   To sort events by time, click the appropriate **Sort** button.

3. To add the event below the currently selected event, click **Insert after**.
   The new event is added to the table.
4. Define the event as necessary, and enter a new **Time** for the event.
5. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.3.6 Remove an event from the Timed Event Table

To remove an event from one of the **Valve Events**, **Integrate Events**, or **Spectrum Gain Events** tables on the *Timed Events* window, do the following:

Procedure

1. Select **Timed Events...** from the **Application** menu.
   The *Timed Events Tables* selector window appears, displaying a list of available timed events tables.

   Note
   You can also access the timed event tables by pressing **F5** or by clicking on the toolbar.

   Note
   If only one timed events table is available, it displays immediately, bypassing the *Timed Events Tables* selector window.

2. Select the table you want to view.
   The selected timed events table displays.

   Note
   To sort events by time, click the appropriate **Sort** button.

3. Select the event you want to delete.
4. Click the appropriate **Delete** button.

4.4 The validation data tables

Use the validation data table to hold information about the composition of the gas that is used in the validation run. During a validation run, the GC performs a test analysis of a gas with a known component composition to verify that the GC is working properly.

To add a component to the validation data table, do the following:

Procedure

1. Select **Validation Data** from the **Application** menu. The ***Validation Data*** window displays.

   Note
   If ***No Validation Data Table*** (VDT) is in use (or configured), then MON2020 shows **NO VDT table in use** message. Go to Streams screen and configure the Validation stream by setting the **Usage** as **Validate**.

   ---

2. If the appropriate table is not displayed, select it from the **Choose Table** dropdown list.
3. Select a new variable by clicking on the appropriate drop-down list under the **Variable** column.
4. To update the nominal value automatically when component data is updated, check **Link with Component Data**.
5. Enter the component's concentration percentage in the appropriate cell under the **Nominal Value** column.

   To ensure accuracy, this value, which is compared to the GC's analysis results at the end of the validation run, should be taken from the documentation provided with the gas cylinder.

6. Enter a value in the appropriate **Percent Deviation** cell.

   Example

   If you enter **10** in this field, and the GC's analysis result for the component differs from the component's *Nominal Value* by ±10% or more, then an alarm is generated.

7. To copy a component variable to the next empty row, click **C + Copy (F8)**.

   The component is incremented to the next available component—for example, from ammonia to benzene. The **Nominal Value** and **Percent Deviation** values are also copied.

   Note
   You can select and copy more than one component at a time.

   If there are no components available, instead of copying the component, MON2020 displays the following message:

8. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.5 Calculations

MON2020's **Calculations** submenu allows you to activate and define how the output of standard or user-defined chromatograph analysis data is used in various calculations.

You can configure the following types of calculations:

- **Control -** Allows you to designate, by streams, the standard calculations that should be performed from the analysis data.
- **Averages -** Allows you to designate, by streams and components, averages of standard calculations GC should perform.
- **User Defined -** Allows you to create and edit customized calculations using analysis data. See Custom calculations for more information.
- **Dewpoint -** This optional feature allows you to calculate dewpoint temperatures and to estimate the cricondentherm, which is the temperature above which no liquid will form at any pressure.
- **Metrology Options -** This feature is only available if the **Metrology Type** inside the GC is set to *GOST*. On this screen, you can edit the **RF Deviation Check** and the **RF Stability Check**.
  - **RF Deviation Check -** Allows you to select *Standard* or *GOST*. The Standard method checks response factor (RF) deviation as a percentage change from the previous calibration. The GOST method computes the range of RF during the calibration and compares it to the permissible range per GOST 32371.7-2008

— **RF Stability Check -** Allows you check the periodic accuracy of the analyzer per Equation 15 GOST 31371.7-2008. If you select *Enable* and run the calibration, the RF Range is compared to a narrower permissible range per Equation 15 GOST 31371.7-2008.

4.5.1 Set standard calculations by stream

To designate, by streams, the standard calculations—for example, mole percent, liquid volume, gas density, Wobbe index, etc.—that should be performed from the analysis data, do the following:

Procedure

1. Select **Applications** → **Calculations** → **Control...**.
   The *Control Calculations* window appears.
2. Select a check box for a given stream to turn the calculation ON for that stream; click to clear the check box for a given stream to turn the calculation OFF for that stream.

   You can use the arrow keys to move from one stream cell to another, and you can press the space bar to toggle the calculation on or off.
3. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

Note
To save the information on this screen to a tab-delimited text file, right-click the table and select **Save Sheet** from the right-click menu.

Note
To copy the information on this screen to the clipboard so that it can be pasted into another application, such as Microsoft® Word or Microsoft® Excel, right-click the table and select **Copy** to clipboard from the right-click menu. The Streams and Calibration data is exported to the clipboard.

Note
To print the information on this screen, right-click the table and select **Print Sheet** from the right-click menu.

4.5.2 Edit averages calculations

To designate, by streams and components, averages of standard calculations the GC should perform, do the following:

Procedure

1. Select **Applications** → **Calculations** → **Averages...**.
   The *Averages Calculations* window appears.
2. Select a new variable by clicking on the appropriate dropdown list under the **Variable** column.

For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.

Note
The averages will be assigned in the default Modbus® map in the order that they appear in the table.

3. Select the type of average to be calculated from the **Average Type** dropdown list. You have the following options:

Unused An average is not be calculated for the variable.

Hourly Averages are calculated every hour at the time displayed in the **Reset Time** field from the **Averages Reset** section.

24 Hour Averages start and stop once a day at the time displayed in the **Reset Time** field from the **Averages Reset** section.

Weekly Averages start and stop once a week at the time displayed in the **Reset Time** field and on the day entered in the **Weekday** field, from the **Averages Reset** section.

Monthly Averages will start and stop once a month at the time displayed in the **Reset Time** field and on the day of the month entered in the **Day** field, from the **Averages Reset** section.

Variable Averages will start and stop for the duration entered in the **Hours** column starting from the reset time.

Everyrun No average is stored; instead, the current value at the end of the run is stored.

4. To set a custom start and stop time for a particular calculation, set the **Average Type** for the calculation to **Variable** and enter the desired time in the **Hours** cell.

Note
The custom **Hours** setting overrides the **Reset Time** setting.

5. Set the appropriate **Restart Flag** to one of the following options:

NO The current average is not reset.

CUR When **CUR** is selected and saved from the drop-down menu, the current average is cleared (reset immediately) and a new average calculation starts. It is used during debugging or troubleshooting to exclude bad runs from averages.

6. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

Note
To save the information on this screen to a tab-delimited text file, right-click the table and select **Save Sheet** from the right-click menu.

Note
To copy the information on this screen to the clipboard so that it can be pasted into another application, such as Microsoft Word or Excel, right-click on the table and select **Copy to clipboard** from the right-click menu.

Note
To print the information on this screen, right-click the table and select **Print Sheet** from the right-click menu.

Also see View Archives, Copy Stream Settings, and Copy Component Settings.

4.5.3 View an archive of averages for a given variable

To view an archive of averages for a given variable, do the following:

Procedure

1. Select **Applications** → **Calculations** → **Averages...**.
   The *Averages Calculations* window appears.
2. Click on the desired variable to view its history.
3. Click **Archive**.
   The archive data screen appears.

Note
To copy the information in this table to the clipboard so that it can be pasted into another application such as Microsoft Word or Excel, select the cells that you want to copy and then press **CTRL + C** to copy the information to the clipboard.

4.5.4 Copy an average calculation configuration

To copy the average calculation configuration from a highlighted row and apply them to the next row, do the following:

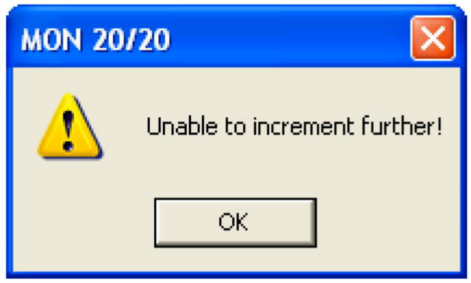
Procedure

1. Select **Applications** → **Calculations** → **Averages...**.
   The *Averages Calculations* window appears.
2. Select the row that you want to copy.
3. Click **S + Copy**.

   The stream is copied to the next row and incremented to the next available stream —for example, from Stream 2 to Stream 3.

Note
You can select and copy more than one stream at a time.

If there are no streams available, instead of copying the stream, MON2020 displays the following message:



4. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.5.5 Copy component settings

To copy the component settings from a highlighted row and apply them to the next row, do the following:

Procedure

1. Select **Applications** → **Calculations** → **Averages...**.
   The *Averages Calculations* window appears.
2. Select the row that contains the component that you want to copy.
3. Click **C + Copy**. The component is copied to the next row and incremented to the next available component—for example, from ammonia to benzene.

   Note
   You can select and copy more than one component at a time.

   If there are no components available, instead of copying the component, MON2020 displays the following message:

4. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.5.6 User-Defined Calculations

Prerequisites

You can use a previously-created user-defined calculation when building new calculations by doing the following:

Procedure

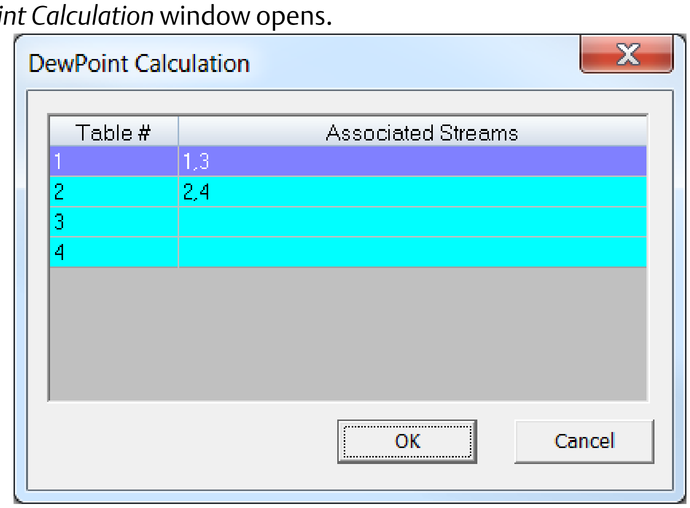
1. From the **Application** → **Calculations** → **User-defined...** → **Edit (F2)** menu, click the **System Variables** dropdown list.
2. Click the **Calculations** arrow and select **User Defined Calculations** from the drop-down list that contains the full list of available calculations.
3. Select the **User-Defined Variable** from the Variables drop-down list.
4. Click **Done**. The User *Calculations* selection menu closes. The selected system variable displays in the *System Variables* drop-down box and in the *Expression Editor*. See Custom calculations in the MON2020 for information on user-defined calculations.

4.5.7 Set the dewpoint calculation

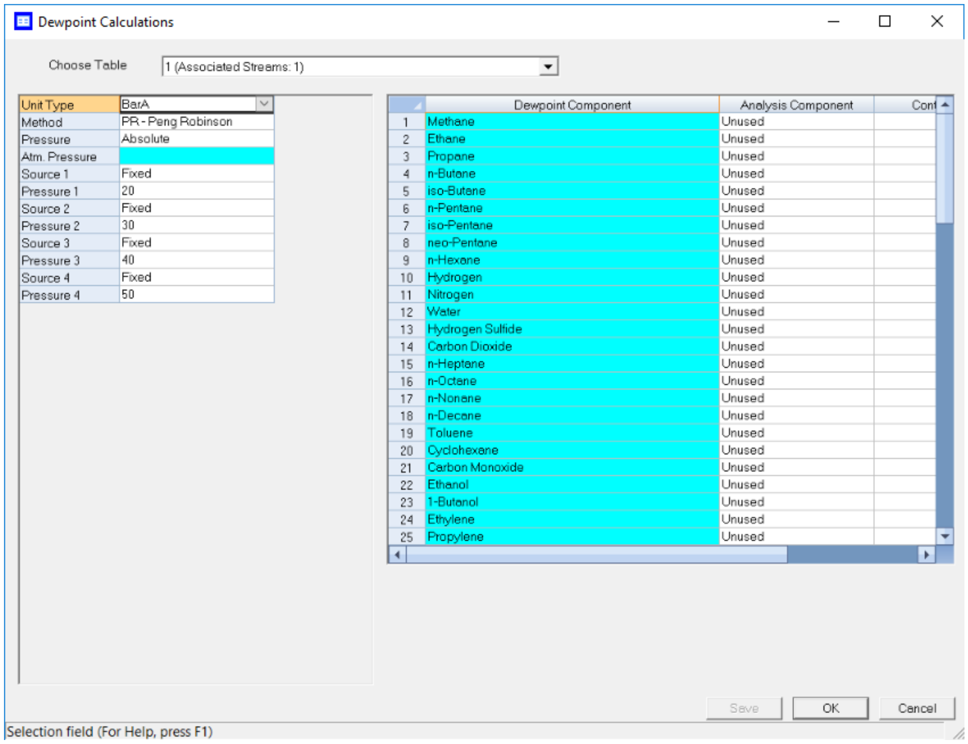
This feature applies to C9+ GCs only. You can use this window to edit the options for calculating the dew point.

Procedure

1. Select **Application** → **Calculations** → **Dewpoint**.
   The *DewPoint Calculation* window opens.



2. Click the row with the component data table you want to edit.
   The larger *Dewpoint Calculations* window opens.



3. Select the unit of measurement from the **Unit Type** dropdown list. The options are:
   - **BarA**
   - **PSIA**
4. Select the dewpoint calculation method from the **Method** dropdown list. The options are:
   - **PR - Peng Robinson**
   - **RKS - Redlich Kwong Soave**
5. Select the type of pressure from the **Pressure** dropdown list. The options are:
   - **Absolute**
   - **Gauge**
6. If you selected **Gauge** in the **Pressure** field, enter the atmospheric pressure in the **Atm. Pressure** field.
7. Select the type for the first source from the **Source 1** dropdown list. The options are:
   - **Fixed**: If you select this option, you can enter a number in the **Pressure 1** field or you can enter the number via Modbus.
   - **Analog Input 1** or **Analog Input 2**: If you select one of these options, MON2020 automatically enters the number from the **Current Value** field in the *Analog Input* window.

Note
See Manage your gas chromatograph's analog inputs for more information about analog inputs.

8. If you selected **Fixed** in the **Source 1** field, enter a number in the **Pressure 1** field.
9. If you want to calculate more than one pressure, repeat steps 7 and 8 for Source 2.

Note
You may enter up to four pressure values.

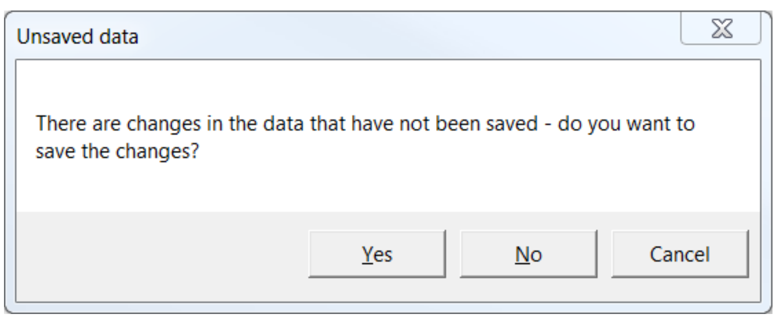
10. For each component in the **Dewpoint Component** column, select a component to be analyzed in the **Analysis Component** column. The options are:
    - C2's
    - Propane
    - Propylene
    - C4's
11. For each component, enter the percentage of the **Dewpoint Component** that is made up of the corresponding **Analysis Component** in the **Contribution** column.

    Write the percentage as a decimal value between `0.000000` and **1.000000**.

Note
The default values are correct for a C9+ analysis, in which all of the C9+ is assumed to be n-Nonane.

12. When you have finished entering the information for each component you want to measure, click **Save** to save your changes.
13. Click **OK** to close the *Dewpoint Calculations* window.

    To close the *Dewpoint Calculations* window without saving your changes, click **Cancel**. If you make changes and then click **Cancel**, the *Unsaved Data* dialog box opens.



If you change your mind and want to save your changes, click **Yes**. If you don't want to save your changes, click **No**. To return to the *Dewpoint Calculations* window, click **Cancel**.

4.6 Set the calculation method to GPA or ISO

MON2020 can be configured to perform GPA calculations, ISO calculations, or both.

To set which type of calculation method MON2020 should use, do the following:

Procedure

1. Select **Applications** → **Calculations** → **Configuration...**.
   The *Calculations Configuration* window displays.
2. Select the method from the **Calculation Method** dropdown list.

   The options are:

   - **GPA**
   - **ISO**
   - **GPA & ISO** (Rosemount 700XA and Rosemount 1500XA only)

3. Select an ISO Version.

   The options are:

   - **ISO6976: 1995**
   - **ISO6976: 2016**

4. Select a unit of measure from the **Base Pressure Units** dropdown list.

   The options are:

   - **PSIA**
   - **BarA**
   - **kPaA**

5. If you set the calculation method to **GPA** or **GPA & ISO**, you can also set the following options:

   - **GPA Calculator Units** (U.S. or S.I.)
   - **GPA Pressure Display** (PSIA, BarA, or kPaA)

6. If you set the calculation method to **ISO** or **GPA & ISO**, you can also set the following options:
   - **ISO Pressure Display (BarA or kPaA)**
   - **Primary Temperatures**
     — 0C/0C
     — 0C/15C
     — 0C/20C
     — 15C/0C
     — 15C/15C
     — 15C/20C
     — 20C/0C
     — 20C/15C
     — 20C/20C
     — 25C/0C
     — 25C/15C
     — 25C/20C
     — 0C/15.55C
     — 15C/15.55C
     — 20C/15.55C
     — 25C/15.55C
     — 15.55C/0C
     — 15.55C/15C
     — 15.55C/15.55C
     — 15.55C/20C

     Note
     Updating this field also updates the primary values—*Sum Factor Pri*, *CV Superior Pri* and *CV Inferior Pri*—that display in the *Component Data* table.
   - **Secondary Temperatures** (same options as **Primary Temperatures**)

     Note
     Updating this field also updates the secondary values—*Sum Factor Sec*, *CV Superior Sec* and *CV Inferior Sec*—that display in the *Component Data* table.
   - **Primary CV Units**
     — kilojoules per cubic meter (kJ/m^3)
     — kilocalories per cubic meter (kCal/m^3)
     — kilowatt hours per cubic meter (kWhrs/m^3)

- megajoule per cubic meter (MJ/m^3)
- megajoule per kilogram (MJ/kg)
- megajoule per mole (MJ/mole)

- **Secondary CV** Units (same options as **Primary CV Units**)
- **AGA 8 Method**
  - AGA8 1994 (Detail)
  - AGA8 2017 (Detail)
  - AGA8 2017 (GERG-2008)

7. Click **OK** to accept the changes and close the window.

Note
Click **Save** to accept the changes without closing the window.

4.7 Set alarm limits

Use this function to set threshold limits for GC analysis data. When a limit is exceeded, an alarm is activated and logged. See View the alarm log for information on Alarm Logs.

To set an alarm limit for a variable, do the following:

Procedure

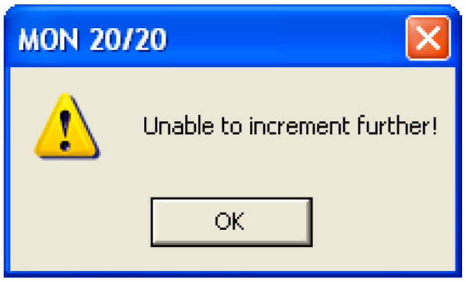
1. Select **Applications** → **Limit Alarms...**.
   The *Limit Alarms* window displays.
2. Select a new variable by clicking on the appropriate dropdown list under the **Variable** column.

   For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.
3. To change the alarm type, click the appropriate cell under the **Type** column.

   You have the following the options:
   - **Off -** Turns off the alarm.
   - **All -** Use high and low limits to activate alarms. Enter the lower limit value in the appropriate cell under the *Low Limit* column. Enter the upper limit value in the appropriate cell under the **High Limit** column.
   - **High -** If the status value of the variable rises above the value set in the corresponding **High Limit** column, the high limit alarm is activated.
   - **Low -** If the status value of the variable falls below the value set in the corresponding **Low Limit** column, the low limit alarm is activated.
4. If you want a discrete output to activate when the alarm triggers, click on the appropriate cell under the **DO # to Set** column and select it from the dropdown list.
5. If you want to inhibit averaging when the alarm triggers, select the **Inhibit Avg** checkbox.

6. To customize the text of the alarm message, enter the new text in the appropriate cell under the *User Alarm Text* column.
   When the alarm triggers, this text will display under the *Alarm Message* column on the *Unack/Active Alarms* window.
7. To configure the Alarm Delay, enter the duration of the alarm condition, in seconds, before the Halt command should be executed. Valid values are between 0 and 1800.
8. To apply the current limit alarm conditions to the stream, click **S + Copy**.
   The conditions are applied to the next available stream--for example, from Stream 2 to Stream 3.

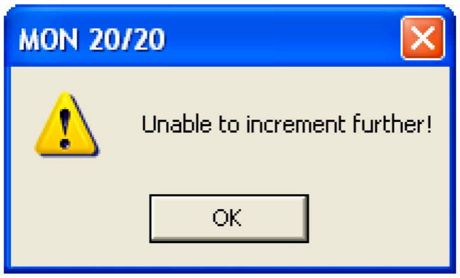
   If there are no streams available, instead of copying the stream, MON2020 displays the following message:



9. To apply the current alarm conditions to the next available component, click **C + Copy**.

   The alarm limit conditions are copied to the next available component--for example, from ammonia to benzene.

   If there are no more components available, instead of copying the component, MON2020 displays the following message:



10. If you want the GC to halt after the current analysis when an alarm is triggered, do the following:
    a) Select the **Halt on Alarm?** checkbox.
    b) Enter a value in the *Delay* column for the length of time, in seconds, that the alarm condition should exist before the alarm is displayed.
       You can enter a value between **0** and **1800**.
11. Select the checkbox to enable the Associated Analysis Clock 1 alarm(s).
12. Select the checkbox to enable the Associated Analysis Clock 2 alarm(s).

13. Select the checkbox to enable the Associated Analysis Clock 3 alarm(s).
14. Select the checkbox to enable the Associated Analysis Clock 4 alarm(s).
15. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

Related information

Create a stream sequence for a detector

4.8 Discrete alarms

To edit discrete alarms, do the following:

Procedure

1. Select **Discrete Alarms...** from the **Applications** menu.
   The *Discrete Alarms* window displays.
2. Click the **Variable** cell. Select the discrete input of interest under **Discrete Inputs** → **Current Value**.
3. If you want a discrete output to activate when the alarm triggers, click on the appropriate cell under the **DO # to Set** column and select it from the dropdown list.
4. If you want to inhibit averaging when the alarm triggers, select the **Inhibit Avg** checkbox.
5. To enable the alarm, select the checkbox under the **Is Alarm Enabled?** column; to disable the alarm, deselect the checkbox under the **Is Alarm Enabled?** column.
6. To halt the GC after the current analysis when an alarm is triggered, select the **Halt on Alarm?** checkbox.
7. To set the amount of time that should pass between the recognition of an alarm condition and the display of the alarm, enter a value between **0** and **1800** in the **Delay** column.
8. Select the **Associated Analysis Clock 1?** checkboxes to configure the discrete alarms for Analysis Clock 1.
9. Select the **Associated Analysis Clock 2?** checkboxes to configure the discrete alarms for Analysis Clock 2.
10. To customize the text of the alarm message, enter the new text in the appropriate cell under the **Alarm Message** column.
    When the alarm triggers, this text displays under the **Alarm Message** column on the *Unack/Active Alarms* window.
11. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.9 View System Alarms

To edit system alarms, do the following:

Procedure

1. Select **System Alarms...** from the **Applications** menu.
   The *System Alarms* window displays.
2. If you want a discrete output to activate when the alarm triggers, click the appropriate cell under the **DO # to Set** column and select it from the dropdown list.
3. If you want to inhibit averaging when the alarm triggers, select the **Inhibit Avg** checkbox.
4. To enable the alarm check the checkbox under the **Is Alarm Enabled?** column; to disable the alarm, uncheck the checkbox under the **Is Alarm Enabled?** column.
5. To set the amount of time that should pass between the recognition of an alarm condition and the display of the alarm, enter a value between **0** and **1800** in the **Delay** column.
6. To halt the GC after the current analysis when an alarm is triggered, check the **Halt on Alarm?** checkbox.
7. Select the checkbox to enable the Associated Analysis Clock 1 alarm(a).
8. Select the checkbox to enable the Associated Analysis Clock 2 alarm(s).
9. Select the checkbox to enable the Associated Analysis Clock 3 alarm(s).
10. Select the checkbox to enable the Associated Analysis Clock 4 alarm(s).
11. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.10 Streams

Use this feature to configure and validate the streams.

MON2020 allows you to do the following:

- Assign component data tables, validation data tables, timed events tables and associated Analysis Clock to a particular stream.
- Designate a stream for analysis, validation, or calibration.
- Control automatic calibration or validation parameters, such as the total number of runs, runs to be averaged, starting times, and time between automatic calibrations and baseline runs.

4.10.1 Create a stream sequence for a detector

A stream sequence defines the order of stream analysis for a detector. You can create three sequences; each can be activated by a digital input device or via a Modbus link. To create or edit a stream sequence, do the following:

Procedure

1. Select **Stream Sequence...** from the **Application** menu.
   The **Stream Sequence** window displays.
2. Each stream sequence table can contain up to three sequences - a primary, or default, sequence and two auxiliary sequences.
3. Double-click the appropriate cell under the **Strm Seq Name** column to give your new sequence a name or to edit the name of an existing sequence. Type in the new name.
4. To define which discrete input should activate the sequence, select it from the dropdown list of the appropriate cell under the **Seq Activate DI** column.

   Note
   No two sequences can be activated by the same discrete input.

5. To define the order of analysis, double-click the appropriate cell under the **Seq of Strms** column and enter the numbers for the streams, separated by commas, that should be analyzed.

   Example

   For example **1,2** would continuously analyze stream 1 followed by stream 2. A sequence of **1,1,1,2** would analyze stream 1 three times and then analyze stream 2 every fourth time in the sequence.
6. For each Analysis Clock, configure the different stream sequence from the **Application** → **Analysis Clock Configuration** screen.
7. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.10.2 Designate how a stream is used

To assign a function to a stream, do the following:

Procedure

1. Select **Streams...** from the **Application** menu.
   The *Streams* window opens.
2. For the appropriate stream, select one of the following options from the **Usage** column:
   - **Unused** - Not used
   - **Cal** - Calibration
   - **Analy** - Analysis
   - **Validate** - Validation

   If you select **Cal** or **Validation**, you can also edit the following parameters:

Auto	If checked, the calibration or validation will be automatic.
Total Runs	The number of runs, from **1** to **10**, to make for each calibration.
Avg Runs	The number of most-recent calibration runs to average; for instance, if five calibration runs are performed and **Avg Run** is set to 3, then the last three runs of the five will be used to average the calibration results.
Start Time	The time the first automatic calibration should be performed.
Interval	The number of hours between automatic calibrations.
Stream Valve	Options are Unused, Calibration, Stream 1, Stream 2, Stream 3.
Stream Valve ON to Select	If this option is checked the GC will purge the sample through the sample loop when the stream valve is set to ON; if this option is not checked the GC will purge the sample through the sample loop when the stream valve is set to OFF.

3. To save the changes and close the window, click **OK**.

Note
To save the changes without closing the window, click **Save**.

4.10.3 Link a valve with a stream

Multiple streams can be linked to the same valve to allow for different uses of that stream—for example, the calibration gas can be assigned to both calibration and validation runs.

Procedure

1. Select **Streams...** from the **Application** menu.
   The *Streams* window opens.
2. Go to the **Stream Valve** column for the corresponding stream and select the appropriate valve from the dropdown list.
   You can view details about the valves in the dropdown list in the *Valves* window.
3. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.
4. If the sample stream is selected when the valve is on, check the corresponding **Stream Valve On to Select** checkbox; if the sample stream is selected when the valve is off, uncheck the corresponding **Stream Valve On to Select** checkbox.

4.10.4 Assign a data table to a particular stream

To assign a component data table, a validation data table, or a timed events table to a stream, do the following:

Procedure

1. Select **Streams...** from the **Application** menu.
   The *Streams* window opens.
2. For the appropriate stream, if **Usage** is set to **Cal** or **Analy**, select a component data table from the **CDT** column and a timed events table from the **TEV** column.
3. For the appropriate stream, if **Usage** is set to **Validate**, select a component data table from the **CDT** column, a timed events table from the **TEV** column, and a validation data table from the **VDT** column.
4. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.10.5 Change the base pressure for a stream

Base pressure is used for the GPA/AGA physical properties calculations.

Note
The base pressure for the ISO calculation is always **101.325 kPaA**.

To change the base pressure for a stream, do the following:

Procedure

1. Select **Streams...** from the **Application** menu.

   The *Streams* window opens.

2. For the appropriate stream, double-click on the corresponding cell under the **Base Pressure** column and enter a new value.

   Note
   The GPA/AGA calculations can also be done at up to three additional optional pressures. Use the **Optional Pressure 1**, **Optional Pressure 2**, and **Optional Pressure 3** columns for this purpose.

3. To save the changes and close the window, click **OK**.

   Note
   To save the changes without closing the window, click **Save**.

4.10.6 Add a customized sequence to a stream

Use the *Edit Custom Logic* window to create a customized sequence of events that can be executed during stream switching.

You can create up to eight customized sequences.

You must create two sub-sequences: one to activate the stream and the other to deactivate the stream. Set up the cycle time so that while in auto sequence mode there is adequate time for the stream with custom logic to activate and deactivate.

To add a customized sequence to a stream:

Procedure

1. Select **Streams** from the **Application** menu.
   The *Streams* window opens
2. For the chosen stream, select **Custom Logic #** from the dropdown list in the **Stream Valve** column.

   The **Edit Custom Logic** button becomes active.
3. Click **Edit Custom Logic**.

   The *Edit Custom Logic* window opens.

4. Add events to the **Events - Activate Stream** table and the **Events - Deactivate Stream** table.
    a) Select a row in the table.
    b) Click **Insert After**.
    A row is added to the table.
    c) Select the event **Type**.

    The event **Type** options are:

    - **Valve #**: Select a stream valve to turn on or off.
    - **DO#**: Select a discrete output (DO) to turn on or off.
    - **Delay**: Introduce a delay in seconds.
    - **Check Status**: Select a discrete input and a desired state for the discrete input. If the desired state is not present, a Sample Fluid Unavailable alarm is triggered.
    - **Check Analog Input Low**: MON2020 reads the analog input and generates an alarm if the analog input's value is lower than the threshold set in the associated **State/Value** column.
    - **Check Analog Input High**: MON2020 reads the analog input and generates an alarm if the analog input's value is higher than the threshold set in the associated **State/Value** column.

    Note
    The **Check Status**, **Check Analog Input Low**, and **Check Analog Input High** events are only available for activating the stream.

    d) Select the **Valve/DO#**:

    The **Valve/DO#** is the name of the analog input or discrete output to activate or deactivate.

    e) Select the **State/Value**.

    The **State/Value** is the desired state or value at which you want the stream to activate or deactivate.

5. When you have finished entering all the events, click **OK** to save your changes and close the *Edit Custom Logic* window.
6. Click **OK** to save the changes to the *Streams* window and close it.

The Custom Logic sequence is executed before starting the analysis if:

- The Purge stream for 60 seconds checkbox is selected on the *Single Stream*, *Calibration*, or *Validation* window.
- You start a single stream analysis, a calibration, or a validation from *Idle* mode on a stream that has custom logic applied and

If several delays are set up in the Custom Logic sequence, then the delays will be executed before executing the next Custom Logic event.

If you start the GC in auto sequence mode:

- When the stream that has Custom Logic is the next stream to be turned on, the customized sequence of activation events will be executed when the current stream's **Stream SW** event is reached.
- When the current stream is a stream that has Custom Logic and the next stream is a different stream, the customized sequence of deactivation events will be executed when the current stream's **Stream SW** event is reached.

4.11 Analytical Train Configuration

Use the Analytical Train Configuration for multiple Analysis Clocks to assign the Valve, DO and Detectors to each Train and then that Train is assigned to respective Analysis Clock.

Note
This feature is not available for Rosemount 370XA GCs.

To configure the settings,

Procedure

1. Assign the usage of Valves and DO to Analyzer# on **Hardware** → **Valves**, **Hardware** → **Detectors** and **Hardware** → **Discrete Outputs** screens.
2. Open the **Application** → **Analytical Train Configuration** screen
3. Click **Discrete Output** and **Valves** buttons. Assign the respective Discrete Outputs, Valve, and Detectors to each Analytical Train. The Valves and DO's are assigned with Usage as Analyzer# displayed on this screen and, for Detectors, it displays all of the available Detectors on this screen. You cannot configure the same Detector, Valve or DO to multiple Trains.
4. On the **Application** → **Timed Event** screen, filter the configured events as per Train selection by selecting **Train#** checkbox.

4.12 Analysis Clock Configuration

Use this feature to configure a single analysis or multiple analyses.

Note
This feature is not available for Rosemount 370XA GCs.

One Analysis can be considered as one virtual GC that has an independent Sample Loop, Analytical Path and Timed Event tables.

Multiple analyses can run independently to analyze multiple streams at the same time. The number of analyses are set at factory per the mechanical configurations.

Mechanical configurations	Description
Trains 1 - 6	The configured **Trains** that are used by the Analysis
Default Stream Sequence	Sets the default sequence to be used by the indicated Analysis during auto-sequencing. To create a new stream sequence or to edit an already-created sequence, click **Stream Sequence** .
Purge Duration	The amount of time, in seconds, to purge the stream before starting an analysis, calibration, or validation run. The default value is **60 SEC**. Purging allows sample gas to flow through the sample loop prior to beginning the run.
Energy Value Check	If enabled, the GC analyzes the calibration gas as an unknown stream and computes its energy value. The GC then compares this value to the Cal Gas Cert CV and determines if the calibration gas' energy value is within the CV Check Allowed Deviation. If it isn't, the GC triggers the Energy Value Invalid alarm. The following conditions must be met before the GC can perform a EV Check: • The **EV Check** flag in the System window must be enabled. • At least one stream must be set up in the Streams window as a calibration stream and the **Auto** flag for this stream must be enabled. The EV Check is performed under any of the following circumstances: • During a warm start that follows a power failure during normal operation. The GC waits for the heater and electronic pressure controller to reach their respective set points and stabilize. It then analyzes the calibration gas as an unknown stream and identifies the peaks. If all the component peaks are identified, the GC computes the calibration gas' energy value and performs the EV Check. • After a successful calibration, the GC computes the gas' energy value with the new response factors and performs the EV Check

1. Press **Insert** to add a new Analysis.
2. Press **Delete** to delete an Analysis.

Related information

Analytical Train Configuration

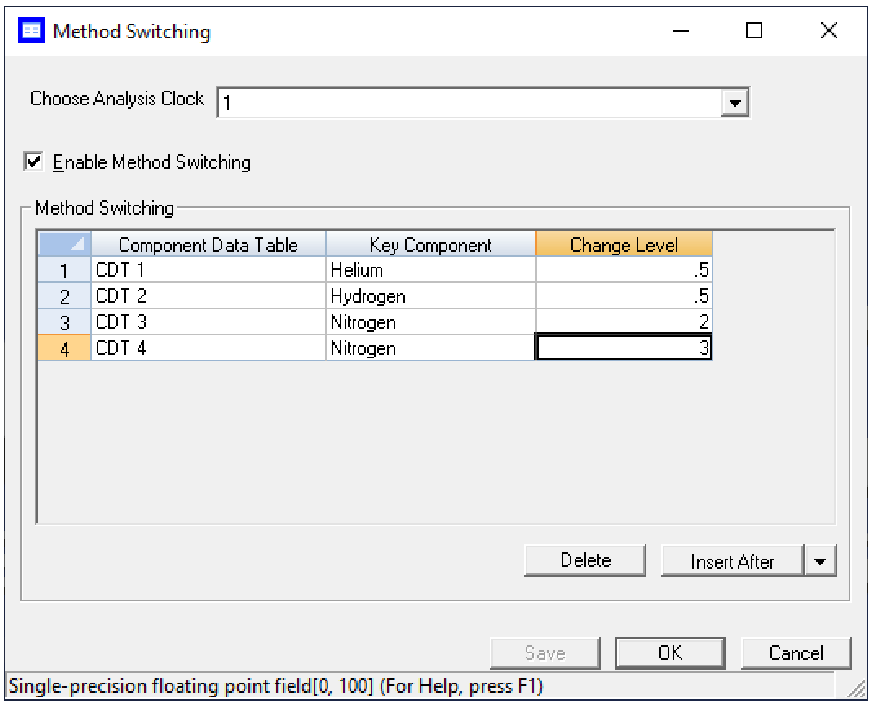
4.13 Method Switching

The purpose of the *Method Switching* screen is to change the component data table (and associated cal gas) as you measure different percentages of your target gas. The Method Switching function tells the GC which component data table (CDT) to use when the measured gas is at a certain percentage.

This screen is only available for the Rosemount 700XA and Rosemount 1500XA GC. To access the ***Method Switching*** screen, select **Application** → **Method Switching...** menu.

To enable the method switching functionality from this screen, select the checkbox.

By default, this screen shows the available number of methods or CDTs (see The component data tables). For example, if four CDTs are supported, the screen will display four rows.



Note
Choose Analysis Clock - Option to select the Analysis Clock for GC's configured for more than one analysis clock.

The screen contains the following three columns.

Name	Description
Component Data table	Number of the component data table: CDT 1 to CDT 4. These names are fixed.
Key Component	This column shows a dropdown list of components associated with the CDT. For example, for the first row, it will display a list of components from the CDT 1 table.
Change Level	The change level is a value between 0 and 100. At the end of the analysis, if the calculated Mole % value of the component in the first row is greater than the value in the **Change Level** column, the GC uses CDT 1 to process the results for the next analysis. If the first key component does not exceed the value in the **Change Level** column, the system checks to see if the Mole % value of the second key component exceeds the value in the second row of the **Change Level** column. If this is the case, the system uses CDT 2 to process the results for the next analysis. If the Mole % value does not exceed the **Change Level** value in the second row, the system compares the Mole % value of the third component to the value in the third column of the **Change Level**.

4.14 Communication

Use this window to configure the GC's ports. To access the *Communication* settiings, select **Application** → **Communication** menu.

The following table lists the *Communication* window's parameters:

Note
During Modbus® serial communications, MON2020 can differentiate between RTU or ASCII protocols; however, the **data bit**, **stop bit**, and **parity settings** still need to be manually configured.

Name	Description
Label	The name of the group of settings.
ModBus Id	Identification number of the Modbus device associated with the port.
Baud Rate	The baud rate setting. Options are: 1200, 2400, 9600, 19200, 38400, and 57600. For high performing PCs, set the baud rate to 38400. If you experience a communications failure at this rate, set the baud rate to 9600. Baud rate settings less than 9600 may result in information delivery that is unacceptably slow.
Data Bits	The number of data bits. Options are 7 and 8 (default).
Stop Bit	The number of stop bits. Options are 1 (default) and 2.
Parity	The parity check method. Options are None (default), Even and Odd.
RTS OFF Delay	Comm Port handshaking RTS delay time.
RTS ON Delay	Comm Port handshaking RTS delay time.
Response Delay	The Response Delay time before checking for an active Clear to Send (RTS/CTS).
MAP File	Points to the file that contains the registers that should be used.
Port	Allows you to set the type of protocol to be used for the port: RS232, RS422 or RS485 or Ethernet. If the port is set to RS422 or RS485, additional configuration steps are required; see Connect directly to a PC using the GC's serial port for more information. If Ethernet prococol is configured, the Default_Map is selected.

Related information

Create or edit registers
Create a MAP file
Assign a variable to a register
View or edit scales

4.14.1 Create or edit registers

You can map GC data to Modbus registers and generate MAP files, which can then be associated with communications ports.

For a list of variable assignments made to all registers, consult the **Communication** section of the *GC Config Report*, which can be accessed from the **Logs/Reports** menu.

To map GC data to Modbus registers, do the following:

Procedure

1. Select **Communication...** from the **Application** menu.
   The *Communication* window appears.
2. Click **Registers**.
   The *Modbus Map Editor* window appears.
3. To view or edit registers that are contained in an existing MAP file, click the **Select MAP File** dropdown list and select the appropriate file.
   The registers will load into the table.

   Note
   Not all parts of a MAP file can be edited. The parts that can be edited are white; the read-only parts are turquoise.

4. To edit a cell, double-click it.
   You can edit the following parameters:

   Register Number — Displays the number for the Modbus registers that will be polled by a connected data acquisition system.

   Data Type — Describes the type of data that is stored in the register.

   Options are:
   - **BOOLEAN**: Has two states ON (**1**) or OFF (**0**).
   - **INT**: 16-bit unsigned integer.
   - **LONG**: 32-bit signed integer

     Note
     If the Modbus data type is **Usr Modbus**, each long value uses two registers; if the data type is **SIM2251**, each long value uses a single register.

   - **ULONG**: 32-bit unsigned integer
   - **FLOAT**: 32-bit floating point.

     Note
     If the Modbus data type is **Usr Modbus**, each floating point value uses two registers; if the data type is **SIM2251**, each floating point value uses a single register.

   - **Bitmap(INT)**

- **Bitmap(LONG)**
- **SCALED_FP1**

  ...
- **SCALED_FP32**

If one of the scaled floating point options is chosen, the **Zero Scale** and **Full Scale** values for that option will display in the appropriate column cells.

SIM_2251 registers use only the **FLOAT** data type.

Variable(s) Displays the variable(s) whose value is to be stored in the register. To change the variable, see Assign a variable to a register.

Record Number The **Record Number** is enabled for Archive type of variables. The User selects which archive record's data needs to output over Modbus®. Record number 1 is referred as recent record and maximum value is referred as oldest record.

Access Determines whether the register will be read-only (**RD_ONLY**) or read/write (**RD_WR**).

Format The date and time format for related variables.

Options are:

- MMDDYY
- DDMMYY
- YYMMDD
- hhmmss
- hhmm
- DD
- MM
- YY
- YYYY
- WW
- hh
- mm
- ss

5. To copy the component settings from a highlighted row and apply them to the next row, click **C + Copy**.

   This feature also increments the **Component** value to the next available component (e.g., incrementing from ammonia to benzene), per the GC application. An error message displays when the last available component is reached.
6. To copy the stream settings from a highlighted row and apply them to the next row, click **S + Copy**.

This feature also increments the Stream value to the next available stream (e.g., incrementing from Stream 2 to Stream 3), per the GC application. An error message displays when the last available stream is reached.

7. To delete a row, click **Delete Row**.
8. To insert a row, click **Insert Row**.
9. To check for conflicting register assignments, click **Check**.

   MON2020 will check the table and if it encounters a conflict it displays the following message:

   Review the table to locate the conflicting registers and change one.

10. To save the MAP file, do the following:
    a) Click **Save**.
    MON2020 validates the table for errors—for instance, ensuring that no two registers share a register number. If any errors are found MON2020 displays the appropriate error message. When no errors are found, the *Save As* window displays.
    b) Click **OK**.

4.14.2 Create a MAP file

Procedure

1. Select **Application** → **Communication...** from the menu.
   The *Communication* window appears.
2. Click **Registers**.

   The *Modbus Map Editor* window appears.
3. Click **New**.
4. Create a new **MAP** file name.
5. From the **Register Type** drop-down list, select the type of PLC emulation protocol you want to use.

   You have two options: **User_Modbus**, which is a PLC emulation Modbus protocol that can use scaling to convert floating point numbers to integers, and **SIM_2251**, which emulates the Daniel 2500 communication protocol and is a simulation of the 2251 GC controller.

6. Click **Ok**.

7. If you want to base a new MAP file on an existing MAP file, you have two options:
   - a. Click **Open from PC**.

     b. Select the file you want to import and click **Open**.
   - Select an existing MAP file from the drop-down list. Click **Save As**.

8. To edit a cell, double-click it.

   You can edit the following parameters:

   Register Number — Displays the number for the Modbus registers that will be polled by a connected data acquisition system.

   Data Type — Describes the type of data that is stored in the register.

   Options are:
   - **BOOLEAN**: Has two states ON (1) or OFF (0).
   - INT: 16-bit unsigned integer.
   - LONG: 32-bit signed integer

     Note
     If the Modbus data type is **Usr Modbus**, each long value uses two registers; if the data type is **SIM2251**, each long value uses a single register.
   - **ULONG**: 32-bit unsigned integer
   - **FLOAT**: 32-bit floating point.

     Note
     If the Modbus data type is **Usr Modbus**, each floating point value uses two registers; if the data type is **SIM2251**, each floating point value uses a single register.
   - **Bitmap(INT)**
   - **Bitmap(LONG)**
   - **SCALED_FP1**

     ...
   - **SCALED_FP32**

   If one of the scaled floating point options is chosen, the **Zero Scale** and **Full Scale** values for that option will display in the appropriate column cells.

   SIM_2251 registers use only the **FLOAT** data type.

   Variable(s) — Displays the variable(s) whose value is to be stored in the register. To change the variable, see Assign a variable to a register.

   Record Number — Select the Archive Record's data needed to output over Modbus®.

Note
Record number 1 is referred as recent record and max value is referred as oldest record.

Select archive type of variables and their maximum records as shown in the table.

Archive type	Maximum records supported (as default)
Analysis	20
Calibration	35
Final Calibration	35
Validation	35
Final Validation	35
Hourly Averages	168
Daily Averages	35
Weekly Averages	53
Monthly Averages	12

Access Determines whether the register will be read-only (**RD_ONLY**) or read/write (**RD_WR**).

Format Use the **Format** drop-down menu to configure the date/time. Options are:

- MMDDYY
- DDMMYY
- YYMMDD
- hhmmss
- hhmm
- DD

9. To copy the component settings from a highlighted row and apply them to the next row, click **C + Copy**.

   This feature also increments the Component value to the next available component (e.g., incrementing from ammonia to benzene), per the GC application. An error message displays when the last available component is reached.

10. To copy the stream settings from a highlighted row and apply them to the next row, click **S + Copy**.
    This feature also increments the Stream value to the next available stream (e.g., incrementing from Stream 2 to Stream 3), per the GC application. An error message displays when the last available stream is reached.
11. To delete a row, click **Delete Row**.

12. To insert a row, click **Insert Row**.
13. To check for conflicting register assignments, click **Check**.

    MON2020 checks the table, and if it encounters a conflict, it displays the following message:

    Review the table to locate the conflicting registers and change one.

14. To save the MAP file to a PC, do the following:
    a) Click **Save**.
       MON2020 validates the table for errors—for instance, ensuring that no two registers share a register number. If any errors are found, MON2020 displays the appropriate error message. When no errors are found, the *Save As* window displays.
    b) To save the MAP file to a PC, click **Save File to PC**.
    c) Click **OK**.

4.14.3 Assign a variable to a register

To assign a variable to a register, from the *Modbus Map Editor* window, double-click the appropriate **Variable(s)** cell and select a new variable.

For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.

4.14.4 View or edit scales

MON2020 uses scales to convert floating point values to integers.

MON2020 supports 32 different scales that are labelled **SCALED_FP1** through **SCALED_FP32**. The **Data Type** column on the *Modbus Map Editor* window displays the type of scale, if any, that is being used for a particular register. If a scale is being used, the **Zero Scale** and **Full Scale** columns display the lower and upper values for the chosen scale.

To view the list of scales, select **Application** → **Communication...** → **Registers** and click **Edit Scales** from the *Modbus Map Editor* window. The *Edit Scales* window displays all of the scales, along with each scales lower and upper values.

Use the following formula to calculate the variable's integer value:

$$integer = \left(\frac{R_F - R_Z}{S_F - S_Z}\right)(D_{fp} - S_Z) + R_Z$$

where:

- R_F
- = Full Scale, range
- R_Z = Zero Scale, range
- S_F = Full Scale, scale
- S_Z = Zero Scale, scale
- D_{fp} = Floating Point value

For example:

- *RF* = 65535
- *RZ* = 0
- *SF* = 100 (from SCALED_FP1)
- *SZ* = 0 (from SCALED_FP1)
- *Dfp* = 97.13 (scaled percent for methane)
-

$$63654 = \left(\frac{65535 - 0}{100 - 0}\right)(97.13 - 0) + 0$$

To edit or create your own scale, do the following:

Procedure

1. Select **Application** → **Communication...** → **Registers** → **Edit Scales** from the **Modbus Map Editor** window.
   The **Edit Scales** window displays.
2. Double-click the appropriate cell and enter a new value.
3. To configure bitmap intergers (16 bit), long, (32 bit), Boolean, an floting data points, see Create a MAP file, Step 8.
4. Click **OK** to save the changes and close the window.

4.15 Configure an Ethernet port

To configure an Ethernet port, select **Ethernet Ports...** from the **Application** menu. The *Ethernet Ports* window displays.

The following list describes the Ethernet ports' parameters:

Ethernet 1 IP Address	IP address to use to connect to the GC's RJ-45 Ethernet port.
Ethernet 1 Subnet Mask	Subnet mask for the IP address of the GC's RJ-45 Ethernet port.
Ethernet 1 Gateway	Gateway address for the GC's RJ-45 Ethernet port.
Ethernet 2 IP Address	IP address to use to connect to the GC's wired Ethernet port.
Ethernet 2 Subnet Mask	Subnet mask for the IP address of the GC's wired Ethernet port.
Ethernet 2 Gateway	Gateway address for the GC's wired Ethernet port.
LOI IP Address	IP address for the GC's LOI.

4.16 Local Operator Interface variables

Use this window to select and configure up to 25 GC parameters that you would like to monitor using the LOI's *Display* mode.

To set an LOI parameter, do the following:

Procedure

1. If the GC is configured with more than one Analysis Clock, use the **Choose Analysis Clock** drop-down menu and select an analysis clock from the list.
2. Select **LOI Status Variables...** from the **Application** menu.
   The *LOI Status Variables* window appears.
3. Select a variable by clicking on the appropriate drop-down list under the *Variable* column.

   Note
   For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.

4. To copy the stream settings from a highlighted row and apply them to the next row, click **S + Copy**.

   This feature also increments the *Stream* value to the next available stream—for instance, incrementing from Stream 2 to Stream 8, per the GC application.

5. To copy the component settings from a highlighted row and apply them to the next row, click **C + Copy**.

   This feature also increments the **Component** value to the next available component —incrementing from ammonia to benzene, per the GC application.

6. Enter a value in the **Precision** column to indicate the number of decimal places to display for this particular variable.

The range of possible **Precision** values is between **0** and **6**.

7. Click **OK** to save the changes and close the window.

Note
To save the changes without closing the window, click **Save**.

4.17 Map a FOUNDATION Fieldbus variable

To map a GC variable to a FOUNDATION Fieldbus process variable (PV), do the following:

Procedure

1. Take the GC out of service from the host.
2. Open MON2020 and select **FFB PV Mappings...** from the **Application** menu.
   The *FFB PV Mappings* window displays.
3. Select a new variable by clicking on the appropriate drop-down list under the **Variable** column.

   Note
   For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.

   Note
   The **PV Value** column displays the current value of the GC variable indicated in the **Variable** column.

   Note
   The **PV Status** column indicates the state of the data displayed in the **PV Value** column. If the data was generated under predictable conditions without any alarms, then the statuses for all mapped process variables are **Good**; if the data was generated under unpredictable conditions—that is, if any alerts were triggered during the analysis cycle—then the statuses for all mapped process variables are **Bad**, because the GC cannot guarantee the results of the analysis.

4. To copy the stream settings from a highlighted row and apply them to the next row, click **S + Copy**.

   This feature also increments the **Stream** value to the next available stream—for instance, incrementing from Stream 2 to Stream 8, per the GC application.

5. To copy the component settings from a highlighted row and apply them to the next row, click **C + Copy**.

   This feature also increments the **Component** value to the next available component—incrementing from ammonia to benzene, per the GC application.

6. If necessary, enter a date or time format into the **Date/Time Format** column.
7. Click **OK** to save the changes and close the window.

Note
To save the changes without closing the window, click **Save**.

5 Logs and reports

The options in the Logs/Reports menu allow you to do the following:

- View alarm, system, and event logs.
- Keep a maintenance record.
- Keep a parameter record.
- View relevant drawings and diagrams.
- View and print trend data.
- Create or view a Repeatability Certificate.
- View the GC Configuration report.
- View archived analysis, calibration, and averages reports.
- Configure how and when certain reports are printed.
- View and print a stream's Molecular Weight Vs Response Factor.

5.1 Alarms

Use this menu to view and/or clear unacknowledged and active alarms, as well as to view the Alarm Log.

- Unack/Active Alarms
- Alarm Log
- Clear/Ack All Active Alarms

5.1.1 View unacknowledged and active alarms

To view unacknowledged and active alarms, select **Logs/Reports** → **Alarms** → **Unack/ Active Alarms....** The *Unack/Active Alarms* window displays.

Note
Double-clicking on the GC Status Bar from the main window also displays the *Unack/Active Alarms* window.

There are three display options for viewing alarms on this window:

- To view both unacknowledged alarms and active alarms, check **All Alarms**. This is the default display option.
- To view unacknowledged alarms only, check **Unacknowledged Alarms**.
- To view active alarms only, check **Active Alarms**.

The *Unack/Active Alarms* window supplies the following data for each alarm:

Status	Indicates whether the alarm has been acknowledged or not.
State	Indicates whether the alarm is **ACTIVE** or **INACTIVE**.

Date	Indicates the date and time at the GC when the alarm condition began.
Alarm Message	Describes the alarm condition.
Type	Indicates whether a high limit or low limit alarm was triggered: • **HI** means a high limit alarm was triggered. • **LO** means a low limit alarm was triggered.
Limit	Indicates the value that was set as the trigger for the alarm.
Value	Indicates the current status value being output by the device.
Name	Indicates the name of the variable that triggered the alarm.

Note

Discrete alarms do not display **Type**, **Limit**, or **Value** data.

5.1.2 Acknowledge and clear alarms

There are three ways to acknowledge and clear alarms:

- To acknowledge and clear alarms without viewing them, select **Logs/Reports** → **Alarms** → **Clear/Ack All Active Alarms**.
- Another method to acknowledge and clear alarms without viewing them is to click from the Toolbar.
- To view the alarms before acknowledging and clearing them, select **Logs/Reports** → **Alarms** → **Unack/Active Alarms...** . The *Unack/Active Alarms* window provides several options:
  - To acknowledge an alarm, select it and then click **Ack Selected (F2)**.

    Note

    An alarm continues to display as an active alarm until that value is no longer in the alarm state.

  - To acknowledge all the alarms displayed on the window, click **Ack All (F3)**.
  - To acknowledge all the alarms displayed on the window and then remove them from the table, click **Clear/Ack All (F4)**.

    Note

    If an alarm is cleared before the condition has been resolved, MON2020 redisplays the alarm entry as an active alarm.

5.1.3 View the alarm log

The Alarm Log records every alarm triggered from the GC. The *Alarm Log* window gives you the option of viewing the total list of alarms, or a date-filtered list.

To view the Alarm Log, select **Logs/Reports** → **Alarms** → **Alarm Log...**. The *Alarm Log* window displays.

The *Alarm Log* window supplies the following data for each alarm:

Date Time Indicates the date and time at the GC when the alarm condition began.

Alarm Message Describes the alarm condition.

State Indicates whether the alarm is **SET** (active) or **CLR** (inactive).

Type If applicable, indicates whether a high limit or low limit alarm was triggered:

- **High** means a high limit alarm was triggered.
- **Low** means a low limit alarm was triggered.

Limit If applicable, indicates the value that was set as the trigger for the alarm.

Value If applicable, indicates the current status value being output by the device.

Unit If applicable, unit of measurement for the displayed values.

Name Indicates the name of the variable that triggered the alarm.

User Indicates which user made the change.

Note
Discrete alarms do not display **Type**, **Limit**, or **Value** data.

To view a list of alarms, do the following:

Procedure

1. To view all alarms, select the **All** checkbox. Otherwise, select the **Select Range** checkbox and use the **Start Date** and **End Date** dropdown lists to select a date range.
2. Click **Read Records**.
   The list of alarms displays with the most recent alarm at the top and the oldest alarm at the bottom. The alarms are also sorted and color-coded by time so that alarms that occurred simultaneously are grouped together.
3. Click **Save** to save the list.

   The list can be saved in the following formats:

   - Tab-Delimited (.txt)
   - Comma-Delimited (.csv)
   - Microsoft Excel (.xls)
   - HTML File (.html)

- XML File (.xml)

4. Click **Close** to close the window.

5.2 The maintenance log

Use this function to manually record and track maintenance activities performed on a given GC unit.

To view the maintenance log, select **Maintenance Log...** from the **Log/Reports** menu.

5.2.1 Add an entry to the maintenance log

Use this window to manually record and track maintenance activities performed on a given GC unit.

To view the maintenance log, select Maintenance Log on the Log/Reports menu.

To add an entry to the maintenance log, do the following:

Procedure

1. Select **Maintenance Log...** from the **Log/Reports** menu.
   The **Maintenance Log** window displays. Log entries are sorted with the most recent on top
2. Click **Insert At Top**.
   A new row appears on the maintenance log table. The **Date** field contains the GC's current date and time, and is editable.
3. Double-click the *Message* cell and enter the relevant information for the log entry.

   Note
   To edit an old log entry, click it and the cell becomes editable.

4. Click **OK** to save the changes and close the window.

   Note
   To save the changes and keep the window open, click **Save**.

5.2.2 Delete an entry from the maintenance log

To delete an entry from the maintenance log, do the following:

Procedure

1. Select **Maintenance Log...** from the **Log/Reports** menu.
   The **Maintenance Log** window displays.
2. Select the entry that you want to delete.
3. Click **Delete**.
   The entry is removed from the maintenance log.
4. Click **OK** to save the changes and close the window, .

Note
To save the changes and keep the window open, click **Save**.

5.3 The parameter list

Use this feature to keep a record of the hardware components and associated parameters for a given GC.

The parameter list is a Microsoft Excel ® document that can be viewed and edited from MON2020. Before attempting to edit the document, be sure to review it first to get an idea of what sorts of data it contains.

The parameter list may contain one or all of the following pages:

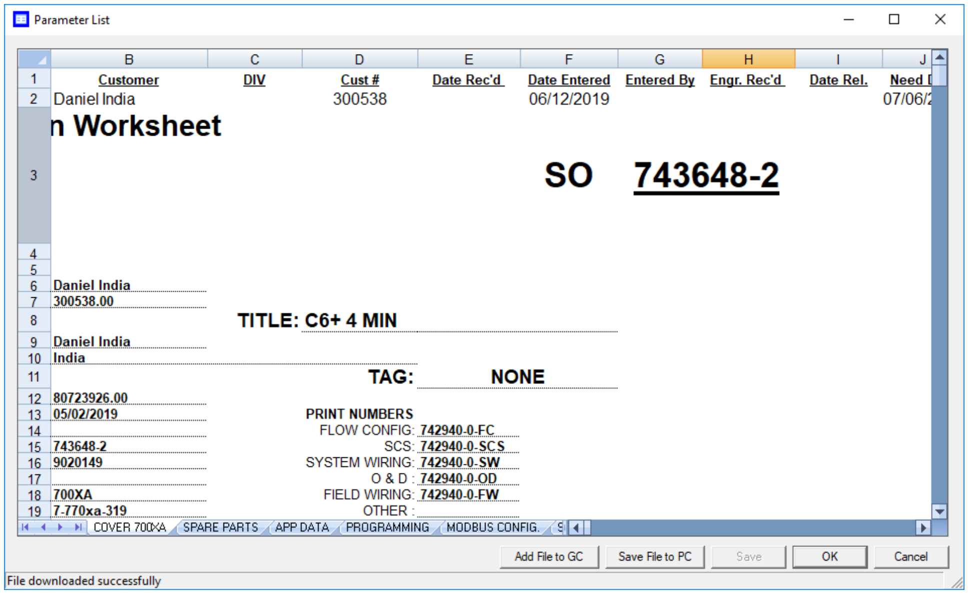
- Cover Sheet
- Spare Parts
- TE Rework
- App Data
- Programming
- Modbus® Config
- Strm Composition and Application
- Col Data
- Cal Std Data
- Stamp

5.3.1 View and edit the parameter list

To view and edit the parameter list, do the following:

Procedure

1. Select **Parameter List...** from the **Logs/Reports** menu.



   The *Parameter List* window displays.

2. Make your changes to the parameter list.
3. Use the scroll tabs to view the data.

   Parameter list tabs:

   - Cover Sheet
   - Spare Parts
   - TE Rework
   - App Data
   - Programming
   - Modbus® Config
   - Strm Composition and Application
   - Col Data
   - Cal Std Data
   - Stamp

4. Click **OK** to save the changes and close the window.

Note
To save the changes and keep the window open, click **Save**.

5.3.2 Adding a parameter list file to the GC

The parameter list is a Microsoft Excel® document and is therefore saved with the .xls extension.

To import a parameter list, do the following:

Procedure

1. Select **Parameter List...** from the **Logs/Reports** menu.
   The *Parameter List* window displays.
2. Click **Add File to GC**.
   The *Open* dialog displays.
3. Locate and select the *Parameter List* that you want to import.
4. Click **Open**, and the document is imported and displayed in the *Parameter List* window.
5. Click **OK** to save the changes and close the window.
   This version of the parameter list will now be displayed by default.

   Note
   To save the changes and keep the window open, click **Save**.

5.3.3 Export a Parameter List

Prerequisites

To export the **Parameter List**, do the following:

Procedure

1. Click **Save File to PC**. The *Save as* dialog opens.
2. Navigate to the folder to which you want to save the file.
3. Click **Save**. The **Parameter List** will be saved with the .xls extension.
4. To save the changes and keep the window open, click **Save**.
5. To save the changes and close the window, click **OK**. This *Parameter List* displays by default whenever **Parameter List** is selected on the **Logs/Reports** menu.

5.4 Drawings and documents

Use this feature to access GC-related drawings and documents such as flow diagrams, the GC's sales order, assembly drawings, and electrical diagrams. These items can be stored on the GC in the following formats:

- PDF
- TIFF
- GC Trend file (.xtrd)
- XA CGM file (.xcgm)
- XA Comparison file (.xcpm)
- GC Configuration file (.xcfg)

5.4.1 View drawings or documents

To view a drawing, do the following:

Procedure

1. Select **Drawings/Documents...** from the **Logs/Reports** menu.
   The *Drawings/Documents* window displays.
2. Select the drawing to view from the drop-down list.

   Note
   If no list displays under the *Drawings/Documents* label, and there is no **+** beside the label, then this GC does not contain any documents.

3. Click **File Viewer (F3)**.
   The drawing displays.
4. Click **Close** to exit the window and to return to the *Drawings/Documents* window.

5.4.2 Add files to the GC

To add files, such as new or updated drawings, to the GC, do the following:

Procedure

1. Select **Drawings/Documents...** from the **Logs/Reports** menu.
   The *Drawings/Documents* window displays.
2. Click **Add File(s) to GC**.
   The *Open* dialog displays.
3. Locate and select the file to add to the GC.
4. Click **Open**.
   The file is saved to the GC, and the *Drawings/Documents* list is updated.

5.4.3 Delete files from the GC

To delete drawings from the GC, do the following:

Procedure

1. Select **Drawings/Documents**... from the **Logs/Reports** menu.
   The *Drawings/Documents* window displays.
2. Select the file to delete from the GC.
3. Click **Delete File from GC**.
   The *Confirm* message displays.
4. Click **Yes**.
   The file is deleted from the GC, and the *Drawings/Documents* list is updated.

5.5 The event log

Use this function to track the changes that are made to the various tables within the GC.

To view the event log, select **Logs/Reports** → **Event Log...**. The *Event Log* window displays.

The *Event Log* window gives you the option of viewing the total list of change events, or a date-filtered list of events. The *Event Log* window supplies the following data for each event:

User ID	Indicates which user made the change.
Date	Indicates the date at the GC when the event occurred.
Time	Indicates the time at the GC when the event occurred.
Event Message	Provides a description of the event.
Old Value	If applicable, indicates the value in the cell before the change.
New Value	If applicable, indicates the value in the cell after change.

To view the list of change events, do the following:

Procedure

1. To view all events, select the **All** checkbox. Otherwise, select the **Select Range** checkbox and use the **Start Date** and **End Date** dropdown lists to select a date range.
2. Click **Read Records**.
   The list of events display with the most recent event at the top and the oldest event at the bottom. The events are also sorted and color-coded by time so that events that occurred simultaneously are grouped together.
3. To save the list, click **Save**.

   The list can be saved in the following formats:

   - Tab-Delimited (.txt)
   - Comma-Delimited (.csv)
   - Microsoft Excel (.xls)
   - HTML File (.html)
   - XML File (.xml)

5.6 Reports

This function allows you to immediately display, print, or store pre-configured reports of GC analysis data. Data is reported in real-time from the GC or from saved files.

5.6.1 Report types

MON2020 can generate the following types of reports:

Analysis Displays a list of the components that were detected, based on raw data. Displays a list of calculations for each component, based on the table located at **Application** → **Calculations** → **Control...**. See Set standard calculations by stream for more information.

There are two types of analysis reports: *Analysis (GPA)* and *Analysis (ISO)*. See Figure 5-1 for a sample *Analysis (GPA)* report. See Figure 5-2 for an example Analysis (ISO) report.

Calibration Displays a list of the components that were detected, along with each component's calibration concentration, raw data value, new response factor, and new retention time. See Figure 5-3 for a sample report.

Final Calibration The *Final Calibration* report displays the list of components along with each component's old and new response factors and each component's old and new retention times, based on the averaged data. See Figure 5-4 for a sample report.

Validation For the most recent validation cycle, displays the nominal value, allowed percent deviation, and the measured value of each variable in the **Validation Data** table. See Figure 5-5 for a sample report.

Note
If the actual deviation is beyond the allowed amount, then the row will be flagged with an asterisk (*).

Final Validation For the most recent validation run, shows the nominal value, allowed percent deviation, and the average value of each variable in the **Validation Data** table. See Figure 5-6 for a sample report.

Note
If the actual deviation is beyond the allowed amount, then the row is flagged with an asterisk (*).

Export Data Generates a report from the configured variables. See Generate Export Data Report for more information.

Raw Data Displays a list of data for each peak that was detected during the run, including the retention time, peak area, and peak height. See Figure 5-8 for a sample report.

Every Run Displays a configurable list of calculations after each run. See Edit averages calculations for more information.

Hourly Displays a configurable list of average calculations each hour, beginning at the time set in the *Average Calculations* window at **Application** → **Calculations** → **Averages...** . See Edit averages calculations for more information.

24 Hour Displays a configurable list of average calculations each day, beginning at the time set in the *Average Calculations* window at **Application** → **Calculations** → **Averages...** . See Edit averages calculations for more information.

Weekly Displays a configurable list of average calculations each week, beginning on the day set in the *Average Calculations* window at

	Application → **Calculations** → **Averages...** . See Edit averages calculations for more information.
Monthly	Displays a configurable list of average calculations each month, beginning on the day of the month set in the *Average Calculations* window at **Application** → **Calculations** → **Averages...** . See Edit averages calculations for more information.
Variable	Displays a configurable list of average calculations every hour at the time entered in the *Hours* column in the *Average Calculations* window at **Application** → **Calculations** → **Averages....** See Edit averages calculations for more information.
Auto Valve Timing (Rosemount 370XA only)	Displays an *Auto valve Timing* report.
Module Validation (Rosemount 370XA only)	Displays a *Module Validation* report.

Each report begins with the following header information:

Date-Time	The GC's date and time when the report was generated.
Analysis Time	The duration, in seconds, of the analysis. Can be configured at **Application** → **Timed Events....** See Set the cycle and analysis time for more information.
Cycle Time	The duration, in seconds, between two consecutive analyses. Can be configured at **Application** → **Timed Events....** See Set the cycle and analysis time for more information.
Firmware revision	The firmware revision, checksum, date and value is displayed.
Stream	The stream that was analyzed. Selected as part of the report generation process. See View a saved report for more information.
Mode	Displays the operational status of the detector.
Cycle Start Time	The date and time that the cycle started.
Analyzer	Name of the GC that generated the data used for the report.
Stream Sequence	The identification and order of the streams that were analyzed. Can be configured at **Application** → **Stream Sequence....** See Create a stream sequence for a detector for more information.
Company:	Company name assosiacted with the GC.
Firmware Revision, Checksum:	Displays the installed firmware version, the checksum and date the log was generated.

Note
If you get an FTP error when trying to save a report, it may be an issue with your firewall blocking the FTP messages between the GC and MON2020. Your IT department needs to open the following TCP ports in the firewall.

- TCP Ports 10,000 - 13,000 (MON2020 proprietary protocol)
- TCP Ports 20, 21, 22 (SSH, FTP)
- TCP Port 502 (Modbus)
- TCP Port 990 (Secure Connection)

Figure 5-1: Analysis (GPA) sample report

```
                                       Analysis Report (GPA)

Date-Time :  11/04/2019 12:10:06 PM  Analysis time :    20.00  sec    Cycle Time        :  30.00 sec
Stream    :  Stream 1                Mode          :    Analysis      Cycle Start Time  :  10/23/2019 06:53:52 AM
Analyzer  :                          Stream Seq.   :    1
Company   :

Firmware Revision, Checksum :  4.0.0, 2019/10/22, 0x65fcb1c2

Component Name              Mole Percent   Dry Gross    Dry Net     Relative
                                                 BTU        BTU   Gas Density

Methane                       74.2940%        752.15     677.26       0.4115
Nitrogen                       6.0000%          0.00       0.00       0.0580
Carbon Dioxide                 6.0000%          0.00       0.00       0.0912
Ethane                         8.0000%        141.92     129.83       0.0831
Propane                        3.0000%         75.66      69.62       0.0457
i-Butane                       0.1500%          4.89       4.51       0.0030
Butanes                        0.3000%          9.79       9.04       0.0060
i-Pentane                      0.0500%          2.01       1.85       0.0012
n-Pentane                      0.1000%          4.02       3.72       0.0025
n-Hexane                       0.0300%          1.43       1.32       0.0009
n-Heptane                     80.0000ppm        0.44       0.41       0.0003
n-Octane                      40.0000ppm        0.25       0.23       0.0002
n-Nonane                      30.0000ppm        0.21       0.20       0.0001
n-Decane                      10.0000ppm        0.08       0.07       0.0000
Hydrogen                       0.4000%          1.30       1.10       0.0003
Oxygen                         0.5000%          0.00       0.00       0.0055
Carbon Monoxide                0.2000%          0.64       0.64       0.0019
Water                          0.0100%          0.00       0.00       0.0001
H2S                            0.2500%          1.60       1.47       0.0029
Helium                         0.7000%          0.00       0.00       0.0010

TOTALS                       100.0000%        996.39     901.27       0.7154

'*' indicates user-defined components

Compressibility Factor (Z) @  14.73000 PSIA and 60.0 Deg.F = 0.99738

Base Pressure                          14.73000 PSIA
-----------------------------------------------
Gross Dry BTU                  =       999.0101 Corrected for Z
Actual Gross BTU               =       998.9153 Corrected for Z
Net Dry BTU                    =       903.6357 Corrected for Z
Actual Net BTU                 =       903.5453 Corrected for Z
Real Relative Density Gas      =         0.7170
Total Unnormalized Mole Percent =       100.000
Average Molecular wgt.         =          20.72


ACTIVE ALARMS
Alarm Name                                                            Alarm State

Preamp Board 3 Comm Failure


ANALOG INPUTS
Analog Input                    Value
Analog Input 1                  0.000
Analog Input 2                  0.000



USER CALCULATIONS
```

Figure 5-2: Analysis (ISO) sample report

```
                                ISO Analysis

Date-Time :  11/06/2019 09:10:00    Analysis time :   230.00 sec    Cycle Time         :  240.00 sec
Stream    :  Stream 1               Mode          :   Analysis      Cycle Start Time   :  11/06/2019 09:00:55
Analyzer  :  C6PlusEXMB             Stream Seq.   :   1,2,3
Company   :

Firmware Revision, Checksum :  4.0.0, 2019/10/22, 0x65fcb1c2

                                            Primary   Secondary
Reference Temperature - Combustion Deg.C    15.00     15.00
Reference Temperature - Metering   Deg.C    15.00     15.00
Calorific Value - Units                     MJ/m3     MJ/m3

Component Name              Mole Percent   Relative   Superior CV   Inferior CV   Superior CV   Inferior CV
                                            Density     Pri units     Pri units     Sec Units     Sec units

C6+ 47/35/17                    0.0349%     0.0012        0.0689        0.0689        0.0688        0.0688
Propane                         0.9122%     0.0139        0.8589        0.8588        0.8569        0.8568
i-Butane                        0.2309%     0.0046        0.2809        0.2809        0.2803        0.2802
n-Butane                        0.2233%     0.0045        0.2726        0.2726        0.2720        0.2719
Neopentane                      0.0000%     0.0000        0.0000        0.0000        0.0000        0.0000
i-Pentane                       0.0713%     0.0018        0.1067        0.1067        0.1064        0.1064
n-Pentane                       0.0760%     0.0019        0.1141        0.1141        0.1138        0.1138
Nitrogen                        2.4393%     0.0236        0.0000        0.0000        0.0000        0.0000
Methane                        89.7739%     0.4973       33.9280       33.9236       33.8485       33.8441
Carbon Dioxide                  1.0662%     0.0162        0.0000        0.0000        0.0000        0.0000
Ethane                          5.1719%     0.0537        3.4250        3.4245        3.4169        3.4165

TOTALS                        100.0000%     0.6186       39.0551       39.0501       38.9635       38.9585

'*' indicates user-defined components

Primary   Compressibility Factor(Z) @ 1.01325 BarA and 15.00 Deg.C = 0.99765

Base Pressure                                  1.01325 BarA
-------------------------------------------------------
Real Superior CV - Dry - Primary      =        39.0551 MJ/m3
Real Superior CV - Sat - Primary      =        38.3979 MJ/m3
Real Inferior CV - Dry - Primary      =        39.0501 MJ/m3
Real Inferior CV - Sat - Primary      =        38.3929 MJ/m3
Real Superior CV - Dry - Secondary    =        38.9635 MJ/m3
Real Superior CV - Sat - Secondary    =        38.3078 MJ/m3
Real Inferior CV - Dry - Secondary    =        38.9585 MJ/m3
Real Inferior CV - Sat - Secondary    =        38.3028 MJ/m3
Real Relative Density Gas - Primary   =         0.6197
Real Gas Density - Primary            =         0.7595 kg/m3
Real Wobbe index - Sup - Primary      =        49.6105 MJ/m3
Average Molar Mass                    =         17.916
Total Unnormalized Mole Percent       =         99.479
```

Figure 5-3: Calibration sample report

Calibration Report

Calibration Run 2 of 3

Date-Time : 11/22/2019 12:33:35 PM Analysis time : 230.00 sec Cycle Time : 240.00 sec
Stream : Calibration Mode : Forced Calib Cycle Start Time : 11/22/2019 09:49:33 AM
Analyzer : Dusty Bottom Stream Seq. : 1

Firmware Revision, Checksum : 3.0.1, 2018/05/22, 0x69c37e18

Component Name	Cal Conc.	Raw Data	New RF	RF % Dev.	New RT	RT % Dev.
C6+ 47/35/17	0.0298%	8585400.00	2.881007e+08	-1.45	34.2	0.0
Propane	0.982%	180845872.00	1.841608e+08	-0.56	46.4	0.0
i-Butane	0.297%	66573736.00	2.24154e+08	-0.24	58.1	0.0
n-Butane	0.297%	69368832.00	2.335651e+08	-0.13	64.6	-0.1
Neopentane	0.0994%	24947122.00	2.509771e+08	1.01	73.7	-0.11
i-Pentane	0.099%	26006184.00	2.626887e+08	0.71	92.6	-0.0
n-Pentane	0.099%	26859036.00	2.713034e+08	1.45	102.7	-0.0
Nitrogen	2.48%	286400832.00	1.154842e+08	-0.02	134.4	0.0
Methane	89.7068%	8500160000.00	9.475491e+07	-0.23	139.3	0.0
Carbon Dioxide	0.99%	136537792.00	1.37917e+08	-0.42	173.1	0.05
Ethane	4.92%	767719360.00	1.560405e+08	-0.12	203.3	-0.0

ACTIVE ALARMS

Alarm Name	Alarm State

ANALOG INPUTS

Analog Input	Value
Analog Input 1	0.000

Figure 5-4: Final Calibration sample report

Final Calibration_Nov_22_2019_12_34_13 (2).txt - Notepad

File Edit Format View Help

Final Calibration ReportDate-Time : 11/22/2019 12:34:23 PM Analysis time : 230.00 sec Cycle Time : 240.00 sec
Stream : Calibration Mode : Forced Calib Cycle Start Time : 11/22/2019 09:53:33 AM
Analyzer : Dusty Bottom Stream Seq. : 1
Firmware Revision, Checksum : 3.0.1, 2018/05/22, 0x69c37e18+
Calibration Certificate Details : Cylinder # ME BU.3X93ZP-FX

Component Name	Cal Conc.	Old RF	New RF	*	RF % RT	Old RT	New Dev.	*	RT % Dev.
C6+ 47/35/17	0.0298%	2.923532e+08	2.891985e+08	*	-1.08	34.2	34.2	*	0.00
Propane	0.982%	1.85198e+08	1.841547e+08	*	-0.56	46.4	46.4	*	0.00
i-Butane	0.297%	2.246887e+08	2.241822e+08	*	-0.23	58.1	58.1	*	0.00
n-Butane	0.297%	2.338593e+08	2.335332e+08	*	-0.14	64.7	64.6	*	-0.06
Neopentane	0.0994%	2.484577e+08	2.502308e+08&	*	0.71	73.8	73.7	*	-0.11
i-Pentane	0.099%	2.608311e+08	2.624054e+08	*	0.60	92.7	92.6	*	-0.09
n-Pentane	0.099%	2.67428e+08	2.717085e+08	*	1.60	102.8	102.7	*	-0.08
Nitrogen	2.48%	1.155077e+08	1.155037e+08	*	-0.00	134.4	134.4	*	0.00
Methane	89.7068%	9.49687e+07	9.4761e+07	*	-0.22	139.3	139.3	*	0.00
Carbon Dioxide	0.99%	1.385033e+08	1.37982e+08	*	-0.38	173.0	173.1	*	0.05
Ethane	4.92%	1.562332e+08	1.560357e+08	*	-0.13	203.4	203.3	*	-0.04

"*" indicates RTs and RFs were updated, or RF % Devs from Ideal were out-of-limit, or RF orders were out-of-order.

"RT" = Retention Time
"RF" = Response Factor

ACTIVE ALARMS
Alarm Name

Alarm State

ANALOG INPUTS

Analog Input	Value
Analog Input 1	0.000

Figure 5-5: Validation sample report

Validation_Nov_22_2019_12_34_25.txt - Notepad

File Edit Format View Help

Validation Report

Validation Run 1 of 2

Date-Time : 11/22/2019 12:34:35 PM Analysis time : 230.00 sec Cycle Time : 240.00 sec
Stream : Validation Mode : Validation Cycle Start Time : 11/20/2019 10:08:38 AM
Analyzer : Dusty Bottom Stream Seq. : 1

Firmware Revision, Checksum : 3.0.1, 2018/05/22, 0x69c37e18

Variable Name	Nominal Value	% Deviation	Measured Value
5 - Validation_Mole %_C6+ 47/35/17	0.0298	5.000000	0.0253
5 - Validation_Mole %_Propane	0.9820	3.000000	0.9832
5 - Validation_Mole %_i-Butane	0.2970	3.000000	0.2976
5 - Validation_Mole %_n-Butane	0.2970	3.000000	0.2982
5 - Validation_Mole %_Neopentane	0.0994	3.000000	0.1005
5 - Validation_Mole %_i-Pentane	0.0990	3.000000	0.0985
5 - Validation_Mole %_n-Pentane	0.0990	3.000000	0.0981
5 - Validation_Mole %_Nitrogen	2.4800	3.000000	2.4729
5 - Validation_Mole %_Methane	89.7068	0.500000	89.7160
5 - Validation_Mole %_Carbon Dioxide	0.9900	3.000000	0.9897
5 - Validation_Mole %_Ethane	4.9200	3.000000	4.9199
5 - Validation_HV Gross BTU Dry	1055.5156	0.100000	1055.4474
5 - Validation_GPA Real Rel Den Gas	0.6235	3.000000	0.6234
5 - Validation_Total Unnormalized Conc	100.0000	3.000000	99.9819

ACTIVE ALARMS

Alarm Name	Alarm State
Stream 4	
RF Deviation	

ANALOG INPUTS

Analog Input	Value
Analog Input 1	0.000

USER CALCULATIONS

Figure 5-6: Final Validation sample report

Final Calibration Report

Date-Time : 12/05/2019 01:29:22 PM Analysis time : 230.00 sec Cycle Time : 240.00 sec
Stream : Calibration Mode : Calibration Cycle Start Time : 11/06/2019 07:54:24 AM
Analyzer : 44226878 Stream Seq. : 1,2,3

Firmware Revision, Checksum : 4.0.0, 2019/10/22, 0x65fcb1c2
Calibration Certificate Details :

Component Name	Cal Conc.	Old RF	New RF	*	RF % Dev.	Old RT	New RT	*	RT % Dev.
C6+ 47/35/17	0.0295%	5.687038e+07	5.697038e+07	*	0.18	30.5	30.4	*	-0.46
Propane	0.99%	2.013015e+07	2.003015e+07	*	-0.50	46.8	46.8	*	0.00
i-Butane	0.291%	5892742	5892742	*	0.00	58.8	58.8	*	0.00
n-Butane	0.289%	7413916	7413916	*	0.00	65.8	65.8	*	0.00
Neopentane	0.101%	2.290791e+08	2.290791e+08		0.00	74.0	74.0		0.00
i-Pentane	0.097%	3770900	3770900	*	0.00	94.4	94.4	*	0.00
n-Pentane	0.097%	2314456	2314456	*	0.00	105.3	105.2	*	-0.06
Nitrogen	2.5%	2.973863e+07	2.963863e+07	*	-0.34	136.5	136.4	*	-0.09
Methane	89.6155%	8.959182e+07	8.959182e+07	*	0.00	141.9	141.8	*	-0.04
Carbon Dioxide	1%	8.247581e+07	8.247581e+07	*	0.00	177.9	177.9	*	0.00
Ethane	4.99%	1.186523e+08	1.186523e+08	*	0.00	212.4	212.4	*	0.00

"*" indicates components whose Retention Times and Response Factors were updated.

ACTIVE ALARMS

Alarm Name	Alarm State

ANALOG INPUTS

Analog Input	Value
Analog Input 1	4.000
Analog Input 2	4.000

Figure 5-7: Variable Averages Report

Variable_Average_Report_Nov_25_2019_14_15_18.txt - Notepad

File Edit Format View Help

Variable Average Report

Variable Average from 11/25/2019 02:15:35 PM Analyzer : 741596 2 SN : System Description : 370XA- 3 Stream + 1

CalFirmware Revision, Checksum : 3.0.1, 2018/05/22, 0x69c37e181

1 - Stream 1_Mole %_Nitrogen	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	2.43461	2.42919	2.44216	15 2
11/25/2019 01:00:00 PM	2.43147	2.42048	2.43874	15 3
11/25/2019 02:00:00 PM	2.43209	2.42009	2.44472	15 2

1 - Stream 1_Mole %_Carbon Dioxide	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	0.986802	0.972008	1.00146	15 2
11/25/2019 01:00:00 PM	0.988167	0.973753	1.02632	15 3
11/25/ 2019 02:00:00 PM	0.9 90089	0.978409	1.0093	15 3

1 - Stream 1_Mole %_Methane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	89.7449	89.7104	89.7838	15 2
11/25/2019 01:00:00 PM	89.7428	89.6943	89.7708	15 3
11/25/2019 02:00:00 PM	89.7441	89.7058	89.7728	15 4

1 - Stream 1_Mole %_Ethane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	4.91754	4.89489	4.9391	15 2
11/25/2019 01:00:00 PM	4.9241	4.90446	4.95152	15 3
11/25/2019 02:00:00 PM	4.92168	4.90802	4.93232	15 5

1 - Stream 1_Mole %_Propane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	0.97898	0.977714	0.980875	15 2
11/25/2019 01:00:00 PM	0.978904	0.974508	0.980007	15 3
11/25/2019 02:00:00 PM	0.978361	0.976447	0.980803	15 6

1 - Stream 1_Mole %_n-Butane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	0.299928	0.294564	0.302929	15 2
11/25/2019 01:00:00 PM	0.300139	0.297413	0.3019	15 3
11/25/2019 02:00:00 PM	0.300161	0.297645	0.302318	15 7

1 - Stream 1_Mole %_i-Butane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	0.298352	0.295424	0.300454	15 2
11/25/2019 01:00:00 PM	0.298607	0.296507	0.301613	15 3
1/25/2019 02:00:00 PM	0.298633	0.297393	0.300696	15 8

1 - Stream 1_Mole %_i-Pentane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	0.100763	0.097928	0.106512	15 2
11/25/2019 01:00:00 PM	0.101483	0.099084	0.1052	15 3
11/25/2019 02:00:00 PM	0.10071	0.09856	0.104393	15 9

1 - Stream 1_Mole %_Neopentane	Average	Minimum	Maximum	Samples 1
11/25/2019 12:00:00 PM	0.10183	0.097917	0.103098	15 2
11/25/2019 01:00:00 PM	0.101035	0.097584	0.103776	15 3
11/25/2019 02:00:00 PM	0.10107	0.098876	0.103447	15 10

Figure 5-8: Raw Data sample report

Raw Data_Report_Nov_22_2019_12_42_19.txt - Notepad

File Edit Format View Help

Raw Data Report

Date-Time :	11/22/2019 12:42:30 PM	Analysis time :	230.00 sec	Cycle Time :	240.00 sec
Stream :	Stream 1	Mode :	Analysis	Cycle Start Time :	11/22/2019 10:17:33 AM
Analyzer :	Dusty Bottom				

Firmware Revision, Checksum : 3.0.1, 2018/05/22, 0x69c37e18

Peak No.	Ret Time	Peak Area	Peak Height	Det No.	Method	Baseline Start	Baseline End	Integration Start	Integration End	Peak Width@ Half Height	Partial Peak
1	46.9	9.8391e+06	106,920	1	4	55,331	38,961	45.1	50.4	1.7	No
2	58.7	3.12827e+06	27,420	1	2	28,458	24,160	56.0	62.4	2.2	No
3	65.2	2.67819e+06	24,899	1	2	24,160	17,983	62.4	71.6	2.4	No
4	74.1	488592	5,392	1	3	17,983	11,268	71.6	81.6	2.3	No
5	93.3	1.28797e+06	6,548	1	2	9,180	7,574	89.0	99.3	3.8	No
6	103.2	1.30482e+06	6,036	1	3	7,574	4,996	99.3	115.9	4.6	No
7	135.1	5.42481e+07	544,036	1	2	4,735	4,329	132.1	139.6	1.8	No
8	142.8	6.38168e+08	5,833,851	1	3	4,329	3,610	139.6	152.8	2.2	No
9	173.7	1.20142e+07	59,353	1	1	1,759	1,518	168.0	182.7	3.8	No
10	205.2	4.71451e+07	177,113	1	1	1,355	1,387	197.7	216.1	5.3	No

ACTIVE ALARMS

Alarm Name	Alarm State

ANALOG INPUTS	Analog Input	Value
Analog Input 1		0.000

Figure 5-9: Dew Point Calculations

Dew Point Calculations_Report_Nov_22_2019_13_24_11.txt - Notepad

File Edit Format View Help

```
Dew Temperature Calculation Report
Date:    11/22/2019 02:27:44 PM
Stream:   Stream 1
Analyzer  :  723536          EPM MEXICO
Firmware Revision, Checksum :  4.0.0, 2019/10/03, 0xf5e9f243

Dew temperature = 50.7 Deg. F at 700.0 PSIG, status is OK
Dew temperature = 53.4 Deg. F at 250.0 PSIG, status is OK
Dew temperature = 55.9 Deg. F at 500.0 PSIG, status is OK
Dew temperature = 17.3 Deg. F at   20.0 PSIG, status is OK
Cricondentherm (max. dew temp.) =   55.8 Deg. F at 507.7 PSIG, status is OK

Selected calculation method is PR
Extended analysis data used on latest dewpoint calculation:

Number of components  = 16

COMPONENT                MOLE %

Methane                  89.5690
Ethane                    5.0100
Propane                   1.0000
n-Butane                  0.2990
iso-Butane                0.3000
n-Pentane                 0.1010
iso-Pentane               0.1010
n-Hexane                  0.0600
Nitrogen                  2.5100
Carbon Dioxide            1.0000
n-Heptane                 0.0200
n-Octane                  0.0200
n-Nonane                  0.0090
n-Decane                  0.0007
n-Undecane                0.0002
n-Dodecane                0.0001

TOTAL =                 100.0000
```

5.6.2 View reports from live data

To view a report created from the most recent data, do the following:

Procedure

1. Select **Report Displays...** from the **Log/Reports** menu.
   The *Report Display* window appears.

   Note
   By default, the **Update automatically** checkbox is selected. This means that when viewing a report based on the most recent data, the report refreshes as new data is created, based on the type of report that you select. For example, in the *Report Display* window, if you select Analysis (GPA), the report display refreshes each time the GC finishes an analysis of the selected stream. The refresh function displays the newly generated report and deletes the previous report (unless already saved to disk).

2. Select the type of report to generate and display.

   For explanations of each report type, see Report types.

3. Select the appropriate stream.

   To see a currently analyzed stream report then you can select the **0 - Current Analysis** field from Stream list.

4. Click **Start (F2)**, or press **F2**.
   The report is generated and displayed.

   Note
   If the report doesn't appear right away, check the status of the report generation process in the status bar, which is below the row of buttons on the report window.

   Note
   To change the font size, click **Font +/-**. There are five preset font sizes available. Continue to click **Font +/-** to cycle through the sizes until you are satisfied with the report's readability.

   Note
   For Average reports, by default it displays three records. Change the setting from **File → Program Settings → Number of Average records displayed in report** to four or five, then MON2020 shows that many records in report.

5. To save the file, click **Save**.

   The report can be saved in the following file formats: .txt, .rpt, .htm, .html, .mht.

5.6.3 View a saved report

To view a saved report, do the following:

Procedure

1. Select **Report Displays...** from the **Log/Reports** menu.
   The *Report Display* window appears.
2. Click **File Viewer (F3)**.
   The *Report file viewer* window displays.
3. Click **Open**.
   The *Open* dialog displays.
4. Locate and select the report that you want to view.

   Reports may be found in the following file formats: TXT, RPT, HTM, HTML, and MHT.
5. Click **Open**.
   The report displays.

   Note
   To change the font size, click **Font +/-**. There are five preset font sizes available. Continue to click **Font +/-** to cycle through the sizes until you are satisfied with the report's readability.

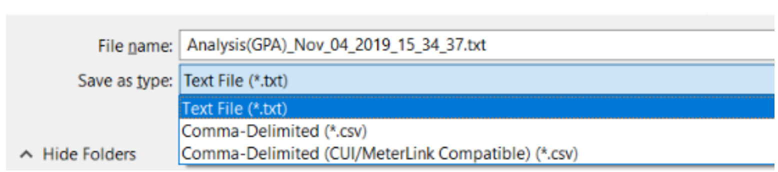
   Note
   To print the report, click **Print**.

5.6.4 Exporting Reports for Ultrasonic SOS

This feature in MON2020 allows exporting reports for Ultrasonic Meter Spead of Sound (SOS). The report can be saved from **Report Display** or **Archive Report** screens.

Procedure

1. Open **Logs/Reports** → **Report Display**.
2. Click **Analysis** report type.
3. Select **Start (F2)** to display an Analysis report.
4. Click **Save** to display the **Save** dialog.
5. Use the **Save as Type** drop-down menu and select **Comma-Delimated (CUI/ MeterLink Compatible) (*.csv)**.



6. The report is exported as an Excel® file compatible with Ultrasonic Meters. format.
7. Repeat Step 1 through Step 6 for a Calibration Report and a Validation Report.

5.7 Generate reports from archived data

Use the **Archive Report** commands to generate analysis, calibration, and average reports from archived GC runs.

5.7.1 Generate analysis and calibration reports from archived data

To generate and view an analysis or calibration report from archived data, do the following:

Procedure

1. Select **Logs/Reports** → **Archive Report** → **Analysis/Calibration/Validation...**.
   The *Analysis/Calibration/Validation Archive Report* window displays.
2. Select a report type from the **Report** dropdown list.

   For an explanation of each report type, see Report types.
3. Select a stream from the **Stream** dropdown list.

   By default, the **Archive Records** table displays all records for the selected report type and stream.

   Note
   To date-filter the list of records, select the **Time Period** checkbox and use the **Start Date** and **End Date** dropdown lists to select a date range.
4. Select the record(s) that you want to view.

   To select several records, hold down **CTRL** and select each record. To select several records in a row, select the first record and then hold down **Shift** and select the last record in the series.
5. Click **Start (F2)**.
   The report displays. If more than one record was selected, each report displays after that previous report on the same page.

   Note
   To change the font size, click **Font +/-**. There are five preset font sizes available. Continue to click **Font +/-** to cycle through the sizes until you are satisfied with the report's readability.

   Note
   To print the report, click **Print**.
6. To save the file, click **Save**.

   The report can be saved in the following file formats: .txt, .htm, .html, and .mht.

5.7.2 Generate an Average report from archived data

To generate and view an average report from archived data, do the following:

Procedure

1. Select **Logs/Reports** → **Archive Report** → **Average...**.
   The *Average Archive Report* window displays.
2. Select a report type from the *Report* drop-down list.
   For an explanation of each report type, see Report types.
3. Select a stream from the *Stream* drop-down list.
   By default, the *List of Averages* table displays all variables for the selected report type and stream.

   Note
   To date-filter the list of records, select the *Time Period* checkbox and use the *Start Date* and *End Date* drop-down boxes to select a date range.

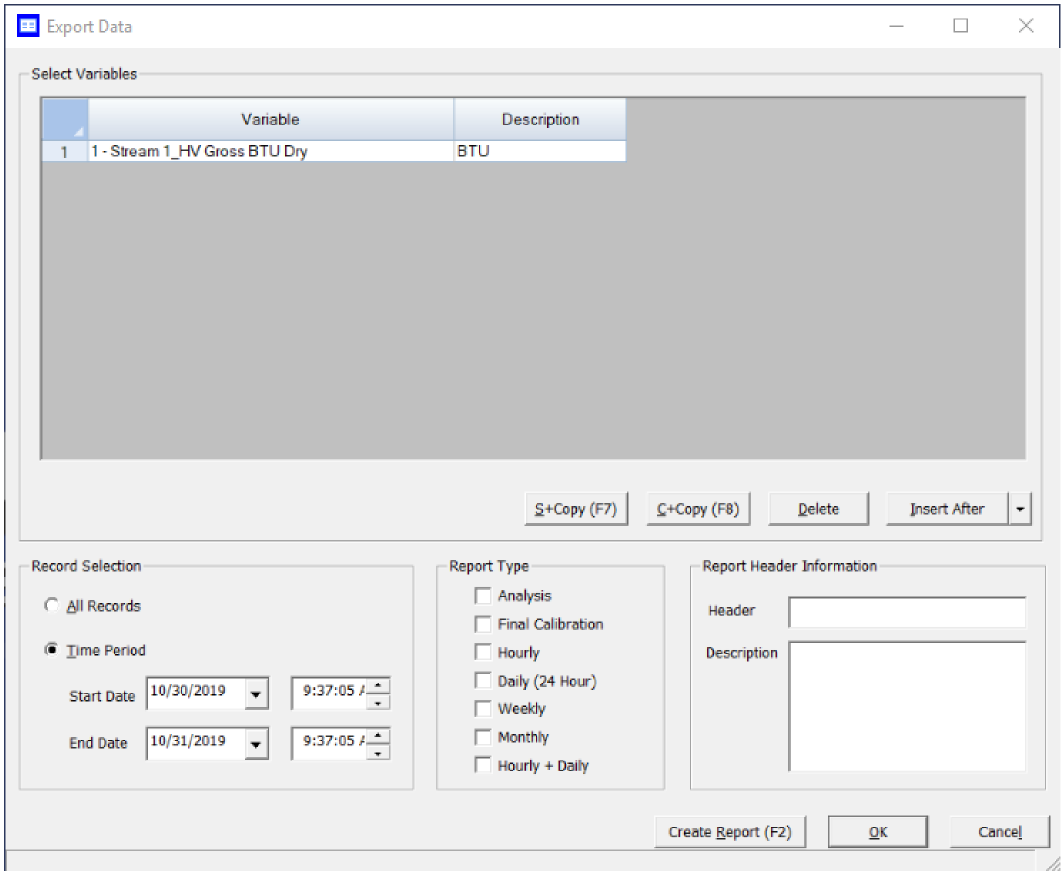
4. From the **Archive Record Selection** field, select the **Number of most recent records** and enter a number value. Or, select the **Time Period** check box and use the **Start Date** and **End Date** drop-down boxes to select a date range.
5. Click **Start (F2)** or press **F2**.

   Note
   To change the font size, click **Font+/-**. There are five preset font sizes available. Continue to click **Font +/-** to cycle through the sizes until you are satisfied with the report's readability.
   To print the report, click **Print**

6. To save the file, click **Save**.
   The report can be saved in the following file formats:
   - .txt
   - .htm
   - .html
   - .mht

5.7.3 Generate Export Data Report

Use the **Logs and Reports** → **Archive Report** → **Export Data** menu to create an archive report.



Procedure

1. Select the **Variables** pull-down to configure the variables exported in the report.

   Options are:

   - Analysis Stream
   - Final Calib Stream
   - Final Calib Analysis Stream
   - Hardware
   - Application

2. Click the **Record Selection** radio button to export either **All Records** or a **Time Period** for the data.
3. Select the **Report Type**

   Options are:

   - Analysis
   - Final Calibration
   - Hourly
   - Daily (24 Hour)

- Weekly
- Monthly
- Hour + Daily

4. Use the **Report Header Information** field and type a report **Header** title and a **Description.** The description column is used as column headers in the Export Data Report.
5. Click **S + Copy** to copy the stream settings from a highlighted row and apply them to the next row,
6. Click **C + Copy** to copy the settings from a highlighted row and apply them to the next row.
7. Click **Delete** to delete a rows.
8. Click **Insert After** to insert variable rows after an entry or Insert rowa above an entry.
9. Click **Create Report (F2)** or press **F2** to create the report.
10. Click **OK** to save the report settings without generating the report and return to the MON2020 home page.
11. Click **Cancel** to abort the report and return to the MON2020 home page.

Related information

Archive Report
Logs and Reports menu

5.7.4 Schedule the generation of reports

MON2020 can automatically generate and print each report according to the following schedule:

Analysis (GPA) An analysis report is available to print after an analysis run, final calibration run, or final validation run.

Note
If **ISO** is set in the *Calculations Configuration* screen, Analysis (ISO) is listed under the **Report Name** column instead of Analysis (GPA); if **GPA & ISO** is set in the *Calculations Configuration* screen, then both Analysis (ISO) and Analysis (GPA) are listed under the **Report Name** column.

Calibration A calibration report is available to print after a calibration run or final calibration run is completed.

Final Calibration A final calibration report is available to print after a final calibration run is completed.

Validation A validation report is available to print after validation or final validation run is completed.

Final Validation A final validation report is available to print after a final validation run is completed.

Every Run	An every run report is available to print after an analysis run is completed.
Hourly	A report is available to print each time an hourly average calculation is run.
24 Hour	A report is available to print each time a 24 hour average calculation is run.
Weekly	A report is available to print each time a weekly average calculation is run.
Monthly	A report is available to print each time a monthly average calculation is run.
Variable	A report is available to print each time a variable average calculation is run.
Raw Data	A raw data report is available to print after an analysis run, calibration run, final calibration run, validation run, or final validation run is completed.

To configure MON2020 to generate and print a report of your choosing based on that report's schedule of availability, do the following:

Procedure

1. Select **Printer Control...** from the **Logs/Reports** menu.
   The *Printer Control* window displays.

   Note
   MON2020 must be connected to the GC for the report to be printed.

2. To print a report after a run, check the appropriate checkbox from the **Print After Completion?** column.
3. To print a report at a fixed interval, check the appropriate checkbox from the **Print At Fixed Interval?** column.
   a) Enter a start time in the **Start Time** column.
   b) Enter an interval, in hours, in the **Interval** column.
4. Use the columns numbered 1 through 20 to select the streams that you want to use for data collection.
5. Click **OK** to save the changes and close the window.

   Note
   To save the changes without closing the window, click **Save**.

5.8 Trend data

This function allows you to view, print, or save graphical representations, or trend lines, of accumulated analysis data from the GC.

5.8.1 View live trend data

Note
You cannot view a live trend if the corresponding analysis record does not exist in the GC's memory.

To view live trend data, do the following:

Procedure

1. Select **Trend Data...** from the **Logs/Reports** menu.
   The *Trend Data* window displays.
2. Click **Trend**.

   The *Select Variables for Trending* window displays.
3. Select the analysis or calibration records that you want to trend from the *Select Analysis/Calibration Variables* section. Click **>** to move your selection to the **Selected Variables** queue.
4. If applicable, select the type of average record that you want to trend from the **Select Average Variables** section. Click **>** to move your selection to the **Selected Variables** queue.

   Note
   To remove a selection from the **Selected Variables** queue, click **Remove**. To remove all selections from the **Selected Variables** queue, click **Remove All**. To save the list of variables to a PC, click **Save**. To open the list of variables from the PC, click **Open**.

5. Click the **All Records** checkbox from the **Trend Record Selection** section to use all data for the trend report, or click the **Time Period** checkbox and select a **Start Date** and **End Date** for the data to be used.
6. Click **Trend**.

   MON2020 reads the data from the GC and then closes the *Select Variables for Trending* window and plots the trend data on the graph section of the *Trend Data* window.

   Each trend record is color-coded; use the **Trend** dropdown list to select a specific trend record.

5.8.2 View saved trend data

Trend data files are saved with the. xtrd file extension. To view a saved trend file, do the following:

Procedure

1. Select **Trend Data...** from the **Logs/Reports** menu.
   The *Trend Data* window displays.
2. Click **PC File**.
   The *Open Trend File* window displays.
3. Select the file that you want to view and click **Open**.
   The trend graph displays.

5.9 Trend graph options

Right-clicking the graph brings up the following commands and keyboard shortcuts:

Zoom In

Numpad Shortcut: **+**

Zooms in on the entire graph.

Note
Another way to zoom in is by clicking and dragging your mouse to select the region of the graph that you want to zoom in on.

Zoom Out

Numpad Shortcut: **-**

Zooms out from the entire graph.

Zoom X In

Numpad Shortcut: **6**

Zooms in on the X-axis.

Zoom X Out

Numpad Shortcut: **4**

Zooms out from the X-axis.

Zoom Y In

Numpad Shortcut: **8**

Zooms in on the Y-axis.

Zoom Y Out

Numpad Shortcut: **2**

Zooms out from the Y-axis.

Note
When the **Selected Data** checkbox is selected, the small table to the right of the graph displays the trend data for the visible area of the graph when zooming in and out.

Save State

Shortcut: **CTRL** + **HOME**

Saves current or archived display settings for the selected trend graph.

Note
The **Save State** function is available only when viewing a live or archived trend graph.

Restore State

Shortcut: **HOME**

Restores the last saved display settings for the selected trend graph.

Note
Pressing **HOME** returns the user to the saved state.

Toggle Full Screen

Shortcut: **F11**

Maximizes the display of the graph in the Trend Data window.

Cursor to Nearest Point

Shortcut: **F8**

Snaps the cursor to the nearest point on the trend graph in both the X and Y directions.

Toggle Coarse/ Fine Cursor

Shortcut: **F4**

Toggles the cursor from coarse and less accurate to fine and more accurate.

Toggle Lines/Dots Displays

Shortcut: **F9**

Toggles the trend graph from lines to dots, or dots to lines.

Toggle Mouse Position Tip

Shortcut: **CTRL** + **F4**

The graph's cursor follows the movement of the mouse while a hovering Tooltip displays the exact coordinates of the current point.

Toggle Nearest Position Tip

Shortcut: **CTRL** + **F9**

The graph's cursor follows the movement of the mouse cursor.

Print

Shortcut: **CTRL** + **P**

Prints the trend graph.

Copy to clipboard

Shortcut: **CTRL** + **C**

Copies from the graph the raw detector data that was used to plot the selected trend graph. This data can be pasted into another application such as Microsoft Word® or Microsoft Excel®.

Paste from clipboard

Shortcut: **CTRL** + **V**

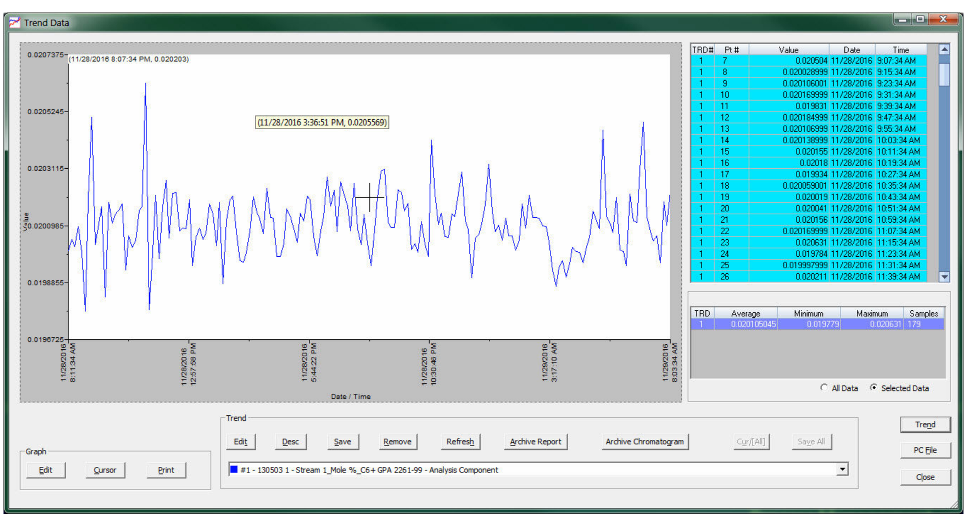
Plots a range of points copied from another application such as Microsoft Word® or Microsoft Excel®.

5.10 Properties of the trend graph

5.10.1 The trend graph bar

Use the graph bar buttons to change the display parameters of the graph.

Figure 5-10: The graph



Click **Edit** to view or change the display properties of the X and Y axes. The *Edit Graph* window displays.

The following list defines the parameters that can be edited:

Point Sets the X-axis values to points. For the purposes of this graph, each sample run is considered a data point. Therefore, if 2500 sample runs were used to generate the trend graph, then there are 2500 data points.

- **X Min -** Sets the minimum value for the X-axis to the point number of the first sample you want to use in the plot. Default value is **0**.
- **X Max -** Sets the maximum value for the X-axis to the point number of the last sample you want to use in the plot. Default value is **N - 1**, where **N** is the total number of points in the graph. Therefore, if there are 2500 points, then the X Max would be **2499**.

Note

The X-axis value for the first sample, or point, in the trend graph is **0**, not **1**. The X-axis value for the final point in the trend graph is **N - 1**, where **N** is the total number of points in the graph.

Date Time Sets the X-axis values to the particular GC dates and times of each sample runs.

- **From -** Sets the minimum value for the X-axis to the date of the first sample you want to use in the plot.
- **To -** Sets the maximum value for the X-axis to the date of the last sample you want to use in the plot.

The primary Y-axis, which is on the left side of the graph, is the default axis for displaying trend graphs. The secondary Y-axis, which is on the right side of the graph, can be used to display a second graph whose minimum and maximum values are different than the minimum and maximum values of the first graph.

Note

If three or more graphs are displayed, by default, the first graph is plotted with the primary Y-axis; the second graph is plotted using the secondary Y-axis; all other graphs are plotted on the primary Y-axis.

Y-xis Display Format	• Percent - Sets the Y-axis values to a percentage of the **Y Max** value. • Value - Sets the Y-axis values to the sample run values. The default value is **0**.
Y Min	Sets the minimum value for the Y axis.
Y Max	Sets the maximum value for the Y axis.
Y Intervals	Sets the number of intervals to be displayed on the graph for the Y-axis.
Print Speed	Sets the number of inches per second for the X-axis while printing a chromatogram, similar to an XY plotter.
X Intervals	Sets the number of intervals to be displayed on the graph for the X-axis.

	The default value is **10**.
Display Option	Determines whether the trend is displayed as a solid line or as a dotted line. The default value is **Lines**.
Show labels	Determines whether each axis is labeled. The default value is **Checked**.
Scroll newest X	Determined whether the graph's window moves to focus on the most recent data point along the X-axis. The default value is **Checked**.

To accept your changes, click **OK**.

Click **Cursor** to toggle the cursor size from coarse movement (less accurate) to fine movement (more accurate).

Click **Print** to print the graph window.

5.11 The Trend bar

The **Trend** bar contains a row of buttons that allows you to manipulate a single trend trace. Below the row of buttons is the **Trace** dropdown list, which contains a list of all of the currently displayed traces that make up the trend graph (see Figure 5-10). Before you can work with a trend trace you must first select it from the dropdown list.

5.11.1 Edit a trend graph

You can use the **Edit** window to change the X and Y offset values for a graph, change its color, and also set which Y-axis should be used when plotting it. These changes may be necessary to make the trend more distinguishable from those that surround it, or to position a graph in relation to a different graph for comparison.

To edit a trend trace, do the following:

Procedure

1. From the **Trend** drop-down list, select the graph that you want to edit.
2. Click **Edit**.
   The *Edit Trend* dialog displays.

X-Offset	Enter a positive number to move the trend to the right or a negative number to move the trend to the left.
Y-Offset	Enter a positive number to move the trend up or a negative number to move the trend down.
Color	Assigns a color to the trend.
Add Trace to:	Sets which Y-axis should be used when plotting the graph. See The trend graph bar for more information.

3. Click **OK** to accept your changes.

5.11.2 Enter a description for a trend graph

To add or change description text for a trend graph, do the following:

Procedure

1. From the **Trend** bar, click **Desc**.
   The *Edit Description* window displays.
2. Type or edit a description and then close the window.

5.11.3 Save a trend

To save a trend, do the following:

Procedure

1. From the **Trend** dropdown list, select the trace that you want to save.
2. Click **Save**.
   The *Save Trend File* window displays.

   Note
   To save all currently displayed trend traces into one file, click **Save All**.

   Note
   For convenience the file is given an auto-generated file name that includes the current date and time; however, you can give the file any name that you choose.
3. Click **Save**.

5.11.4 View associated trend data

For each data point in a trend graph, it may be possible to view the associated report or chromatogram.

Note
The associate report most likely exists, but the existence of the associated chromatogram depends on the age of the trend. If the trend is more than a few days old it is likely that its associated chromatogram has been deleted to make space for newer chromatograms.

Procedure

1. Move the cursor to the desired trend point on the graph.
2. To view the associate report, click **Archive Report**.
   If the report exists, it will be displayed. If the report does not exist, the *Archive records information is not available!!* error message displays.
3. To view the associate chromatogram, click **Archive Chromatogram**.
   If the chromatogram exists, it will be displayed. If the it does not exist, the *Archive chromatogram information is not available!!* error message displays.

5.11.5 Remove a trend graph from view

To remove a trend graph from the graph display, do the following:

Procedure

1. From the **Trend** dropdown list, select the graph that you want to remove.
2. Click **Remove**.

5.11.6 Refresh a trend graph

Procedure

1. From the *Trend* pull-down menu, select the trace that you want to refresh.
2. Click Refresh.
   The trend graph is updated with any new data that was compiled since the most recent refresh.

5.11.7 Display trend data

The data used to plot the trend graphs displays in the table to the right of the graph display area.

The trend data table contains the following columns:

TRD Indicates the identification number of the trend graph. Useful if more than one trend is being displayed. The first trend that is displayed is **#1**, and so on.

Pt # For the purposes of trend graphs, each sample run is considered a data point. Therefore, if 2500 sample runs were used to generate the trend graph, then there are 2500 data points.

> **Note**
> The first sample, or point, is counted as `0`, not **1**. The final point is counted as **N - 1**, where **N** is the total number of points in the graph.

Value The data point's value.

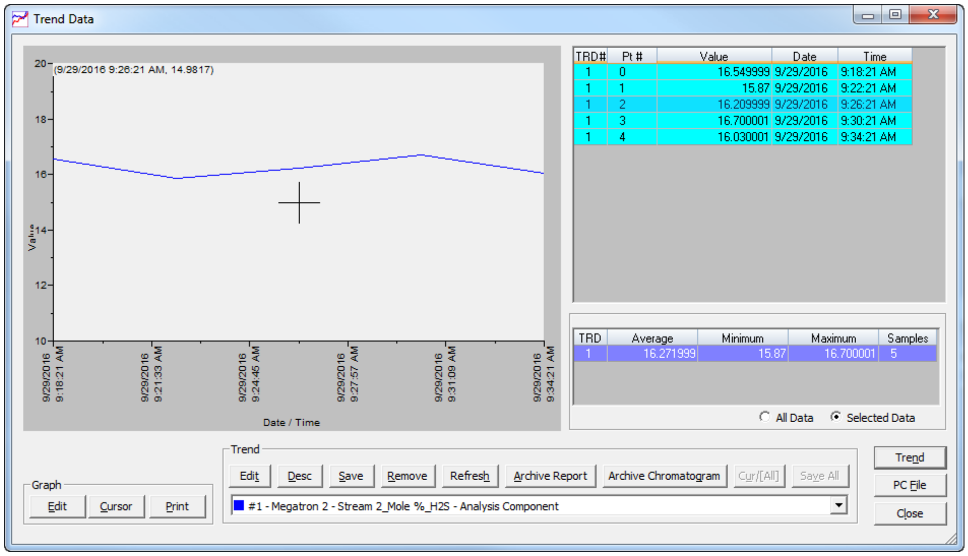
Data The GC's date when the sample was run and the value was calculated.

Time The GC's time when the sample was run and the value was calculated.

To view all trend data, click **Cur/All**. To view trend data for the trend graph selected from the Trend drop-down list, click **Cur/All** again.

The second trend data table is useful when zooming in to or out of the graph. When the *Selected Data* checkbox is selected, this table displays the trend data for the visible area of the graph. As the example shows, the table indicates that the trend data for five samples are visible after zooming in to the graph.

Figure 5-11: The Trend Data window



The table contains the following columns:

TRD Indicates the identification number of the trend graph. Useful if more than one trend is being displayed. The first trend that is displayed is #1, and so on.

Average Indicates the average data point value of the selected samples.

Minimum The lowest data point value of the selected samples.

Maximum The highest data point value of the selected samples.

Samples The number of samples that were selected and that are displayed in the graph window.

Procedure

1. Click **Trend** to configure the parameters for a trend file.
2. Click **PC File** to display the **Open Trend File** dialog and navigate to a saved file on your PC.
3. Click **Close** to exit the **Trend Data** screen and return to the MON2020 **Home** page.

5.12 Edit/create a repeatability certificate

The following table lists the fields in a repeatability certificate.

Name	Description
Variable	Select to configure the certificate variable. Options are: Analysis Stream, Final Calib Stream, Final Calib Analysis Stream, Hardware, Application,, or Final Validation.
Plot	If selected, a graph will be added to the report.
Description	The name that will be used to denote the selected variable on the report.
Ambient Limit (RepeatabilityType)	The maximum allowed variation of the selected variable. If the variation of the selected variable is greater than the limit, the variable will fail the repeatability test.
Chamber Limit (RepeatabilityType)	The maximum allowed variation of the selected variable. If the variation of the selected variable is greater than the limit, the variable will fail the repeatability test.
Range Min Value	Based on the **Average Value** and the **Limit**, this is the lowest valid value that can be generated. If a value lower than this is generated, the result of the repeatability test for this variable is **FAIL**.
Range Max Value	Based on the **Average Value** and the **Limit**, this is the highest valid value that can be generated. If a value higher than this is generated, the result of the repeatability test for this variable is **FAIL**.
Units	Unit of measure for the associated limit value.
Calculation Method	Determines how the limit will be treated when calculating the data. Absolute: The limit will be subtracted from the average value to determine the minimum value, and the limit will be added to the average value to determine the maximum value. % of Avg: The limit will be divide by 100 to create a percentage value that will be applied to the average value to calculate the minimum and maximum values.

To edit or create a repeatability certificate:

Procedure

1. In the *Repeatability Certificate* window (under the **Log/Reports** menu), click **Insert After**.
   A row is added to the **Select Variables** table.
2. Select a variable from the **Variable** column.
   You can select a maximum of 100 variables.

Note

To copy a variable and increment the stream by one, select the variable and press **S + Copy**. For example, if you select **Stream 1_Mole%_Propane** and press **S + Copy**, **Stream 2_Mole%_Propane** is added to the table.

Note

To copy a variable and increment the component by one, based on the list of components in the component data table, select the variable and press **C + Copy**. For example, if you select **Stream 1_Mole%_Propane** and press **C + Copy**, **Stream 1_Mole%_ iButane** will be added to the table.

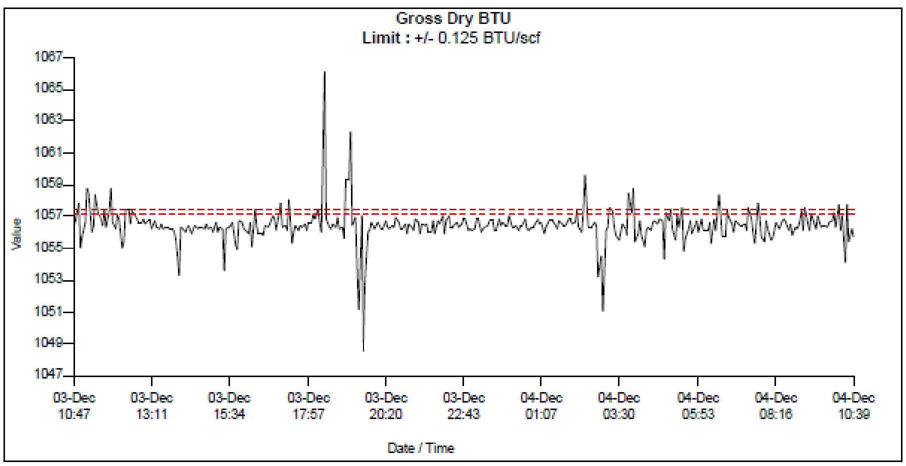
Figure 5-12: Example Repeatability Certificate

Ambient Repeatability Certificate

Analyzer : 741596 2
Company Name : ROSEMOUNT ANALYTICAL INC
S/N :
S/O :
Test Notes : Chamber Test

Test Start Time : 12/03/2019 10:45:12 AM
Test End Time : 12/04/2019 10:45:12 AM
Tested By : Hai Nguyen

Description	Units	Calculation	Allowable Limit		Ambient Laboratory Test Summary				
		Method	Stated	Absolute	Average	Minimum	Maximum	Variance	Result
Gross Dry BTU	BTU/scf	Absolute	0.125	0.125	1056.44	1048.48	1066.1	8.81	FAIL
Tot Unnormalized	Mole%	Absolute	0.375	0.375	109.898	109.347	110.754	0.703499	FAIL
C6+	Mole%	% of Avg	5%	0.00138164	0.0276327	0.006849	0.038915	70.0682%	FAIL
C3	Mole%	% of Avg	2%	0.0195796	0.97898	0.950201	1.06993	5.92679%	FAIL
i-C4	Mole%	% of Avg	2%	0.00598922	0.299461	0.272941	0.349574	12.3102%	FAIL
n-C4	Mole%	% of Avg	2%	0.00601299	0.30065	0.26092	0.345828	13.9939%	FAIL
neo-C5	Mole%	% of Avg	2%	0.0020573	0.102865	0.035363	0.147621	61.3485%	FAIL
i-C5	Mole%	% of Avg	3%	0.00308359	0.102786	0.060198	0.246397	60.7313%	FAIL
n-C5	Mole%	% of Avg	3%	0.00325891	0.10863	0	0.326155	100%	FAIL
N2	Mole%	% of Avg	2%	0.0487412	2.43706	2.40229	2.56936	3.36045%	FAIL
C1	Mole%	% of Avg	0.25%	0.224278	89.7112	88.9148	90.4011	0.828871%	FAIL
CO2	Mole%	% of Avg	2%	0.0199979	0.999893	0.885431	1.77192	33.3599%	FAIL
C2	Mole%	% of Avg	2%	0.0986168	4.93084	4.21739	5.37597	12.0769%	FAIL



5.13 Generate a repeatability certificate

The report is generated as a PDF, so if your computer does not have the Adobe Reader installed, MON2020 prompts you to install it.

A Read-only user can generate a *Repeatability Certificate Report* but can't modify any of the fields that are used to generate the report. A Regular user or higher can generate a *Repeatability Certificate Report* and can modify the fields that are used to generate the report.

Procedure

1. Select **Log/Reports** → **Repeatability Certificate** from the menu.

   The *Repeatability Certificate* window opens.
2. To include all data in the report, select the **All Records** check box; to include a limited set of data in the report, select the **Time Period** check box and then select a **Start Date** and an **End Date**.
3. To run the test with ambient limit, select the **Ambient Limit Type**. To run the test with chamber limit, select the **Chamber Limit Type**.
4. Select the **Result Criteria** as a **Variance** or **Standard Deviation** Std. Dev (k=2).
5. Use the **Test Information** fields to track data related to the generation of the certificate.

   Note
   This information will be displayed on the report beneath a **Test Notes** heading.
6. Click **Create Report (F2)**. The data in the **Select Variables** table are saved, and the certificate is generated and displayed in Acrobat Reader. A table of repeatability values is displayed first and then each variable that you selected to be plotted has its own graph.

Table 5-1: Repeatability Values

Name	Description
Limit Type	This value is taken from the (Ambient or Chamber) **Limit** value that you entered in the *Repeatability Certificate* window.
Units	Unit of measure for the associated **Limit** value.
Average Value	The average of all the data collected during the test.
Range Min Value	Based on the **Average Value** and the **Limit**, this is the lowest valid value that can be generated. If a value lower than this is generated, the result of the repeatability test for this variable is **FAIL**.
Range Max Value	Based on the **Average Value** and the **Limit**, this is the highest valid value that can be generated.

Table 5-1: Repeatability Values *(continued)*

Name	Description
Result Criteria	The result of the repeatability test. Select **Variance** or **Standard Deviation** Std. Dev (k=2). Is computed using the formula: $\text{Tested Repeatability} = \dfrac{\text{Maximum Value - Minimum Value}}{2}$ where Maximum Value = the highest measured value Minimum Value = the lowest measured value If **Calculation Method** is set to **% of Avg**, the tested repeatability is computed in percentage.
Standard Deviation	Standard deviation shows the variation in measurement over the entire data set. A low standard deviation indicates that the measurement is close to the average reading whereas a high standard deviation shows that the reading fluctuates from the average value. Standard deviation is caluculated using the formula:
Result	Displays the **Pass** or **Fail** results. If a value higher than the **Average Value** limit is generated, the **Result** of the repeatability test for the variable is **FAIL**.

Note

To save the data in the **Select Variables** table without generating the report, click **OK**. The next time you open the **Repeatability Certificate** window, the table is populated with the saved data.

Enable the **Export Data** checkbox to Open the exported data file as *XML Files* in Microsoft Excel® or, drag and drop to Microsoft Excel®.

5.14 Export a repeatability certificate to Excel

Procedure

1. To generate an XML file of a *Repeatability* report, check **Export Data**.

   Note

   By default, the exported data are generated in *data.xml* under GC specific folders.

2. To select a different file or folder, click **Select File**. To open it in Excel, click **Select File** and drag and drop the file to Excel or open Excel, set the file type as XML, and then open the file.

5.15 Generate a GC Configuration report

A *GC Configuration* report displays the current settings for the GC. This section explains how to produce a *GC Configuration* report and provides an example for reference.

To generate a GC Configuration report, do the following:

Procedure

1. Select **GC Config Report...** from the **Logs/Reports** menu.
   The *GC Config Report* window displays.
2. Select the checkbox for each option that you want to include in the report.

   Note
   To select all the options, click **Select All (F9)**. To clear all options, click **Clear All (F10)**.

3. Select the type of output you want for the report.
   - File: Saves the report as a .txt file.
   - Printer (with formfeeds): If multiple reports are selected, this option will add page breaks in between reports.
   - Printer (without formfeeds): If multiple reports are selected, after one report is finished, the next report will continue to print on the same page.
   - Screen: Opens the report in a new window within MON2020.

   Note
   When choosing a **Printer** option, if you want to use a printer different from the one that you usually use, deselect the **Use default printer** checkbox and when the report is ready, the printer configuration window displays.

   Note
   When choosing the **File** option, the *Save* window displays, allowing you to name the text file and choose a location in which to save it.

4. Click **Start (F2)**.
   MON2020 generates the customized report and prints or saves it, according to the output option you selected.

   Note
   A *GC Configuration* report that includes all options can take several minutes to generate and save. If you press **Esc** or click **Cancel** in the *Progress* dialog box, MON2020 stops generating the report after the current option is completed.

Page from a sample GC Configuration report

```
System Report From 700XA 44226878
Firmware Revision, Checksum:  4.0.0, 2019/10/22, 0x65fcb1c2
12/05/2019 02:55:30 PM

Description                       Value

Analyzer Name                     44226878
System Description                C6+ He/H2
Site Id                           1
Company Name                      EMP LTD
Location                          UK
Model                             700XA
Serial No                         00
Firmware Version                   4.0.0, 2019/10/22, 0x65fcb1c2
LOI Firmware Version              4.0.0
Std. Component Table Version (GPA)   GPA Standard 2145-16
Std. Component Table Version (ISO)   ISO 6976:2016(E)
CGM FCAL Archive                  Keep Last FCAL Per Day
CGM FVAL Archive                  Keep Last FVAL Per Day
Date Format                       MM$DD$YYYY
Date Field Separator              /
Time Format                       HH:MM:SS
Time Notation                     12 Hr
Synchronize with FF Timing        False
Show Advanced System Variables    False
Allow Multiple Writers            False
Maintenance Mode                  False
Max Warmstart Delay               02:00
Sales Serial No                   00
Calibration Retry on Failure      False
Calibration Repeatability Check   False
Metrology Type                    None
GC Id                             0
Identification Number             0
Configuration Checksum at Lockout
Current Configuration Checksum    0xba418342
Checksum Update Time              12/05/2019 02:50:30 PM
Chromatograph ID
Chromatograph Site ID             0.000000
Keep Last Good Average            False
Ext. Modbus Calibration Archive Data   Circular Buffer
Modbus Stream Alarm Bit Association    SIM2251 Emulation

*************************************************************************************

Component Data Report From 700XA 44226878
Firmware Revision, Checksum:  4.0.0, 2019/10/22, 0x65fcb1c2
12/05/2019 02:52:37 PM

Component Data Table #1

Component             Usr/Std   Det #      Ret Time    Resp Factor   Calib Type
                                              (SEC)

C6+ 47/35/17          Std       1              45.0   3.422772e+08  Single-Level
Propane               Std       1              62.5    2.10626e+08  Single-Level
i-Butane              Std       1              80.6   2.449192e+08  Single-Level
n-Butane              Std       1              91.6   2.500847e+08  Single-Level
Neopentane            Std       1             103.6   2.734801e+08  Single-Level
i-Pentane             Std       1             135.3   2.791553e+08  Single-Level
n-Pentane             Std       1             152.4   2.828341e+08  Single-Level
Methane               Std       1             190.4    1.01714e+08  Single-Level
Carbon Dioxide        Std       1             229.3   1.463915e+08  Single-Level
Ethane                Std       1             262.2   1.647616e+08  Single-Level
Helium                Std       2             189.9    7.62229e+07  Single-Level
Hydrogen              Std       2             205.4   1.264064e+08  Single-Level
Nitrogen              Std       2             242.8   1.073546e+07  Single-Level


Component                   Calib Conc  Unit             Anly Meth

C6+ 47/35/17                   0.03009  Mole%            Area
Propane                         1.0064  Mole%            Area
i-Butane                        0.3019  Mole%            Area
n-Butane                        0.3003  Mole%            Area
Neopentane                     0.10074  Mole%            Area
i-Pentane                      0.09942  Mole%            Area
n-Pentane                      0.10004  Mole%            Area
Methane                        88.4745  Mole%            Area
Carbon Dioxide                  0.9931  Mole%            Area
Ethane                           5.078  Mole%            Area
Helium                          0.5117  Mole%            Area
Hydrogen                        0.5165  Mole%            Area
Nitrogen                        2.4873  Mole%            Area
```

5.16 Reset Archive Data

Use this feature to delete archived data and reset the gas chromatograph memory.

To delete archived data and reset the GC memory, do the following:

Procedure

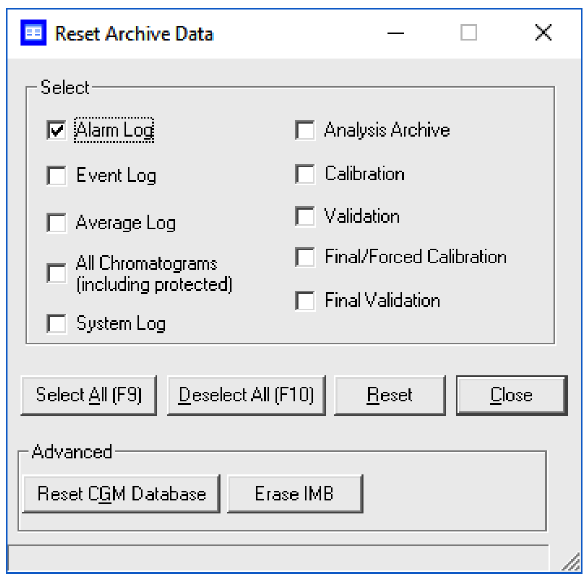
1. Select **Reset Archive Data...** from the **Logs/Reports** menu.
   The *Reset Archive Data* window displays.
2. Select the types of data that you want to delete.

   Note
   To select all the options, click **Select All**. To clear all options, click **Deselect All**.

3. Click **Reset CGM Database** to reset the CGM database and delete all the archived CGMs.

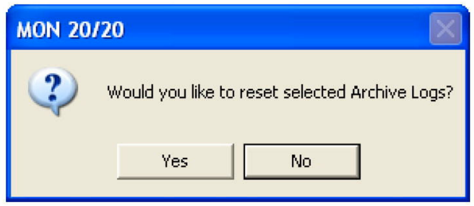
   This operation should only be performed at the direction of an Emerson Customer Care Representative.

4. For Rosemount 370XA GCs, click the **Erase IMB** button to erase the Intellegent Module Board memory.



   Note
   Only select the **Erase IMB** function at the direction of an Emerson Customer Care Representative.

5. Click **Reset**.
   MON2020 displays a confirmation dialog.



6. Click **Yes**.
   MON2020 clears the GC's memory. New archived records begin accumulating again as analysis and calibration runs occur.

5.17 The molecular weight vs. response factor graph

The *Molecular Weight Vs. Response Factor* window generates a graph according to Appendix B in *GPA 2198-03 Selection, Preparation, Validation, Care, and Storage of Natural Gas and Natural Gas Liquids Reference Standard Blends*. This graph can be useful in checking valve function and consists of the following information:

- Log (Molecular Weight) vs. Log (Response Factor): plots the values for the selected calibration.
- A trend line (best fit straight line);.

  Note
  The ideal trend line would be linear.

- R-squared correlation coefficient.

  Note
  The closer RSq is to **1**, the better.

This graph is only available for calibration streams, which can be selected from the **Stream** dropdown list. By default, the newest final calibration data is used to generate the graph, but any archived final calibration file can be used by selecting it from the **Final Calibration Record** dropdown list.

To print the graph, click **Print**.

5.18 H(s) Archive

The **Logs/Reports** → **H(s) Archive** stores the superior dry primary calorific value (CV) for up to two years. The heating values measurement analysis is dependent on the gas composition and is only available for Rosemount 770XA Gas Chromatographs.

To collect the records:

Procedure

1. Use the pull-down menus and select the **Start Date** and **Start Time**.
2. Use the pull-down menus and select the **End Date** and **End Time**'
3. Click **Read Records.**

   The records displays with the `Date Time`, `Stream`, and `H(s)` values data.

4. **Right click** on the table to save or print the records.

6 Control Menu

The options in the **Control** drop down list allow you to manage analysis runs as well as calibration, validation, and baseline runs. **Control** menu commands also allow you to stop an analysis run immediately or, at the end of the run.

6.1 Auto Sequence

This is the normal mode for an online GC. Use this function to start continuous GC analysis runs that follow a predefined stream sequence. See Create a stream sequence for a detector for detailed instructions on configuring the predefined sequence.

Note
If an analysis run is in progress, it must be stopped before auto sequencing can be started. See Stop an analysis for more information.

Note
If auto calibration or auto validation is enabled then they will be performed as part of the auto sequence.

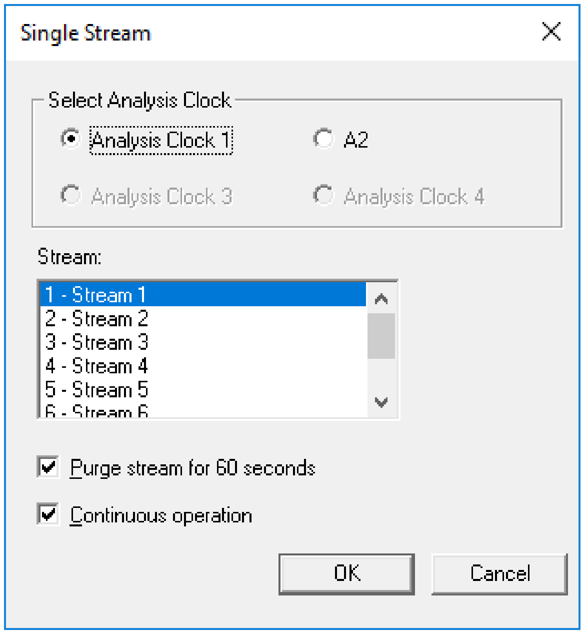
To initiate auto-sequencing, do the following:

Procedure

1. There are three ways of initiating auto sequencing:
   a) Select **Control** → **Auto Sequence...** → **Single Stream**.
   b) Press **F2**.
   c) Click  on the Toolbar.

   The *Start Auto Sequence* dialog displays.

2. Select **Analysis Clock**, for GC's configured with more than one Analysis Clock.



3. Decide whether to enable purging, then select or deselect the **Purge stream for 60 seconds** checkbox as necessary.

Note
Purge duration can be configured in the 700XA and 1500XA. See `Purge Duration` in Analysis Clock Configuration.

Purging allows sample gas to flow through the sample loop for 60 seconds prior to beginning the first analysis. The checkbox is selected by default.

4. Click **OK** and auto sequencing starts.

   Use the `Mode` column on the **GC Status Bar** to monitor the status of the analysis run.

6.2 Analyze a single stream

If an analysis run is in progress, it must be stopped before single stream analysis can be started. See Stop an analysis for more information.

Note
If auto calibration or auto validation is enabled then they will be performed as part of the auto sequence.

To start an analysis run on a single calibration or sample stream, do the following:

Procedure

1. Select **Single Stream...** from the **Control** menu.
   The ***Start Single Stream Analysis*** dialog displays.
2. Select **Analysis Clock** to display the analysis clock related streams in **Stream** list.
3. Select a stream from the **Stream** menu.
4. Decide whether to enable purging, then select or deselect the **Purge stream for 60 seconds** checkbox as necessary.

   Note
   Purge duration can be configured in the 700XA and 1500XA. See **Purge Duration** in Analysis Clock Configuration.

   Purging allows sample gas to flow through the sample loop for 60 seconds prior to beginning the first analysis. The checkbox is selected by default.
5. Check or uncheck the **Continuous operation** checkbox to set or disable repetitive analysis. The checkbox is selected by default.

   If you select **Continuous operation** the stream selected will continue until halted.
6. Click **OK**.
   The analysis starts. Use the **Mode** column on the **GC Status Bar** to monitor the status of the analysis run.

6.3 Calibrate the gas chromatograph

Calibration runs are determined by the component data table (CDT) and Streams settings. See The component data tables and Create a stream sequence for a detector for detailed instructions on how to edit these settings.

To calibrate a GC, do the following:

Procedure

1. Select **Control** → **Calibration...**.
   The **Calibration** dialog displays.

   Note
   If the GC is in *Auto Sequence* mode, calibration does not start until two or more analysis runs have been completed. This delay is required to complete the current analysis and the analysis of the stream currently purging through the valve.

2. Select **Analysis Clock** to display the analysis clock related streams in **Stream** list.
3. Select a **Stream**.
4. Decide whether to enable purging; then select or deselect the **Purge stream for 60 seconds** checkbox as necessary.

   Note
   Purge duration can be configured in the 700XA and 1500XA. See **Purge Duration** in Analysis Clock Configuration.

   Purging allows sample gas to flow through the sample loop for 60 seconds prior to beginning the first analysis. The checkbox is selected by default.

5. Select the desired calibration type.
   - Select **Normal** to perform a manual calibration in which the component data table for the selected stream(s) will be updated with calibration data *unless* the data is outside the acceptable deviations, as listed on the component data table. For more information, see The component data tables.
   - Select **Forced** to perform a manual calibration in which the component data table for the selected stream(s) will be updated with calibration data *even if* that data is outside the acceptable deviations, as listed on the component data table. For more information, see The component data tables.

     Note
     A forced calibration updates the component data table's response factors even if there are issues with the analysis; therefore, **manually check the results of the calibration before returning the unit to service**.

6. Click **OK**.
   The calibration starts. Use the **Mode** column on the **GC Status Bar** to monitor the status of the operation.

6.4 Validate the gas chromatograph

During a validation run, the GC performs a test analysis to verify that it is working properly. The test analysis is performed on a gas whose component concentrations are already known; if the GC's results deviate significantly from the predetermined data, an alarm is generated. Validation runs are determined by the validation data table and streams settings. See The validation data tables and Create a stream sequence for a detector for detailed instructions on how to edit these settings.

To validate the GC, do the following:

Procedure

1. Select **Control** → **Validation...**.
   The **Validation** dialog displays.

   Note
   If the GC is in **Auto Sequence** mode, validation does not start until two or more analysis runs have been completed. This delay is required to complete the current analysis and the analysis of the stream currently purging through the valve.

2. Select **Analysis Clock** to display the analysis clock related streams in **Stream** list.
3. Select a **Stream**.
4. Decide whether to enable purging, then select or unselect the **Purge stream for 60 seconds** checkbox as necessary.

   Note
   Purge duration can be configured in the 700XA and 1500XA. See **Purge Duration** in Analysis Clock Configuration.

   Purging allows sample gas to flow through the sample loop for 60 seconds prior to beginning the first analysis. The checkbox is selected by default.

5. Click **OK**.
   The validation starts. Use the **Mode** column on the **GC Status Bar** to monitor the status of the operation.

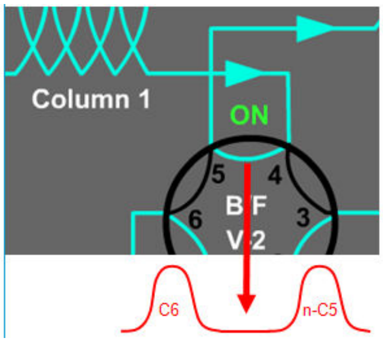
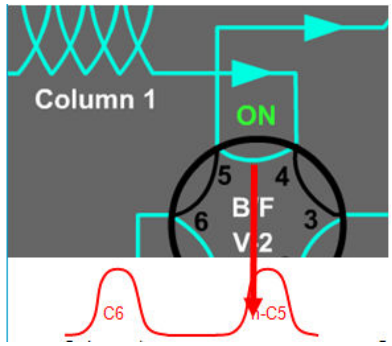
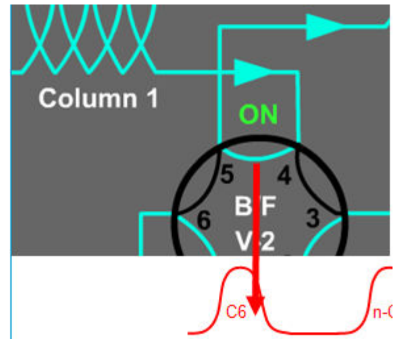
6.5 Configure the valve timing

Use this feature to set and adjust the valve timing.

Note
Auto valve timing is only available with the Rosemount™ 370XA Gas Chromatograph.

The function of valve timing is to switch the analytical flow path after the peak of a *lighter* component has left a column, but before the next component comes out. The first image below shows the valve timing occurring in-between the C6+ and n-Pentane peaks correctly on a standard 4-minute C6+ application. The second image shows what happens when the valve timing is too early and cuts off some of the first peak. The third image shows what happens when the valve timing is too late and cuts of some of the second peak. In the last two examples, not all of the component will reach the detector at the expected time, and therefore will not be measured correctly.

Table 6-1: The effect of valve timing on component leaks.

		
Correct timing	**Early valve timing error**	**Late valve timing error**

Historically, a technician monitors the peak areas of the two affected peaks while making changes to the valve timing, and determine the correct timing using personal judgment. The intention of the auto valve timing (AVT) process is to automatically make the adjustments and monitor the peak areas to determine the correct valve timing automatically, reducing the load on the technician to just selecting when to initiate the AVT process.

The AVT is a process that runs on the calibration gas stream. The process consists of the following activities:

- Correctly identify all the component peaks.
- Adjust the timed events based on peak retention times.
- Automatically adjust the valve time.
- Run a calibration cycle after the adjustments have been made.
- Check the range and order of response factors.

Procedure

1. Select **Control Auto Valve Timing** to open the **Start Auto Valve Timing** dialog.
2. If you are installing a new module, select the **Factory Defaults** checkbox; otherwise, select the **Use Current** checkbox.
3. Click **OK**.
   The AVT process will run. When it completes, it will generate and display an *Auto Valve Timing* report.

Figure 6-1: Auto Valve Timing sample report

```
                          Auto Valve Timing

Date-Time: 10/15/08 09:29   Analysis Time: 350    Cycle Time: 360
Stream: 4 Cal               MODE:  FCAL     Cycle Start Time: 09:23
Analyzer: Houston      Strm Seq:1,3,2
Houston
S/N: 000001      SO: 000001

Valve 2 - OFF
EVC Component  n-Pentane
LVC Component  C6+(47/35/17)

Time          EVC Area     % Change        LVC Area     % Change
19              883624            -          606288            -
19.5       1.21677E+06        37.7%          421916       -30.4%
20*        1.24228E+06         1.8%          416836        -1.2%
20.5       1.25552E+06         1.1%          396148        -5.0%
21         1.25318E+06        -0.2%          336532       -15.0%


Valve 3 - OFF
EVC Component  Ethane
LVC Component  Propane

Time          EVC Area     % Change        LVC Area     % Change
38              883624            -          506288            -
38.5       1.11677E+06        32.7%          321916       -35.4%
39*        1.14256E+06         1.4%          316836        -1.4%
39.5       1.15534E+06         1.0%          396148        -4.8%
40         1.15378E+06        -0.4%          236532       -15.0%

ACTIVE ALARMS
```

6.6 Auto valve timing alarms

Alarm Name	Description	Example
Excessive AVT Adjustment	If the valve timing adjustment exceeds the limit set in the *Configuration* dialog, this alarm is triggered and the retention times, and timed events are set back to their pre-adjustment settings. The valve number(s) that did not find an ideal time are reported with the alarm.	Exc AVT Adj: **2,3**
AVT Timed Event Adjustment	If an adjustment of a timed event by the AVT process results in a timed event being within 0.5 seconds of another timed event, this alarm is triggered and the retention times and timed events are set back to their pre-adjustment values. The timed event and the time of the event are reported with the alarm.	AVT Timed Event Adj: **32 sec**
AVT Missing Peak	If any of the component peaks cannot be found during any of the calibration gas analysis runs, this alarm is triggered and the retention times and timed events are set back to their pre-adjustment values. The peak that could not be identified is reported with the alarm.	AVT Missing Peak: **Nitrogen**

Related information

Configure the valve timing

6.7 Halt an analysis

To stop the current analysis at the end of its cycle, do the following:

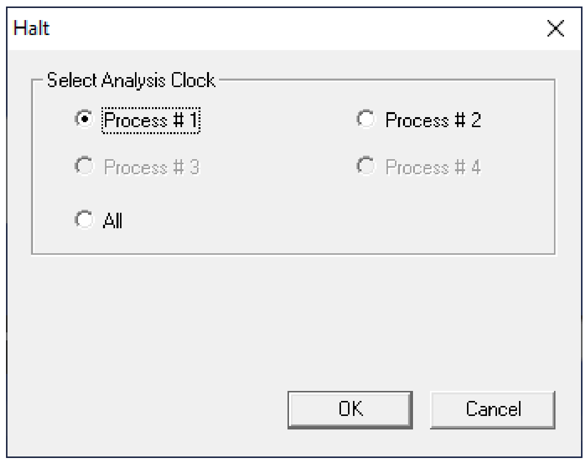
Procedure

1. There are three ways to halt an analysis run:
    a) Select **Halt...** from the **Control** menu.

    b) Press **F3**.

    c) Click on the Toolbar.
    A confirmation message displays.

Figure 6-2: Confirmation message



2. Select the **Analysis Clock** to halt.
3. Click **Yes**.
    The analysis stops at the end of the current cycle. Use the **Mode** column on the *GC Status Bar* to monitor the status of the operation. When the analysis has halted, the **Mode** value is **Idle**.

6.8 Stop an analysis

This function forces the system into *Idle* mode. If **Stop Now** is performed while an analysis is in progress, the components may continue to elute from the columns. No analysis data is generated.

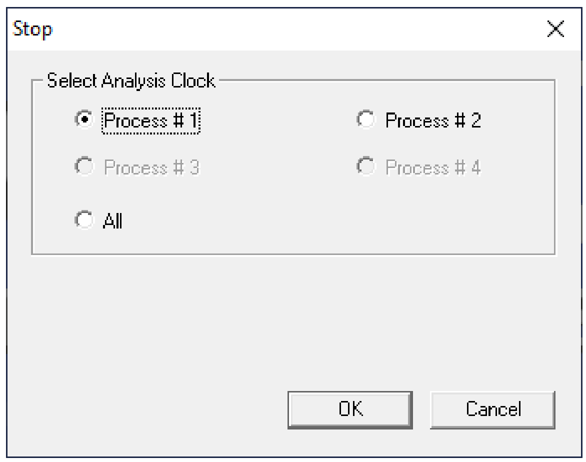
Do not perform a **Stop Now** unless absolutely necessary. Whenever possible, use the **Halt** function.

To *immediately* stop an analysis run, do the following:

Procedure

1. Select **Control** → **Stop Now...**.
   A confirmation message displays.

Figure 6-3: Confirmation message



2. Select the **Analysis Clock** to **Stop Now**.
3. Click **Yes**.
   The current analysis stops.

7 Tools

The options in the Tools dropdown list allow you to do the following:

- Manage users.
- Upgrade the firmware
- Cold boot and restart the GC
- Modbus® Map Editor
- Modbus® Test program - used to confirm that data is being accurately relayed from the gas chromatograph to the PC.
- Diagnostics
- Adjust the sensitivity of the LOI keys.
- Install upgrades to the GC
- Run, view, and Save diagnostic data

For Rosemount 370XA Gas Chromatograph, the following options are available:

- Module Validation
- Force Module Update
- Edit Module Validation Allowable Deviations
- AVT Timed Event Adjustments
- AVT Valve Selections
- AVT Settings

7.1 Users

Use the User Administration commands to create or delete users, change passwords, and to monitor PC-to-GC connections.

Login security is at the gas chromatograph level instead of at the software level. This means that you have to log in to the gas chromatograph to which you are trying to connect. *This also means that if you create a new user, that user is only valid for the GC to which you are connected. You cannot connect to any other GC unless you create the same user on it first*.

MON2020 recognizes the following four user types, or roles, each with an increasing level of access to functionality:

Read-only	A read-only user has the lowest level of access and can view data but cannot make any changes. A read-only user can change his or her password only.
Regular	A regular user has all of the privileges of a read-only user, as well as the ability to acknowledge and clear alarms. A regular user can also control the GC through MON2020's **Control** menu. A regular user can change his or her password only and cannot create or delete other users.

Super User A super user has all of the privileges of a regular user, as well as the ability to manage and control the GC through MON2020's **Application** and **Hardware** menus. A super user can change his or her password only and cannot create or delete other users.

Administrator An administrator has complete access to all of MON2020's commands and functions, as well as the ability to manage all other users by creating or deleting user accounts and changing passwords.

Note
Each GC ships with two administrator accounts. Contact your Customer Care Representative to obtain account information. For the first-time logon, a password is required.

The following table lists in detail the functions and commands that are available to each user role:

Menu	Commands	Admin User	Super User	Regular User	Read-Only User
File	GC Directory	Y	Y	Y	Y
	Open Configuration File	Y	Y	Y	Y
	Save Configuration (to PC)	Y	Y	Y	Y
	Restore Configuration (toGC)	Y	Y	Y	Y
	Program Settings	Y	Y	Y	Y
	Print Setup	Y	Y	Y	Y
	Exit	Y	Y	Y	Y
Chromatograph	Connect	Y	Y	Y	Y
	Disconnect	Y	Y	Y	Y
	Chromatogram Viewer	Y	Y	Y	Y
	Chromatogram - Forced Cal	Y	Y	N	N
	View/Set Date Time Time	Y	Y	Read-only	Read-only
Hardware	Heaters	Y	Y	Read-only	Read-only
	Valves	Y	Y	Read-only	Read-only
	EPC	Y	Y	Read-only	Read-only
	Detectors	Y	Y	Read-only	Read-only
	Discrete Inputs	Y	Y	Read-only	Read-only
	Discrete Outputs	Y	Y	read-only	read-only
	Analog Inputs	Y	Y	Read-only	Read-only
	Analog Outputs	Y	Y	Read-only	Read-only

Menu	Commands	Admin User	Super User	Regular User	Read-Only User
	Installed Hardware	Read-only	Read-only	Read-only	Read-only
Application	System	Y	Y	Read-only	Read-only
	Component Data	Y	Y	Read-only	Read-only
	Timed Events	Y	Y	Read-only	Read-only
	Calculations - Control	Y	Y	Read-only	Read-only
	Calculations - Averages	Y	Y	Read-only	Read-only
	Calculations - User Defined: • Calculation - Dew Point • Calculation - Configuration • Calculation - Metrology Options	Y	Y	Read-only	Read-only
	Limit Alarms	Y	Y	Read-only	Read-only
	Discrete Alarms	Y	Y	Read-only	Read-only
	System Alarms	Y	Y	Read-only	Read-only
	Streams	Y	Y	Read-only	Read-only
	Analytical Train Configuration	Y	Y	Read-only	Read-only
	Analysis Clock Configuration	Y	Y	Read-only	Read-only
	Stream Sequence	Y	Y	Read-only	Read-only
	Method Switching	Y	Y	Read-only	Read-only
	Communication	Y	Y	Read-only	Read-only
	Ethernet Ports	Y	Y	Read-only	Read-only
	LOI Status Variables	Y	Y	Read-only	Read-only
	FFB PV Mappings	Y	Y	Read-only	Read-only
Logs/Reports	Alarms	Y	Y	Y	Read-only
	Unack/Active Alarms	Y	Y	Y	Read-only
	Alarm Logs	Read-only	Read-only	Read-only	Read-only
	Clear/Ack Alarms	Y	Y	Y	N
	Maintenance Log	Y	Y	Y	N
	Parameter List	Y	Y	Y	N
	Drawings/Documents	Y	Y	Y	N
	Event Log	Read-only	Read-only	Read-only	Read-only
	Report Display	Read-only	Read-only	Read-only	Read-only

Menu	Commands	Admin User	Super User	Regular User	Read-Only User
	Archive Report	Read-only	Read-only	Read-only	Read-only
	Analysis/Calibration/ Validation	Y	Y	Y	N
	Average	Y	Y	Y	N
	Export Data	Y	Y	Y	N
	Printer Control	Y	Y	Y	Read-only
	Trend Data	Read-only	Read-only	Read-only	Read-only
	Repeatability Certificate	Y	Y	Y	N
	GC Config Report	Y	Y	Y	N
	Reset Archive Data	Y	N	N	N
	Molecular Wt Vs Response Factor	Y	Y	Y	Read-only
	H(s) Archive	Y	Y	Y	Read-only
Control	Auto Sequence	Y	Y	Y	N
	Single Stream	Y	Y	Y	N
	Calibration	Y	Y	Y	N
	Validation	Y	Y	Y	N
	Auto Valve Timing	Y	Y	Y	N
	Halt	Y	Y	Y	N
	Stop Now	Y	Y	Y	N
Tools	Users	Y	N	N	N
	User Administration	Y	N	N	N
	Change User Password	Any	Own	Own	Own
	Upgrade Firmware	Y	N	N	N
	Cold Boot	Y	N	N	N
	Restart GC	Y	N	N	N
	Modbus Map Editor	Y	N	N	N
	Diagnostics	Y	N	N	N
	Module Validation	Y	N	N	N
	Force Module Validations Settings	Y	N	N	N
	Edit Module Validation Allowabble Deviations	Y	N	N	N
	AVT Timed Event Adjustments	Y	N	N	N

Menu	Commands	Admin User	Super User	Regular User	Read-Only User
	AVT Valve Selections	Y	N	N	N
	LOI Key Sensitivity	Y	N	N	N
	Save Diagnostic Data	Y	N	N	N
	View Diagnostic Data	Y	N	N	N

7.1.1 Create a user

Note
You must be logged in as an administrator.

To create a user, do the following:

Procedure

1. Select **Tools** → **Users** → **User Administration...**.
   The *User Administration* window appears, displaying a list of current users and their role levels.
2. To add a user, click **Add User**.

   The *Add User* window displays.
3. Enter the appropriate information into the text fields.
4. Click **OK**.
   MON2020 creates the new user and adds it to the **User** table on the *User Administration* window.

7.1.2 Export a list of user profiles

To save a list of users, along with their role levels and passwords, do the following:

Procedure

1. Select **Tools** → **Users** → **User Administration...**.
   The *User Administration* window appears, displaying a list of current users and their role levels.
2. Click **Export File**.
   The *Export User File* window displays.
3. Navigate to where you want to save the file, if necessary.
4. Type in a file name or use the pre-generated name provided.
5. Click **Save**.

7.1.3 Import a list of user profiles

To load a list of users, along with their role levels and passwords, do the following:

Procedure

1. Select **Tools** → **Users** → **User Administration...**.

The *User Administration* window appears, displaying a list of current users and their role levels.

2. Click **Import File**.

   The *Import User File* window displays.

3. Navigate to where the file is located, if necessary.

   Note
   User files have the .xusr extension.

4. Click on the file to be loaded.
5. Click **Open**. The users are added to the *User Administration* window.

7.1.4 Edit a user profile

Note
You must be logged in as an administrator.

To edit a user's name, role level, or password, do the following:

Procedure

1. Select **Tools** → **Users** → **User Administration....**
   The *User Administration* window appears, displaying a list of current users and their role levels.
2. Select the user whose role you want to edit and click **Edit User**.
   The *Edit User* window displays.
3. Change the appropriate information as required.
4. Click **OK**.
   MON2020 makes the requested changes and returns to the *User Administration* window.

7.1.5 Remove a user

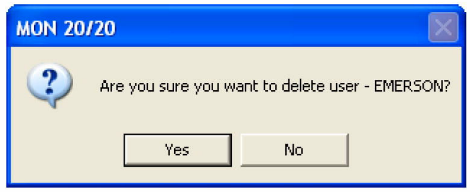
Prerequisites

Note
You must be logged in as an administrator to remove a user.

To remove a user, do the following:

Procedure

1. Select **Tools** → **Users** → **User Administration....**
   The *User Administration* window appears, displaying a list of current users and their role levels.
2. Select the user you want to delete and click **Remove User**.
   A confirmation message displays.



3. Click **Yes**.
   MON2020 deletes the user and returns to the *User Administration* window.

7.1.6 Change a user's password

A user without administrator-level access can only change his or her own password.

Procedure

1. Select **Tools** → **Users** → **Change User Password...**.
   The *Change User Password* window displays.
2. Enter the appropriate information in the text fields and click **OK**.

7.1.7 Reset the administrator password

To reset an administrator password, do the following:

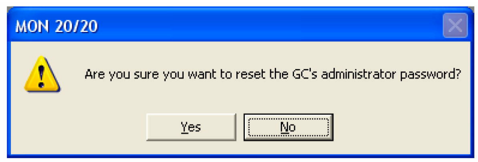
Procedure

1. Start MON2020 and select **Users** → **Reset Administrator User / Password**.

   Note
   If MON2020 was already started, be sure to disconnect from all GCs before attempting to reset the administrator password.

   The following warning displays:

   Figure 7-1: Password reset warning message

2. Click **Yes**.
   The *Connect to GC* window displays.
3. Click the **Ethernet** button that corresponds to the GC whose password you want to reset.
   MON2020 connects to the GC and generates a password reset request ID for the default user *Emerson*. If *Emerson* does not exist, it is created. The *MON2020 - Password Reset* window displays.
4. Click **Copy to Clipboard** and email the password reset request ID to GC.CSC@emerson.com. We will send you a password reset key.
5. After you receive the password reset key, return to the *Connect to GC* window and again click the **Ethernet** button that corresponds to the GC whose password you want to reset.
   The *Login* window displays.
6. Enter the **User Name**, *Emerson*, and the password reset key and click **OK**.
   MON2020 connects to the GC. To change the password, see Change a user's password.
7. The MON2020 security policy requires a user to change the password immediately after login. After changing the password successfully, login with the new password.

Related information

Password security level

7.1.8 Password security level

Procedure

1. Select **Tools** → **User Administration**.
2. Make a selection to **Add**, **Remove**, or **Edit** user profiles.
3. Click **Password Security Level** . Options are:
   - Low
   - Medium
   - High
4. Use **Export File** or **Import File** to save or import**User's** profiles

Related information

Password security level

7.1.9 Find out who is connected to the gas chromatograph

To ascertain which users are connect to the GC, select **Tools** → **Users** → **Logged on Users....** The *Logged on Users* window displays with a list of the users who are currently logged on to the GC, along with each user's IP address.

7.2 Upgrade the firmware

This command allows you to download upgrades to the GC's firmware.

To upgrade the firmware, do the following:

Procedure

1. Select **Upgrade Firmware...** from the **Tools** menu.
   The *Upgrade Firmware* window displays. The **Currently Installed Versions** section details the status of the currently-installed applications.
2. Click **Open**.
   The *Open File* dialog displays.
3. Locate and select the desired .zip file and click **Open**.
   The .zip file's content information displays in the **Upgrade** section of the *Upgrade Firmware* window. The **Information** column alerts you to the new files that should be selected and downloaded to the GC.

   Note
   If the upgrade file contains a program that is newer than what is currently installed on the GC, it is automatically selected to download.

4. Select the check boxes for the files that you want and click **Upgrade**.

   While the files are transferring, you can monitor their status in the **Upgrade Progress** section.

Note
If you want to halt the upgrade, click **Cancel Upgrade**. The *Upgrade Progress* stops and the new files are not downloaded to the GC.

When the upgrade completes successfully, a confirmation message displays.

5. Click **OK**.
   MON2020 disconnects from the GC, and the GC reboots.

7.3 Cold Boot

Prerequisites

Cold booting the GC clears all its stored analysis files and logs and resets all the tables to the default settings.

This is a necessary step, for example, towards refurbishing the GC or CPU board.

To cold boot the GC, do the following:

Procedure

1. Select **Cold Boot...** from the **Tools** menu. A warning message displays, stating *Are you sure you want to cold-boot the GC? The GC will lose its configuration and historical data! Are you sure you want to continue?*
2. Click **Yes**. The GC will initiate the cold boot process. Once the process has completed, you will get the following confirmation message, which states, *The GC will reboot. MON2020 connection with GC will go away when you press OK. Reconnect to the GC in 3 minutes.*
3. Click **OK** to reboot the GC.

7.4 Restart the GC

Use this feature to restart the GC.

Procedure

1. Select **Restart GC** from the *Tools* menu. MON2020 displays the *Are you sure you want to Restart the GC?* dialog.
2. Click **Yes** to restart the GC or click **NO** to cancel and close the dialog.

7.5 Modbus Map Editor

Prerequisites

Use this window to map GC data to Modbus™ registers and generate MAP files, which can then be associated with communications ports.

For a list of variable assignments made to all registers, consult the *Communication* section of the *PC Config Report*.

To map GC data to Modbus registers, do the following:

Procedure

1. Select **Communication** from the *Application* menu. The *Communication* window opens.
2. Click **Registers**. The *Modbus Map Editor* window opens.
3. To view or edit registers that are contained in an existing MAP file, click the **Select MAP File** drop-down list and select the appropriate file. The registers will load into the table.

4. To edit a cell, double-click it. You can edit the following parameters:
    - To copy the component settings from a highlighted row and apply them to the next row, click C + Copy. This feature also increments the Component value to the next available component (e.g., incrementing from Ammonia to Benzene), per the GC application.
    - An error message displays when the last available component is reached.

Name	Description
Register Number	Displays the number for the Modbus register that will be polled by a connected data acquisition system.
Data Type	Describes the type of data that is stored in the register. SIM_2251 and User_Modbus options are: • BOOLEAN • INT • LONG • FLOAT • Bitmap(INT) • Bitmap(LONG) • SCALED_FP1 ... SCALED_FP32 If one of the scaled floating point options is chosen, the Zero Scale and Full Scale values for that option will display in the appropriate column cells. The default User_Modbus data type is FLOAT, which means the value is not converted to an integer and is stored in two adjacent registers. Data types other than FLOAT require only one register per variable.
Variable(s)	Displays the variable(s) whose value is to be stored in the register. To change the variable, see Assign Variable to Register.
Record Number	The **Record Number** is enabled for Archive type of variables. The User selects which archive record's data needs to output over Modbus®. Record number 1 is referred to as the recent record and maximum value is referred to as the oldest record.
Access	Determines whether the register will be read-only (RD_ONLY) or read/write (RD_WR).
Format	Defines the date and time using the drop-down menu. Select DDMMYY, MMDDYY, YYMMDD, hhmmss, hhmm, DD, MM, YY, YYYY, WW, hh, mm, or ss.
Zero Scale	Used when converting the analog output value to mA.
Full Scale	Used when converting the analog output value mA.

7.6 The Modbus Test program

Use the Modbus program to poll the GC's Modbus registers (or registers from another device) to confirm that data is accurately relayed from the gas chromatograph to the PC. Then, as necessary, assign data types to the returned data. See Assign scale ranges to

User_Modbus registers for more information. You can save all settings to a file for future reference.

You can use this program to facilitate software debugging or for special installations. With this program, you can troubleshoot any device that employs registers, including the GC, an ultrasonic meter, or a flow computer.

Traditionally, Modbus registers are polled by using a data collection system. To facilitate installation and debugging, the Modbus program emulates a Modbus master.

⚠ CAUTION

Only one Modbus master should be connected to a single serial link at a time.

This section provides detailed instructions for using the Modbus program. Use this program only if you are familiar with Modbus communication protocol and the operation of MON2020.

Related information

Assign Scale Ranges to Registers
Port Setup
Get Modbus data
Transmit single data type
Transmit data using a template
Log data
Save Modbus data
Print Modbus data
Modbus Comm Errors

7.6.1 Modbus protocol comparison

The GC and the Modbus test program can accommodate two different Modbus protocols: **SIM_2251** and **User_Modbus**. Some settings depend on which Modbus protocol is used.

The protocol you need depends ultimately on the hardware used for data acquisition from the GC Modbus register contents.

The following comparison should help clarify the differences between the two protocols as well as the utility of each.

Table 7-1: Comparing SIM_2251 and User_Modbus Protocols

SIM_2251	User_Modbus
A modified protocol that allows a floating point number to be assigned to a single register so that it can be transmitted over Modbus via 2251 emulation slave type. All Gas Custody Transfer GCs are shipped with the SIM_2251 Modbus Interface.	Standard Gould protocol that accommodates PLC Emulation LO-HI or HI-LO word order for 32-bit values. The GC uses the LO-HI order.
Most register contents are predefined. The pre-configured maps conform to the SIM_2251 register designations. See Pre-defined Modbus® Map Files for pre-defined Modbus map files.	Predefined Boolean (coils) User-defined Numeric (registers)

Table 7-1: Comparing SIM_2251 and User_Modbus Protocols *(continued)*

SIM_2251	User_Modbus
Data types are predefined for the following register ranges: **1001-2999** discrete, coils **3001-4999** 16-bit integers **5001-6999** 32-bit integers **7001-8999** IEEE 32-bit floats **9000-9999** Any data type	Data types are user-defined **0 - 9999** discrete, coils **0 - 9999** 16-bit integers For transmitting 32-bit data, two contiguous registers can be used.
When using the Modbus test program, set **Register Mode** to **SIM2251** to view register contents.	When using the Modbus test program, set **Register Mode** to **PLC- LH** or **PLC-HL** to view register contents.
It is not necessary to assign scales to registers.	It may be necessary to assign scales to registers in order to convert floating point values to whole integer representations.

7.6.2 Set communication parameters

To determine or reset the communications parameters used by the Modbus® Test program, do the following:

Procedure

1. Select **Modbus Test...** from the **Tools** menu.
   The *Modbus Test Program* window displays. The current port settings display in the window's title bar. If MON2020 is connected to a GC through an Ethernet, then the Modbus Test program uses the Ethernet connection.
2. Click **Port Setup**.
   The *Port Setup* window appears.
3. Make the appropriate configuration changes to match the settings for the link you are trying to test. The following table lists the typical setting for each parameter:

Parameter	RTU	ASCII	Comments
Port	COM1 or COM2	COM1 or COM2	For serial connection only
Baud Rate	9600	9600	For serial connection only
Data Bits	8	7	For serial connection only
Parity	None	Even	For serial connection only
Stop Bits	1	1	For serial connection only
Flow Control	None	None	For serial connection only
Read Timeout	1000 ms	1000 ms	N/A
Try	2	2	Retry when an error is detected on the frame
Register Mode	(SIM_2251) or PLC-LH (User_Modbus)	(SIM_2251) or PLC-LH (User_Modbus)	N/A

4. Click **OK**.

7.6.3 Obtain Modbus® data

To read or write register contents to the GC, or any other device, do the following:

Note
To learn the variable names that are assigned to the Modbus registers before retrieving the data, generate a GC Config Report and review the **Communication** section.

Procedure

1. In the **Slave Addr** field, type the **COM ID** of the GC. The Modbus program will accept a slave address value of **1** to **247**.

   To use **Broadcast** mode, which directs the Modbus program to poll all known devices, enter **0** in the **Slave Addr** field. Each device interprets this poll attempt as an instruction to read and take action; however, a response message may not be received by the Modbus program.

2. Select the desired read or write option from the **Function** dropdown list.

Function Code	Description	Broadcast
1 (Read Coil)	Reads one or more coil values.	
2 (Read Input Status)	Reads one or more input status values.	
3 (Read Multiple Regs)	Reads one or more register values.	
4 (Read Input Regs)	Reads one or more input register values.	
5 (Set Single Coil)	Set (write) one coil value	✓
6 (Set Single Reg)	Set (write) one register value	✓
15 (Set Multiple Coils)	Set (write) multiple coil values	✓
16 (Set Multiple Regs)	Set (write) multiple register values	✓

3. Type the starting register value in the **Data Addr** field.

   Note
   When the register mode is set to **SIM_2251**, the data type is set automatically by the Modbus program, based on the specified data address.

4. In the **Quantity** field, type the number of registers to be retrieved.

   The Modbus test program accepts a quantity value of **1** to **2016**. The requested number of registers cannot exceed the amount contained by the selected message block but you *can* retrieve a partial block. You cannot cross a message block boundary.

   Also, in **Standard Modbus** mode each register is 16 bits. Therefore, integers (SHORT) consist of one register while floats (FLOAT) and long integers (LONG) consist of two registers.

Note
Boolean registers are not user-defined (for either SIM_2251 or User_Modbus) and primarily contain alarm flags useful for debugging. To view the contents of Boolean registers, select the **1 (Read Coil)** function code.

Numeric registers for User_Modbus can be user-defined. To view the contents of numeric registers, select the **3 (Read Regs)** function code.

5. Type the desired repeat count, which is the number of times the Modbus program should read or set the specified registers before ceasing transmission, in the **Repeat** field.

   The Modbus program will accept a repeat value of **1** to **9999**. A value of **–1** produces an infinite polling loop that can be terminated by clicking **Stop**.

7.6.4 Transmit a single data type

To assign a data type to a group of registers you will read or edit, do the following:

Note
To learn the variable names that are assigned to the Modbus registers before retrieving the data, generate a *GC Config Report* (see Generate a GC Configuration report) and review the **Communication** section.

Procedure

1. In the **Slave Addr** field, type the COM ID of the GC.

   The Modbus test program accepts a slave address value of **1** to **247**.

   To use **Broadcast** mode, which directs the Modbus test program to poll all known devices, enter **0** in the **Slave Addr** field. Each device interprets this poll attempt as an instruction to read and take action; however, a response message may not be received by the Modbus test program.

   Note
   Changes are applied to the corresponding register value at each device.

2. Select the desired read or write option from the **Function** pull down menu.

Function Code	Description	Broadcast
1 (Read Coil)	Reads one or more coil values.	
2 (Read Input Status)	Reads one or more input status values.	
3 (Read Multiple Regs)	Reads one or more register values.	
4 (Read Input Regs)	Reads one or more input register values.	
5 (Set Single Coil)	Set (write) one coil value	✓
6 (Set Single Reg)	Set (write) one register value	✓
15 (Set Multiple Coils)	Set (write) multiple coil values	✓
16 (Set Multiple Regs)	Set (write) multiple register values	✓

3. Type the starting register value in the **Data Addr** field.

Note
The data type is set automatically by the Modbus test program, based on the specified data address.

4. In the **Quantity** field, type the number of registers to be retrieved.

   The Modbus test program will accept a quantity value of **1** to **2016**. The requested number of registers cannot exceed the amount contained by the selected message block but you *can* retrieve a partial block. You cannot cross a message block boundary.

   Also, in **Standard Modbus** mode each register is 16 bits. Therefore, integers (SHORT) consist of 1 register while floats (FLOAT) and long integers (LONG) consist of 2 registers.

   Note
   Boolean registers are not user-defined (for either SIM_2251 or User_Modbus) and primarily contain alarm flags useful for debugging. To view the contents of Boolean registers, select the **1 (Read Coil)** function code.

   Numeric registers for User_Modbus can be user-defined. To view the contents of numeric registers, select the **3 (Read Regs)** function code.

5. Type the desired repeat count, which is the number of times the Modbus program should read or set the specified registers before ceasing transmission, in the *Repeat* field.

   The Modbus test program accepts a repeat value of **1** to **9999**. A value of **–1** produces an infinite polling loop that can be terminated by clicking **Stop**.

6. Select the **Use <data type> to decode registers** radio button in the **Data Type** box.
7. Select a data type from the dropdown list.

   Note
   If **SIM2215 Register** mode is used, the radio buttons in the **Data Type** box are disabled. The following list displays the default data types for each block of SIM_2251 registers:

1000 – 2999	Boolean
3000 – 4999	Integer
5000 – 6900	Long
7000 – 8999	Float
9000 - 9999	Any data type

   Note
   To ensure the best data type assignments, review a saved *GC Config Report*.

8. Click **Transmit** to retrieve the selected registers (i.e., the specified data addresses) from the GC.

   The transmitted/received packet data displays in the *Packet Input-Output* window.

9. Click **Stop** to end the transmission of the data and to return to the **Modbus Function Selection** options.

7.6.5 Transmit data using a template

Templates are best used when decoding mixed data types because the template contains data that the Modbus program can use to determine which data type should be assigned to which register.

To create a new template or to use an existing template, do the following:

Note
To learn the variable names that are assigned to the Modbus registers before retrieving data, generate a *GC Config Report* and review the **Communication** section.

Procedure

1. In the **Slave Addr** field, type the **COM ID** of the GC.

   The Modbus program accepts a slave address value of **1** to **247**.

   To use **Broadcast** mode, which directs the Modbus program to poll all known devices, enter **0** in the *Slave Addr* field. Each device interprets this poll attempt as an instruction to read and take action; however, a response message may not be received by the Modbus program.

   Note
   Changes are applied to the corresponding register value at each device.

2. Select the desired read or write option from the *Function* pull down menu.

Function Code	Description	Broadcast
1 (Read Coil)	Reads one or more coil values.	
2 (Read Input Status)	Reads one or more input status values.	
3 (Read Multiple Regs)	Reads one or more register values.	
4 (Read Input Regs)	Reads one or more input register values.	
5 (Set Single Coil)	Set (write) one coil value	✓
6 (Set Single Reg)	Set (write) one register value	✓
15 (Set Multiple Coils)	Set (write) multiple coil values	✓
16 (Set Multiple Regs)	Set (write) multiple register values	✓

3. Type the starting register value in the **Data Addr** field.

   Note
   The data type is set automatically by the Modbus program, based on the specified data address.

4. In the **Quantity** field, type the number of registers to be retrieved.

   The Modbus program will accept a quantity value of **1** to **2016**. The requested number of registers cannot exceed the amount contained by the selected message block but you *can* retrieve a partial block. You cannot cross a message block boundary.

   Also, in **Standard Modbus** mode each register is 16 bits. Therefore, integers (SHORT) consist of 1 register while floats (FLOAT) and long integers (LONG) consist of 2 registers.

   Note
   Boolean registers are not user-defined (for either SIM_2251 or User_Modbus) and primarily contain alarm flags useful for debugging. To view the contents of Boolean registers, select the **1 (Read Coil)** function code.

   Numeric registers for User_Modbus can be user-defined. To view the contents of numeric registers, select the **3 (Read Regs)** function code.

5. Type the desired repeat count, which is the number of times the Modbus program should read or set the specified registers before ceasing transmission, in the **Repeat** field. The Modbus program will accept a repeat value of **1** to **9999**. A value of **–1** produces an infinite polling loop that can be terminated by clicking **Stop**.
6. Depending on your intent, select **Use template to decode registers** or **Use template to decode logs**.
   The **Record No.** field becomes active if **Use template to decode logs** is selected.
7. Enter the desired record number in the **Record No** field.

   To verify which record number should be entered, consult the Modbus specifications for your device.

   The following table describes the relationship between templates and record numbers:

Data Type Setting	Other Setting(s)	Result
Use template to decode registers	• Enter **Data Addr** value. • Enter **Quantity** value.	Read **Quantity** fields (i.e., the number of fields specified by the **Quantity** setting) from the specified address of the register (**Data Addr**).
Use template to decode logs	Enter **Record No.** value.	Read all fields associated with the **Record No.**
	• Enter **Data Addr** value. • Enter **0** for the **Record No.** value.	Read all fields in all records for the specified log register **(Data Addr)**.

8. Click **Edit Template**.
   The *Template File* window displays with a new template.
9. To open an existing template file, click **Open**.
   The *Select Template Configuration File* dialog displays.
10. Locate and select the template file, and then click **Open**.

Template files are saved with the .cfg extension.

11. To edit the template, select a data type for each desired offset.
12. To change all offsets to the same data type, change the first offset to the desired data type, and then click **Auto Reset**.
    The data type for the remainder of the offsets switch to the data type of the first offset.
13. To save the displayed file to disk, click **Save As...**.
    The *Select Template Configuration File* dialog appears. Type in a filename and click **Save**.
14. Click **OK** to apply your selections and return to the main window.

7.6.6 Set the log parameters

The *Log Data* window allows you to log the polled data to a specified file.

Note
The log data function is not necessary to transmit Modbus data. To disable this function, clear the **Enable Logging 'Data' Registers and Values** checkbox in the *Log Data* window.

To set the log parameters for the Modbus program, do the following:

Procedure

1. Click **Log Data**.
   The *Log Data* window displays.
2. Select the **Enable Logging 'Data' Registers and Values** checkbox to enable data logging and to activate the **Log Data Parameters** section.
3. Select a **Logging Mode** from the dropdown list.

   You have the following options:

   - **Continuous** mode records the polled data continuously until the connection is terminated or data logging is disabled by clearing the **Enable Logging 'Data' Registers and Values** check box.
   - **Sampling** mode records the polled data based on the time interval that you set in the **Time Interval between consecutive logs** text box. Time intervals can be set in seconds, minutes, or hours.

4. Select a type of logging.

   You have the following options:

   - **Append** adds this log to the file specified, preserving previously logged data.
   - **Reset** deletes the previously-logged data and saves only this new log.

5. Click **Save As...**.
   The *Save As* window displays. The file can be saved as a tab-delimited text file or a Microsoft Excel file. Type in a filename and click **Save**.

7.6.7 Save Modbus data

To save the data table to a separate file, do the following:

Procedure

1. Click **Save Data**.
   The *Save 'Data' Displayed As* dialog appears. The file can be saved as a tab-delimited text file, an HTML file, or a Microsoft Excel file.
2. Type in a filename and click **Save**.

7.6.8 Print Modbus data

To print Modbus data, click **Print Data**. The standard print dialog displays.

MON2020 prints the report to your previously configured printer. See Configure your printer for more information about changing printers.

7.6.9 Assign scale ranges to User_Modbus registers

By assigning scale ranges, floating point data can be converted to integer values. This is an optional task that applies to applications using the User_Modbus protocol.

Use the **Register** command described in View or edit scales to assign scale ranges.

7.6.10 Communication errors

The Modbus® program's Error Log is maintained in a circular buffer that holds up to 512 entries.

The Modbus program tracks the errors for a given session but does not store them. When you exit the Modbus program, all errors are cleared.

To view any communication errors that occurred during the data transfer, do the following:

Procedure

1. Click **Error...**.
   The *Error* window appears.

   Note
   Double-click a **Description** cell to scroll through the displayed text.

   ---
2. To view all errors that have occurred in this session, click **Update**.
3. To delete all entries to date, click **Clear**.

7.6.11 View Modbus® Trace logs

To view Modbus logs, do the following:

Procedure

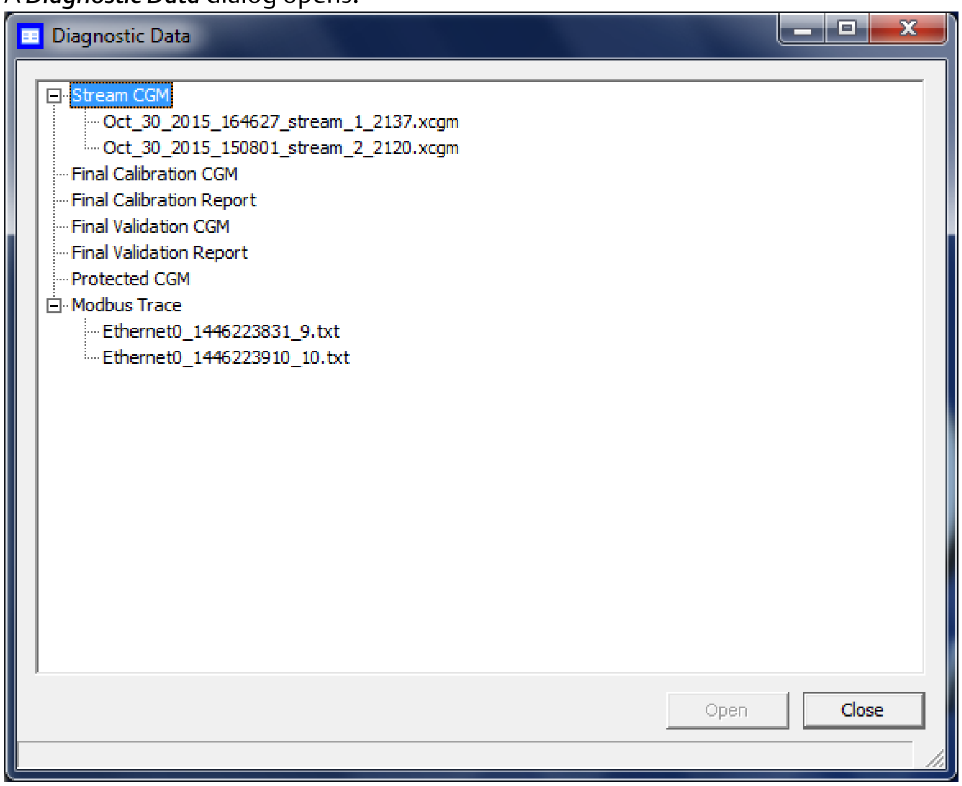
1. Select **View Diagnostic Data...** from the **Tools** menu.

   Note
   You need to be disconnected from the GC to perform this function. If you are not, you are asked if you want to disconnect and open the configuration file. Click **Yes**.

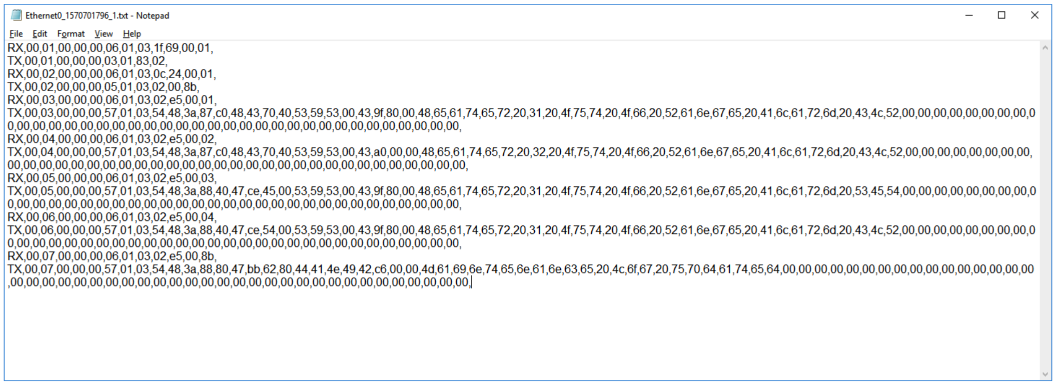
2. The *Open* dialog displays. The default location is the same location as the current **Open configuration** file.
3. Locate and select the latest configuration and diagnostic data file that you want to open and click **Open**.

   Note
   If none exists, see Save diagnostic data on how to create data files.

   A *Diagnostic Data* dialog opens.



4. Double-click **Modbus Trace** file of interest. The file contains the raw protocol data. See the figure below. *RX* is what the GC receives, and *TX* is what the GC transmits.



Ethernet0_1570701796_1.txt - Notepad
File Edit Format View Help

RX,00,01,00,00,00,06,01,03,1f,69,00,01,
TX,00,01,00,00,00,03,01,83,02,
RX,00,02,00,00,00,06,01,03,0c,24,00,01,
TX,00,02,00,00,00,05,01,03,02,00,8b,
RX,00,03,00,00,00,06,01,03,02,e5,00,01,
TX,00,03,00,00,00,57,01,03,54,48,3a,87,c0,48,43,70,40,53,59,53,00,43,9f,80,00,48,65,61,74,65,72,20,31,20,4f,75,74,20,4f,66,20,52,61,6e,67,65,20,41,6c,61,72,6d,20,43,4c,52,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,
RX,00,04,00,00,00,06,01,03,02,e5,00,02,
TX,00,04,00,00,00,57,01,03,54,48,3a,87,c0,48,43,70,40,53,59,53,00,43,a0,00,00,48,65,61,74,65,72,20,32,20,4f,75,74,20,4f,66,20,52,61,6e,67,65,20,41,6c,61,72,6d,20,43,4c,52,00,00,00,00,00,00,00,00,
00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,
RX,00,05,00,00,00,06,01,03,02,e5,00,03,
TX,00,05,00,00,00,57,01,03,54,48,3a,88,40,47,ce,45,00,53,59,53,00,43,9f,80,00,48,65,61,74,65,72,20,31,20,4f,75,74,20,4f,66,20,52,61,6e,67,65,20,41,6c,61,72,6d,20,53,45,54,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,
RX,00,06,00,00,00,06,01,03,02,e5,00,04,
TX,00,06,00,00,00,57,01,03,54,48,3a,88,40,47,ce,54,00,53,59,53,00,43,9f,80,00,48,65,61,74,65,72,20,31,20,4f,75,74,20,4f,66,20,52,61,6e,67,65,20,41,6c,61,72,6d,20,43,4c,52,00,00,00,00,00,00,00,00,0
0,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,
RX,00,07,00,00,00,06,01,03,02,e5,00,8b,
TX,00,07,00,00,00,57,01,03,54,48,3a,88,80,47,bb,62,80,44,41,4e,49,42,c6,00,00,4d,61,69,6e,74,65,6e,61,6e,63,65,20,4c,6f,67,20,75,70,64,61,74,65,64,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00
,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,00,

7.7 View diagnostics

To view the **Diagnostics** window, select **Diagnostics...** from the **Tools** menu.

MON2020 provides a *Diagnostics* window that displays diagnostic information about the following software boards' revision and voltage levels:

- CPU Board
- Preamp board
- Heater/Solenoid board
- Base IO board

This information can be useful when troubleshooting maintenance issues and in deciding if further action is required.

7.8 Module Validation

When you install a new analytical module in the Rosemount 370XA and turn on the power, MON2020 automatically recognizes that a new module has been installed and starts the **Module Validation** wizard. You may also initiate module validation at any time by going to **Tools** → **Module Validation** from either the MON2020 interface or the gas chromatograph's local operator interface (LOI).

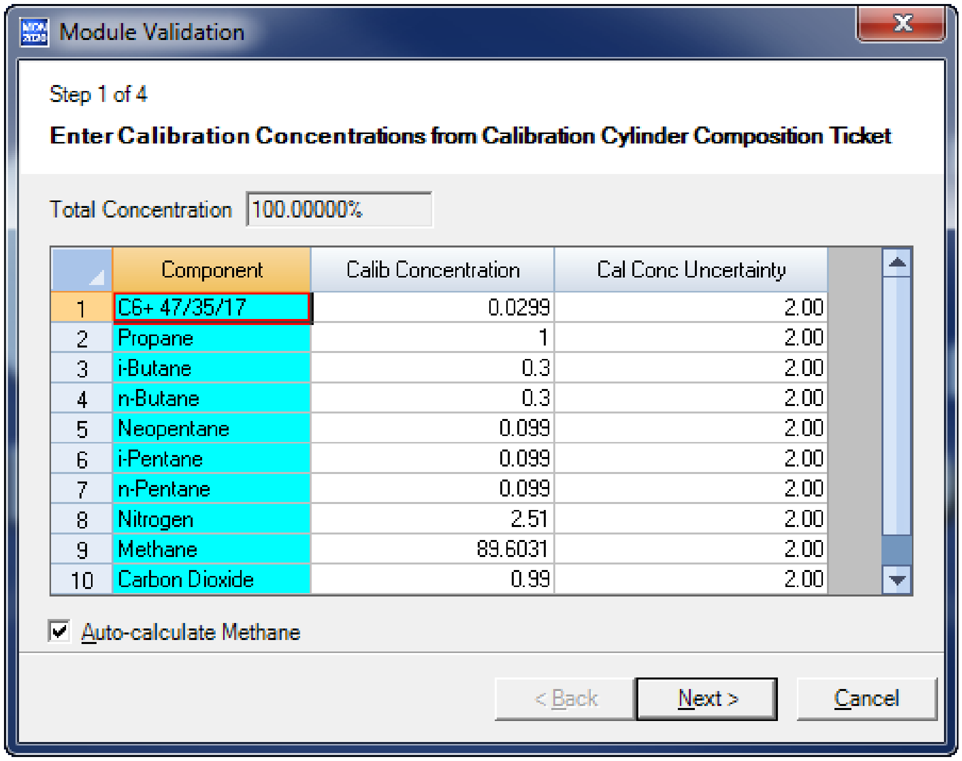
Prerequisites

Only available for Rosemount 370XA GCs.

The **Module Validation** wizard takes you through the following steps:

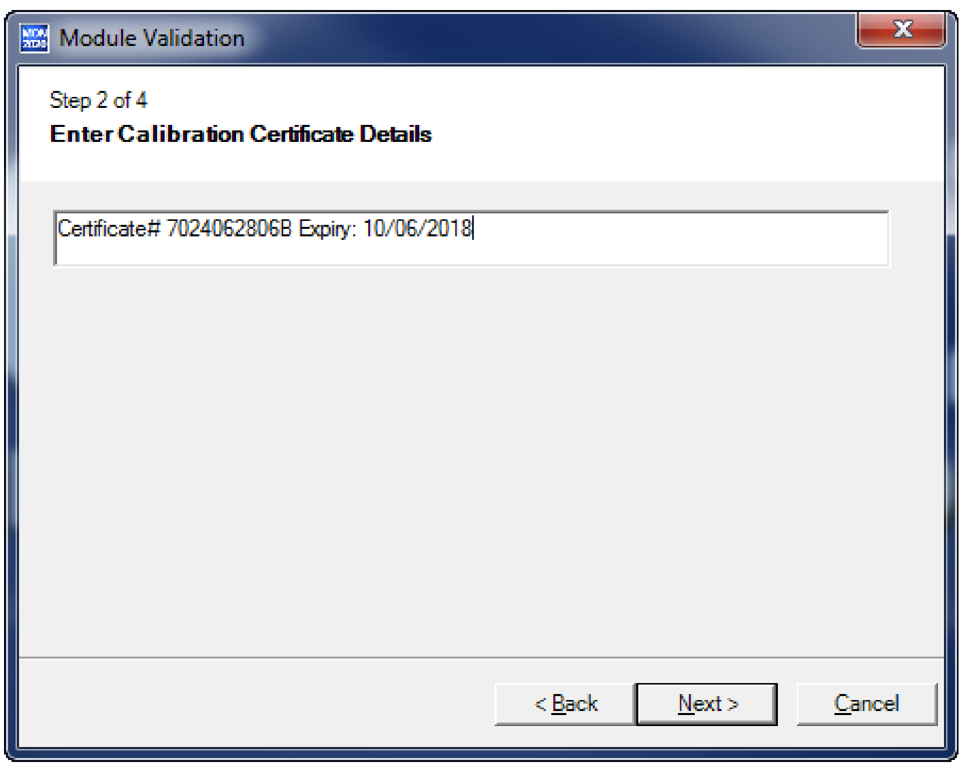
Procedure

1. Enter the calibration concentration.



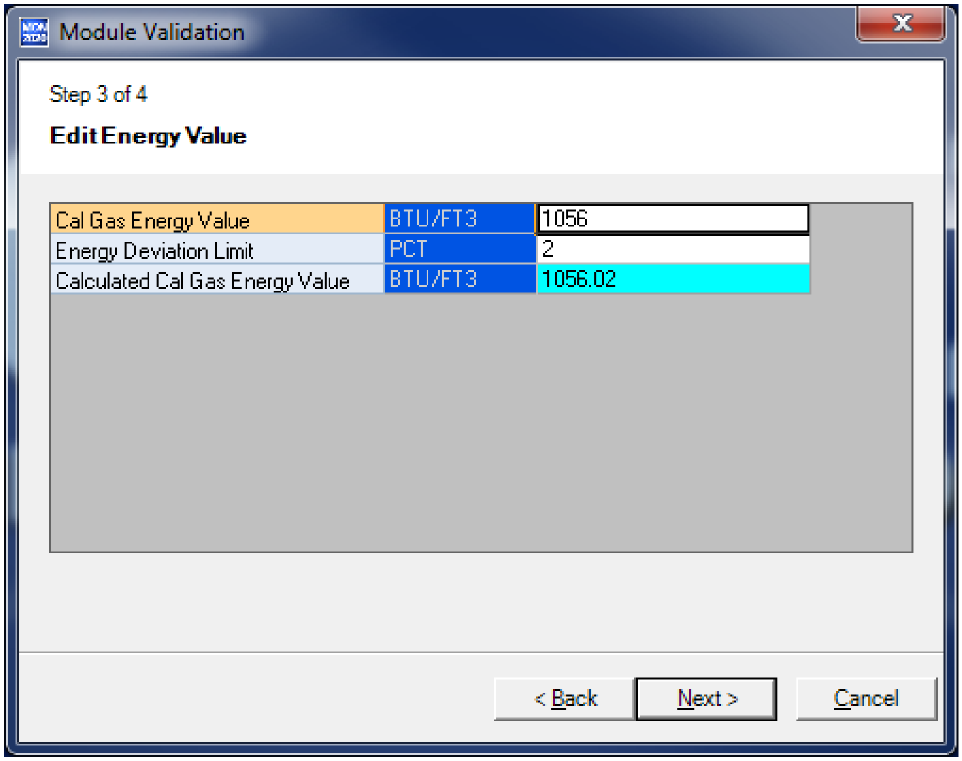
This information is in the Calibration Gas Composition ticket.

2. Enter the uncertainty percentage for each component in the calibration gas.

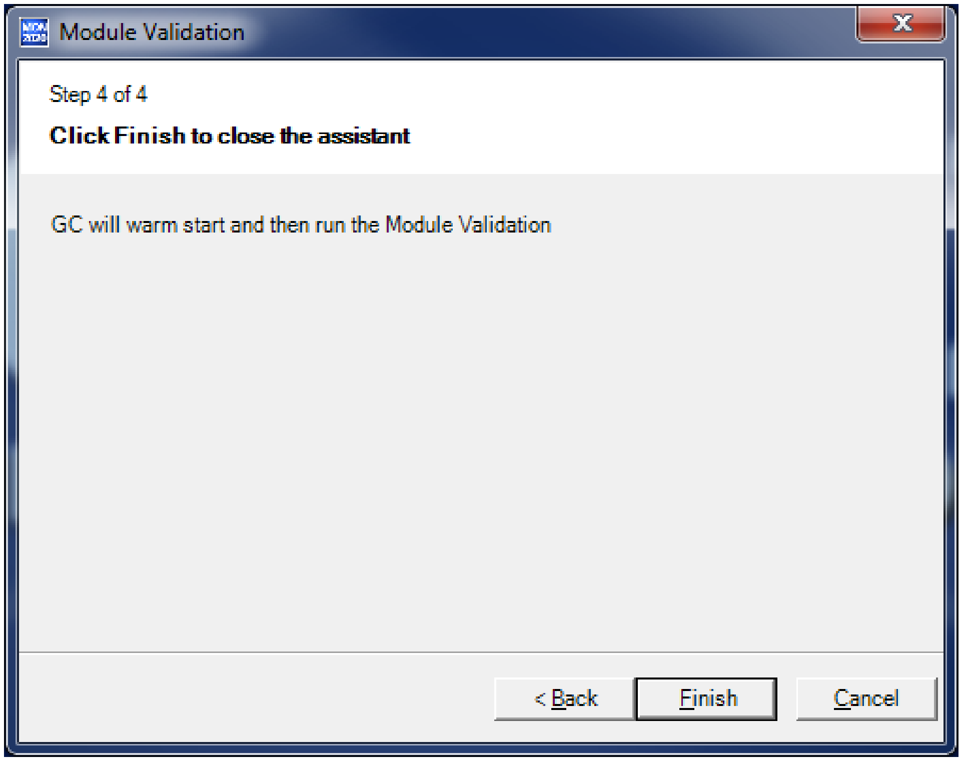


This information is in the Calibration Gas Composition ticket.

3. Warm up the oven, run the carrier gas through the analytical paths, and cycle the analytical valves to rapidly purge the system.
4. Analyze the calibration gas as an unknown, storing the response factors and retention factors in the new analytical module and ensuring that the measured composition is within the uncertainty percentage specified for the calibration gas (entered in step 2).



5. Calibrate the analyzer with the calibration gas to generate updated response factors and retention times.
6. Start the auto sequence process.



See Auto Sequence.

At any time during this process, you can monitor the status of the Change Module process by viewing the *Module Validation* report. See Report types.

If any step in the module validation process fails, the analyzer generates a *Module Validation Failure* alarm and goes idle.

7.8.1 Forcing a module update

⚠ CAUTION

Only perform this task if you are instructed to do so by Rosemount factory or service personnel. This command is used in the factory to write module-specific characteristics such as calibration factors and oven settings into the analytical module. If this is performed in the field, the factory settings programmed into the analytical module are overwritten.

To force a module update, go to **Tools** → **Force Module Update**. This does the following:

Procedure

1. Copies the response factors, retention times, oven temperature, and pressure settings from the analyzer's CPU board into the intelligent module board inside the analytical module. The factory configuration stored in the analytical module is overwritten with the new factors.
2. The module serial number from the analytical module is cached in the analyzer's CPU board. This ensures that the analyzer will no longer see the analytical module

as a new module and thus will not perform the module validation process when the analyzer is power cycled.

See Module Validation.

7.8.2 Module Validation Settings

This feature is only valid for the Rosemount 370XA Gas Chromatograph.

These values are set at the factory based on the analytical application and configuration of the GC. Only make adjustments to the values in these fields at the direction of your Emerson Customer Care representative.

The Module settings include:

- Minimum time to purge Analytical paths (in minutes)
- Maximum number of runs of Module Validation

7.8.3 Edit Module Validation Allowable Deviations

The component values are set at the factory based on the analytical application and configuration of the GC. Only make adjustments to the values in this field at the direction of Emerson Customer Care personnel.

1. Right click the component's **Allowed Deviation** and enter a valve.

   The **Allowable Deviations** for the components are measured as a percentage
2. Click **Save** to apply the changes.
3. Click **OK** to exit and return to the MON2020 **Home** screen.
4. Click **Cancel** to abort the changes and return to the MON2020 **Home** screen.

7.9 AVT Timed Event Adjustments

These values are set at the factory based on the analytical application and configuration of the GC. Only make adjustments to the values in this screen at the direction of Emerson Customer Care personnel.

The screen lists the Component Data and fields for **Dependent Timed Events**, **Ideal RF Ratio**, **Reference Component** with a drop-down selection menu, and **Ideal RF Limit** percent.

7.10 AVT Valve Selections

These Auto Valve Timing (AVT) values are set at the factory based on the analytical application and configuration of the GC. Only make adjustments to the values in this field at the direction of Emerson support personnel.

This AVT valve selections are based on:

- 1-Sample, 4-Backflush, 3-Dual Column

- Timing to be Adjusted - options are None, On or Off
- Early Valve Cut Component - Unused, Component Data list
- Late Valve Cut Component - Read only
- Peak Area Change Limit - Percent

1. Click **Save** to save the edits.
2. Click **OK** to return to the MON2020 **Home** screen without makes changes to the GC.
3. Click **Cancel** to discard the changes and to return to the MON2020 **Home** screen.

7.11 AVT Settings

These values are set at the factory based on the analytical application and configuration of the GC. Only make adjustments to the values in this field at the direction of Emerson support personnel.

1. Use the **AVT Settings** to configure the AVT parameters. Options are:
   - Valve Timing Adjustment - UOM is seconds
   - Maximum Adjustment Limit - UOM is seconds
   - EVC # of Area Repeats - number of iterations of valve timing adjustments where the Area of the peak does not change before the valve timing time is confirmed.
   - Use Repeat # for Valve Timing - apply the number of EVC Area repeats
   - Backup Time - UOM is seconds
2. Click **Save** to save the edits.
3. Click **OK** to return to the MON2020 **Home** screen without makes changes to the GC.
4. Click **Cancel** to discard the changes and to return to the MON2020 **Home** screen.

7.12 Adjust the sensitivity of the LOI Keys

Note
This feature is not available for Rosemount 370XA gas chromatographs.

To adjust the sensitivity of the LOI keys, do the following:

Procedure

1. Select **LOI Key Sensitivity** from the **Tools** menu.
   The *LOI Key Sensitivity* window displays.
2. Adjust the sensitivity for a key by sliding the bar up or down.

   Raising the bar *increases* the sensitivity or the key; lowering the bar *decreases* the sensitivity.

Note
To manipulate all of the sliders together, select the **Apply same key sensitivity to all keys** check box.

Note
Click **Restore Factory Defaults** to return the sliders to their original settings.

3. Click **OK** to save the changes and close the window.

Note
To save the changes without closing the window, click **Save**.

7.13 Set the I/O card type

Note
This feature is not available for Rosemount 370XA gas chromatographs.

To set the card type for an optional communications (COM) card, do the following:

Procedure

1. Select **I/O Cards...** from the **Tools** menu.
   The *I/O Cards* window displays.
2. Select the card type for the I/O card from the drop-down list.
   Options are:
   - None (Default)
   - Analog Output Module
   - Communication Module RS-232
   - Communication Module RS-422/RS-485
   - Discrete Output Module
   - Discrete Input Module
   - Analog Input Module
3. Click **OK** to save the changes and close the window.

   Note
   To save the changes without closing the window, click **Save**.
4. Restart the GC after saving the changes.
5. Click **Cancel** to discard the changes and return to the MON2020 **Home** screen.

7.14 Save diagnostic data

MON2020 provides methods to save and send configuration files and diagnostic data to a user-defined email address. This can be helpful when seeking guidance with troubleshooting. Diagnostic data consists of Stream CGM, Final Calibration CGM, Final

Calibration Report, Final Validation CGM, Final Validation Report, Protected CGM, and Modbus Trace.

Stream CGM is the last stream chromatogram for each stream. The CGMs are listed in the ascending order of stream numbers.

Final Calibration CGM is the final Calibration chromatogram of the last calibration for the available calibration streams. The CGMs are listed in the ascending order of calibration stream numbers.

Final Calibration Report is described under Report types. The report(s) are listed in the ascending order of calibration stream numbers.

Final Validation CGM is the final validation chromatograms of the last final validation for the available validation streams. The CGMs are listed in the ascending order of validation stream numbers.

Final Validation Report is described under Report types. The report(s) are listed in the ascending order of validation stream numbers.

Protected CGM is the chromatogram(s) that is preserved. See Protected chromatograms.

Modbus Trace is the Modbus communication log reports. The ports are listed in ascending order of the port numbers. Each port can have a maximum of two files.

To create the diagnostic data file, do the following:

Procedure

1. Select **Save Diagnostic Data...** from the **Tools** menu.

   Note
   You need to be connected to the GC to perform this operation.

   The *Save* dialog displays. The default file name is similar to current *Save Configuration* with *and Diagnostic Data* added. The default save location is the same location as the current *Save Configuration*. You are able to change location and/or filename as with current *Save Configuration* - see Save the current configuration.
2. Click **Save**.
   After the information is saved to the PC, a window pops up asking if you want to *Email config file and diagnostic data?*
3. Click **Yes**.
   Your email client launches with the configuration file and diagnostic data attached.

7.15 View diagnostic data

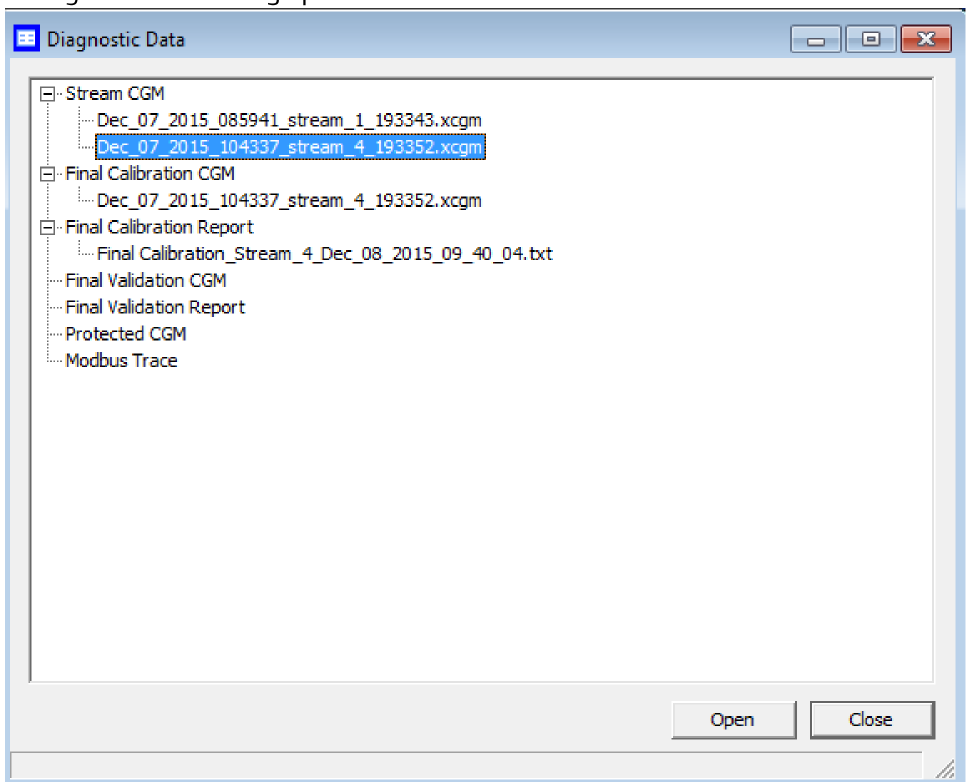
To view a *Diagnostic Data* file, do the following:

Procedure

1. Select **View Diagnostic Data...** from the **Tools** menu.

   Note
   You need to be disconnected from the GC to perform this function. If you are not, you are asked if you want to disconnect and open the configuration file. Click **Yes**.

2. The *Open* dialog displays. The default location is the same location as the current *Open* configuration.
3. Locate and select the configuration and diagnostic data file that you want to open and click **Open**.
   A *Diagnostic Data* dialog opens.



4. Select the data of interest and click **Open**.
5. Click **Save**.
   After the information is saved to the PC, a dialog diplays asking if you want to *Email config file and diagnostic data?*
6. Click **Yes**.
   Your email client launches with the configuration file and diagnostic data attached.

A Custom calculations

To create or edit a customized calculation using GC analysis data, do the following:

Procedure

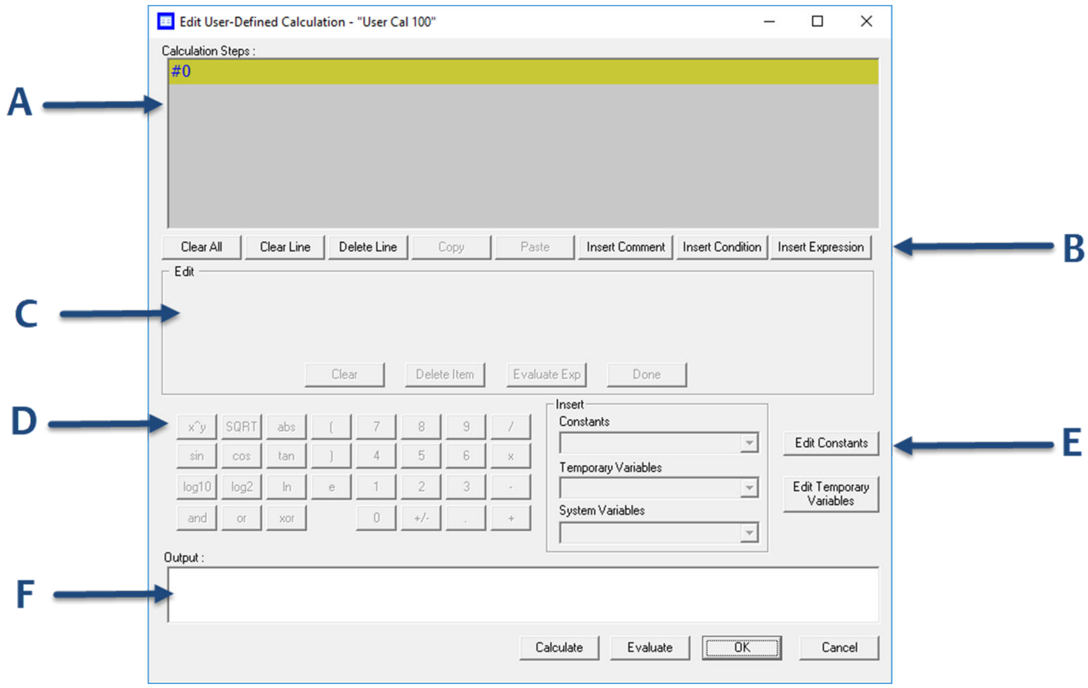
1. Select **Applications** → **Calculations** → **User Defined...**.
   The *User Defined Calculations* window appears, containing a list of all the user-defined calculations that are available to the GC.
2. Double-click the *Label* cell and enter a name for the calculation you are about to create.

   Note
   If you want to enter a short description for the new calculation, double-click the *Comment* cell and enter it there.

3. Click **Edit**.

   The *Edit User-defined Calculation* window displays.

Figure A-1: The Edit User-defined Calculation window



A. Calculation Steps viewer
B. Command buttons
C. Expression editor
D. Calculator
E. Edit Constants and Variables creator
F. Output display

In MON2020, building a calculation is similar to building a simple program. You have constants and two types of variables available, as well as two calculation-building commands. You can also add comments that will be ignored by the application but that can help you explain the logic and structure of the calculation you are designing.

The following is a description of the design elements of the *Edit User-defined Calculation* window:

Calculation Steps viewer (A) This element displays the line-by-line construction of the calculation as it is being built. The following commands allow you to interact with this area:

- Click **Clear All** to clear the content of the **Calculation Steps** viewer.
- Click **Clear Line** to clear the content of the selected line.

Note

If the selected line is an *If-Then* statement, then the entire condition is cleared. If the cursor is on an *else* or *endif* condition, a message box is displayed to confirm that the whole *If-Then* block is deleted.

- Click **Delete Line** to delete the selected line.

Note

If the selected line is the beginning of a conditional statement, then the entire *If-Then* block is deleted along with the expressions that constitute the *If-Then* construct. If the selected line is part of the conditional *If-Then* construct—that is, the line only has *Else* or *Endif* in it - a message box is displayed to confirm that the whole *If-Then* block is deleted.

- Click **Copy** to copy the selected line to the clipboard. You cannot copy keywords such as **else** or **endif**.
- Click **Paste** to paste the content of the clipboard into a selected line. If the line already has a calculation in it, it is cleared before the content of the clipboard is pasted into it.

Command buttons (B)

This section displays three buttons you can use to insert commands.

- **Insert Comment -** Adds a comment to the calculation. Each comment is preceded by *//*.
- **Insert Condition -** Adds an *If-Then* statement to the calculation.
- **Insert Expression -** Adds a mathematical expression to the calculation.

Expression editor (C)

This section is the work area where the comment, condition or expression is built before being added to the **Calculation Steps** viewer. There are four modes of the **Expression** editor, depending upon what action is being performed: *No Action* mode, *Insert Comment* mode, *Insert Condition* mode, and *Insert Expression* mode.

The following commands allow you to interact with the **Expression** editor:

- Click **Clear** to clear the content of the entire line. The line itself is not deleted.
- Click **Delete Item** to delete the currently active token. Each mathematical function, numeric data, and mathematical operation is treated as a token. The token to the right of the current cursor location is treated as the currently active token.
- Click **Evaluate Exp** to check the validity of the expression. If any errors are detected in the syntax, then an error is reported in the Output window.

Note

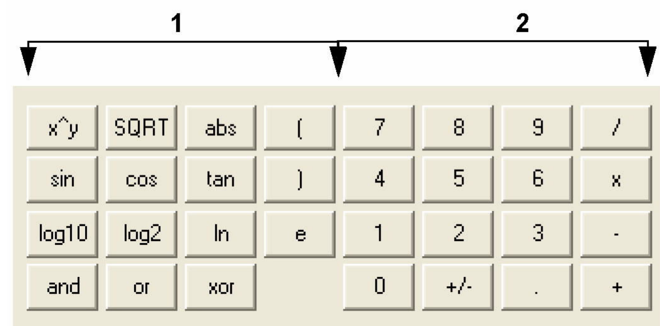
This button is only active when the line being edited is an expression.

- Click **Done** to evaluate the expression and copy it to the **Calculations Steps** viewer. If there are any errors in the expression, they are reported in the *Output* window.

Calculator (D)

This section contains calculator functions that can be used to build a mathematical expression. This section can be divided into two parts:

Figure A-2: Calculator functions



- **Section 1 -** This section contains the following keys:

x^y	x to the power of y
SQRT	Square root
abs	Absolute value
sin	Sine
cos	Cosine
tan	Tangent
log10	Logarithm to the base 10
log2	Logarithm to the base 2
ln	Logarithm to the base e
and	Logical AND
or	Logical OR
xor	Logical XOR
(	Open bracket
)	Close bracket

- **Section 2 -** This section contains the traditional calculator keys and can be used with your keyboard's **Numpad**, if it has one.

Note
Make sure to engage your keyboard's **Numlock** before using the Numpad.

Constants and Variables Creator (E)	This section contains dropdown lists and buttons that allow you to create and select constants and variables that can be added to your mathematical expressions. • **Constants -** Allows you to select constants from a dropdown list. • **Temporary Variables -** Allows you to select temporary, user-created variables from a dropdown list. • **System Variables -** Allows you to select system variables. • **Edit Temporary Variables -** Allows you to create variables. • **Edit Constants -** Allows you to create system-wide constants that can be used in user-defined calculations.
Output display (F)	Displays status information.

4. Use the following procedures to build your calculation:
   - Insert a comment: Insert a comment
   - Insert a conditional statement: Insert a conditional statement
   - Insert an expression: Insert an expression
   - Create a constant: Create a constant
   - Create a temporary variable: Create a temporary variable
   - Insert a system variable: Insert a system variable
5. To see the result of the calculation, click **Calculate**.
   The results display in the **Output** window.
6. To validate the calculation for errors, click **Evaluate**.
   The results of the validation check display in the **Output** window.
7. To save the calculation and close the *Edit User-defined Calculation* window, click **OK**.
   You return to the *Edit User-defined Calculation* window.
8. To save the changes on the *Edit User-defined Calculation* window and close it, click **OK**.

A.1 Insert a comment

To add a comment to the calculation, do the following:

Procedure

1. Click on the **Insert** dropdown list and select **Insert Comment**.
   A new line is added to the **Calculation Steps viewer**, and the **Expression Editor** switches to *Edit Comment* mode.
2. Enter the comment into the *Edit Comment* text box and then click **Done**.
   The comment is added to the **Calculation Steps viewer**.

A.2 Insert a conditional statement

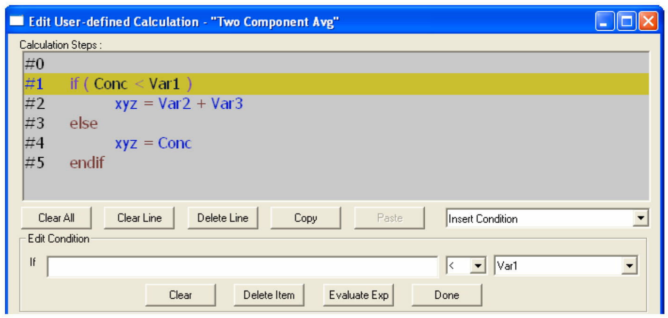


Figure A-3: An example of a conditional statement

The **Expression editor** in *Edit Condition* mode allows you to build a conditional statement:

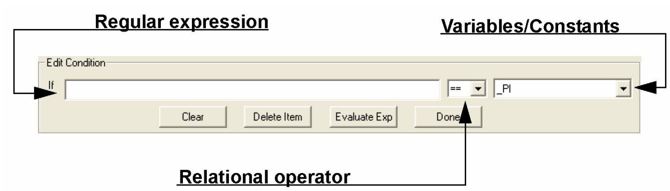


Figure A-4: The Expression editor in Edit Condition mode

Expressions are built using the **Expression editor** in *Edit Expression* mode.

To add a conditional statement, do the following:

Procedure

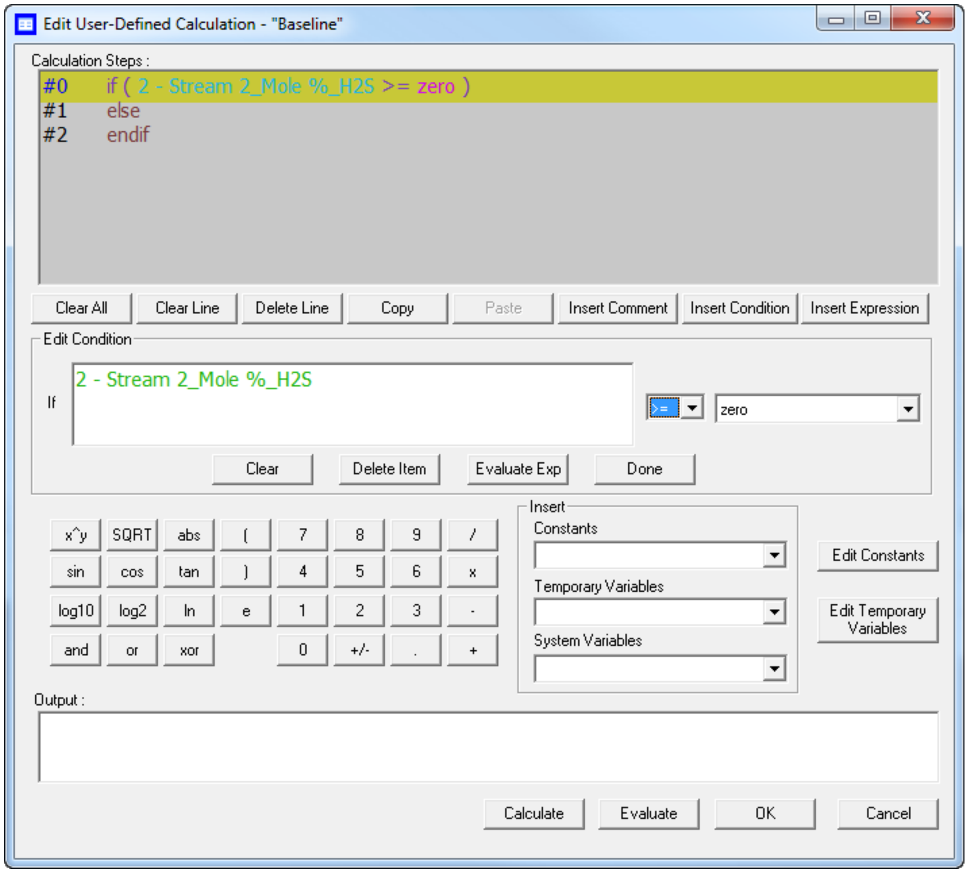
1. Click **Insert Condition**.
   A new line is added to the **Calculation Steps Viewer**, and the **Expression editor** switches to *Edit Condition* mode.
2. Add a condition.

   Note
   You can use constants, temporary variables, system variables, and the calculator functions to build the condition. For information on inserting system variables, see Insert a system variable. For information on creating variables, see Create a temporary variable. For information on creating constants, see Create a constant.

   To insert a constant or temporary variable to the left of the condition, select it from the respective dropdown list.

   To select a constant or temporary variable on the right side of the condition, click the arrow on the right side of the condition, click + to expand the list, and select from the respective list.

Figure A-5: Edit Condition area



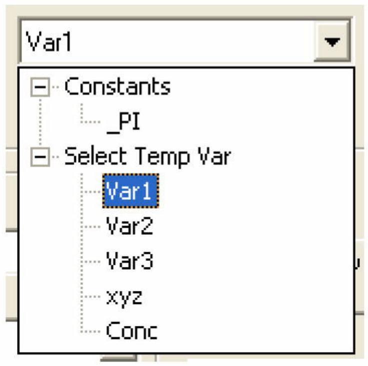
3. Select a relational operator from the dropdown list.

   You have the following options:

<	Less than
<=	Less than or equal
>	Greater than
>=	Greater than or equal
==	Equal
!=	Not equal

4. To add a variable or constant to the expression, click the **Variable/Constant** dropdown list and select the appropriate item.

Figure A-6: The Variable/Constant drop-down list



For information on creating variables, see Create a temporary variable. For information on creating constants, see Create a constant.

5. Click **Done**.
MON2020 validates the statement and if there are no errors, it adds it to the **Calculation Steps** viewer.

Postrequisites

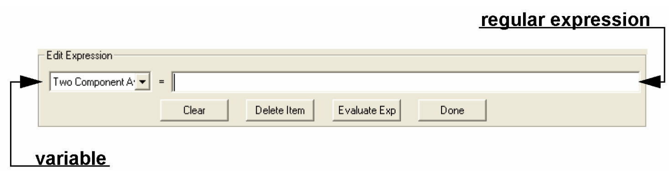
To complete the conditional statement, use the **Expression editor** in *Edit Expression* mode to add the necessary mathematical expressions.

A.3 Insert an expression

A mathematical expression has the following structure:

Variable = Regular expression

Figure A-7: Edit Expression area



To add an expression to a conditional statement or calculation, do the following:

Procedure

1. Click on the **Insert** dropdown list and select **Insert Expression**.
   A new line is added to the **Calculation Steps viewer**, and the **Expression editor** switches to *Edit Expression* mode.
2. Select a variable from the **Variable** dropdown tree view.

   You can select either a temporary variable or you can set the expression you are building as the final result of your new user-defined calculation. For instance, if the user-defined calculation you are building is called *User Calc* 1, then you can select **User Calc 1** from the **Final Result** tree view. For information on creating variables, see Create a temporary variable.
3. Add a regular expression.

   To select a temporary variable on the left side of the expression, click **+** to expand the list and select from the respective list. To insert a constant or temporary variable to the right of the expression, select it from the respective dropdown list. You can use constants, temporary variables, system variables, and the calculator functions to build the expression. For information on inserting system variables, see Insert a system variable. For information on creating variables, see Create a temporary variable. For information on creating constants, see Create a constant.
4. Click **Done**.
   MON2020 validates the statement, and if there are no errors, it adds it to the **Calculation Steps viewer**.

A.4 Create a constant

To create a constant that you can use in building a calculation, do the following:

Procedure

1. From the *Edit User-defined Calculation* window, click **Edit Constants**.
   The *Edit Constants* window displays, showing all the constants that have been created so far for the GC.
2. Click **Insert before**.
   A new row is added to the **USER_CALC_CONSTANTS** table.

   Note
   To delete a constant, select it in the **USER_CALC_CONSTANTS** table and click **Delete**.

3. Double-click the **Label** cell and enter a name for the constant.

   Note
   To edit any cell, double-click it.

4. Double-click the **Value** cell and enter a value for the constant.
5. Use the **Comment** cell to store information that is relevant for the constant.
6. Click **OK** to save the changes and close the window.

   Note
   To save the changes without closing the window, click **Save**.

A.5 Create a temporary variable

To create a temporary variable that you can use in building a calculation, do the following:

Procedure

1. From the *Edit User-defined Calculation* window, click **Edit Temporary Variables**.
   The *Edit Temporary Variables* window displays, showing all the temporary variables that have been created so far for the user-defined calculation.
2. Click **Insert**.
   A new row is added to the table.

   Note
   To delete a variable from this window, select it in the table and click **Delete**.

3. Double-click the **Name** cell and enter a name for the variable.
4. Use the **Comment** cell to store information that is relevant for the variable.
5. Click **OK** to save the changes and close the window.

   To save the changes without closing the window, click **Save**.

A.6 Insert a system variable

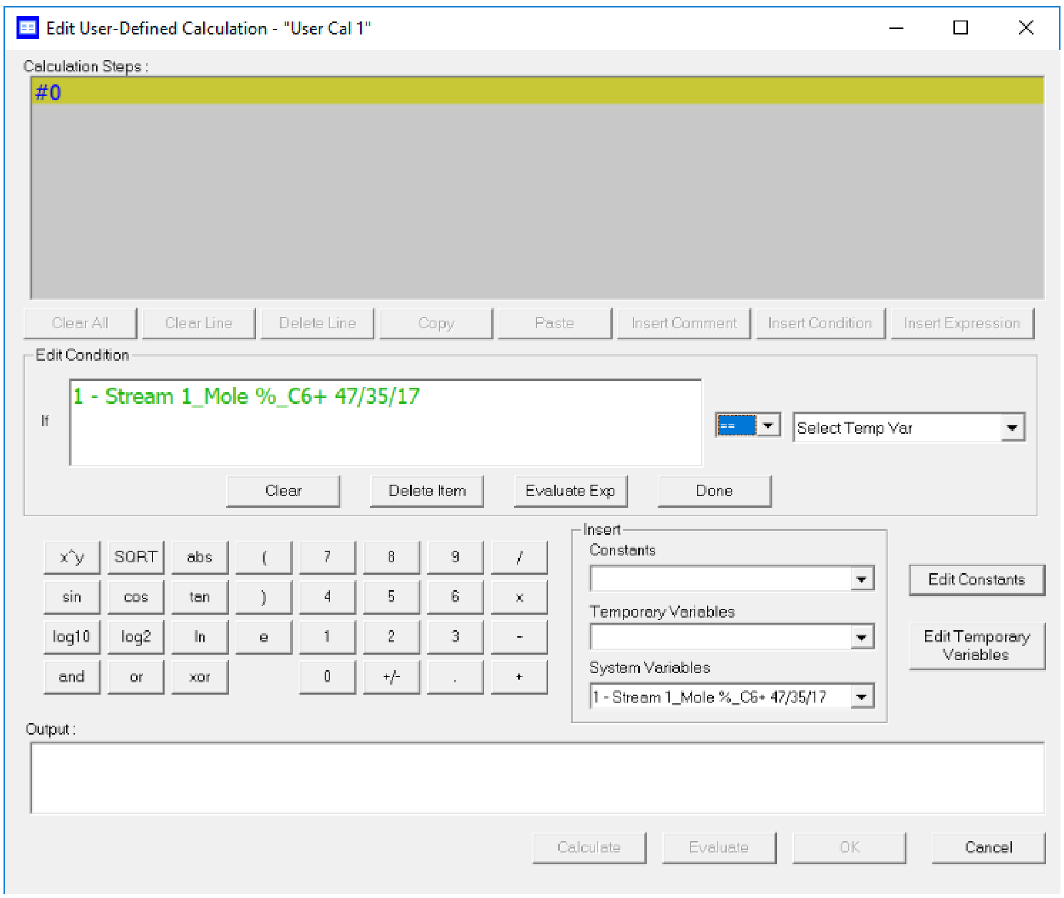
To insert a system variable into the **Expression or Condition** editor, do the following:

From the **Application** → **Calculations** → **User-defined...** → **Edit (F2)** menu, click the **System Variables** drop-down list.

For a demonstration of how to use the context-sensitive variable selector, see The context-sensitive variable selector.

The selected system variable displays in the **System Variables** drop-down list and in the **Expression or Condition** editor.

Figure A-8: The Expression editor



B Pre-defined Modbus® Map Files

B.1 Definitions of Terms

Register: Modbus register number

Data type: The following data types are supported:

1. INT - 16-bit integer value
2. FLOAT - 32-bit IEEE single precision floating point value
3. Bitmap (INT) - 16 Boolean values packed into a single 16-bit integer. Each bit represents one Boolean value.
4. Long - 32-bit long integer value
5. Bitmap (long) - 32 Boolean values packed into a 32-bit long integer. Each bit represents one Boolean value.
6. SCALED_FP_1 ... SCALED_FP_32 - Scaled floating point data type is also referred to as *Ranged Integers*. A 32-bit floating point value is converted to a 16-bit integer. For more details, refer to Edit Scales.

Variable: System variable that is mapped to a Modbus register.

Record #: This field is applicable only for Archive Average System Variables. The record # tells the GC which historical average value to retrieve. For example, Record #1 refers to the most recent average, Record #2 refers to the second most recent average and so on.

Access: Can either be *Read only* or *Read-Write*. A small fraction of GC system variables can be updated from a Modbus Master. Writable registers have to be set to *RD_WR* in the mapping before they can be written from a Modbus Master.

Format: This field is applicable for system variables that hold date/time. Date/time is internally stored in a 32-bit Unix time_t format. The format field is used to convert the date/time to human readable form. The available format modifiers are:

- **MM -** 2 digit month (1-12)
- **DD -** 2 digit day of the month (1-31)
- **YY -** 2 digit year (0-99)
- **YYYY -** 4 digit year (1970 - 2038)
- **hh -** 2 digit hour in 24 hour format (0-23)
- **mm -** 2 digit minutes (0-59)
- **SS -** 2 digit seconds (0-59)
- **MMDDYY -** 6 digit date. If the date is January 4, 2010, the register reads **010410.** If the date is November 7, 2012, the register reads **110712.**
- **DDMMYY -** 6 digit date. If the date is January 4, 2010, the register reads **040110.** If the date is November 7, 2012, the register reads **071112.**

- **YYMMDD -** 6 digit date. If the date is April 17, 2007, the register reads **070417**. If the date is January 31, 2014, the register reads **140131**.
- **hhmmss -** 6 digit time in 24 hour format
- **hhmm -** 4 digit time in 24 hour format

B.2 SIM_2251 map file (with GPA results)

Register #	Data Type	Variable	Record #	Access	Format
3001	INT	Last Analy_Component Code(US)[1 - Component 1]		RD_ONLY	
3002	INT	Last Analy_Component Code(US)[2 - Component 2]		RD_ONLY	
3003	INT	Last Analy_Component Code(US)[3 - Component 3]		RD_ONLY	
3004	INT	Last Analy_Component Code(US)[4 - Component 4]		RD_ONLY	
3005	INT	Last Analy_Component Code(US)[5 - Component 5]		RD_ONLY	
3006	INT	Last Analy_Component Code(US)[6 - Component 6]		RD_ONLY	
3007	INT	Last Analy_Component Code(US)[7 - Component 7]		RD_ONLY	
3008	INT	Last Analy_Component Code(US)[8 - Component 8]		RD_ONLY	
3009	INT	Last Analy_Component Code(US)[9 - Component 9]		RD_ONLY	
3010	INT	Last Analy_Component Code(US)[10 - Component 10]		RD_ONLY	
3011	INT	Last Analy_Component Code(US)[11 - Component 11]		RD_ONLY	
3012	INT	Last Analy_Component Code(US)[12 - Component 12]		RD_ONLY	
3013	INT	Last Analy_Component Code(US)[13 - Component 13]		RD_ONLY	
3014	INT	Last Analy_Component Code(US)[14 - Component 14]		RD_ONLY	
3015	INT	Last Analy_Component Code(US)[15 - Component 15]		RD_ONLY	
3016	INT	Last Analy_Component Code(US)[16 - Component 16]		RD_ONLY	
3017	INT	Last Analy_Component Code(US)[1 - Component 1]		RD_ONLY	
3018	INT	Last Analy_Component Code(US)[2 - Component 2]		RD_ONLY	
3019	INT	Last Analy_Component Code(US)[3 - Component 3]		RD_ONLY	
3020	INT	Last Analy_Component Code(US)[4 - Component 4]		RD_ONLY	
3021	INT	Last Analy_Component Code(US)[5 - Component 5]		RD_ONLY	
3022	INT	Last Analy_Component Code(US)[6 - Component 6]		RD_ONLY	
3023	INT	Last Analy_Component Code(US)[7 - Component 7]		RD_ONLY	
3024	INT	Last Analy_Component Code(US)[8 - Component 8]		RD_ONLY	
3025	INT	Last Analy_Component Code(US)[9 - Component 9]		RD_ONLY	
3026	INT	Last Analy_Component Code(US)[10 - Component 10]		RD_ONLY	
3027	INT	Last Analy_Component Code(US)[11 - Component 11]		RD_ONLY	
3028	INT	Last Analy_Component Code(US)[12 - Component 12]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
3029	INT	Last Analy_Component Code(US)[13 - Component 13]		RD_ONLY	
3030	INT	Last Analy_Component Code(US)[14 - Component 14]		RD_ONLY	
3031	INT	Last Analy_Component Code(US)[15 - Component 15]		RD_ONLY	
3032	INT	Last Analy_Component Code(US)[16 - Component 16]		RD_ONLY	
3033	INT	Run Time(1/30th Sec)		RD_ONLY	
3034	INT	Last Analy_Stream Number		RD_ONLY	
3035	INT	Last Analy_CDT Stream Mask		RD_ONLY	
3036	INT	Current Time (time_t)		RD_WR	MM
3037	INT	Current Time(time_t)		RD_WR	DD
3038	INT	Current Time (time_t)		RD_WR	YY
3039	INT	Current Time (time_t)		RD_WR	hh
3040	INT	Current Time (time_t)		RD_WR	mm
3041	INT	Last Analy_Start Time		RD_ONLY	MM
3042	INT	Last Analy_Start Time		RD_ONLY	DD
3043	INT	Last Analy_Start Time		RD_ONLY	YY
3044	INT	Last Analy_Start Time		RD_ONLY	hh
3045	INT	Last Analy_Start Time		RD_ONLY	mm

Register #	Data Type	Variable	Record #	Access	Format
3046	Bitmap(INT)	0:Unused, 1:Unused, 2:System Alarm_Alarm On - Last Analysis_Analog Input 1 Low Signal, 3:System Alarm_Alarm On - Last Analysis_Analog Input 1 High Signal, 4:System Alarm_Alarm On - Last Analysis_Analog Input 2 Low Signal, 5:System Alarm_Alarm On - Last Analysis_Analog Input 2 High Signal, 6:Unused, 7:Unused, 8:System Alarm_Alarm On - Last Analysis_Analog Output 1 Low Signal, 9:System Alarm_Alarm On - Last Analysis_Analog Output 1 High Signal, 10:System Alarm_Alarm On - Last Analysis_Analog Output 2 Low Signal, 11:System Alarm_Alarm On - Last Analysis_Analog Output 2 High Signal, 12:System Alarm_Alarm On - Last Analysis_Analog Output 3 Low Signal, 13:System Alarm_Alarm On - Last Analysis_Analog Output 3 High Signal, 14:Analyzer Failure, 15:Unused		RD_ONLY	
3047	Bitmap(INT)	0:System Alarm_Alarm On - Current Analysis_Power Failure, 1:Calibration Failed, 2:Preamp Failure, 3:Unused, 4:Unused, 5:Unused, 6:Unused, 7:Unused, 8:Unused, 9:Unused, 10:Unused, 11:Unused, 12:Unused, 13:Unused, 14:Unused, 15:Unused		RD_ONLY	
3048	INT	1 – Stream 1_Active Low Limit Alarms		RD_ONLY	
3049	INT	1 - Stream 1_Active High Limit Alarms		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
3050	INT	2 - Stream 2_Active Low Limit Alarms		RD_ONLY	
3051	INT	2 - Stream 2_Active High Limit Alarms		RD_ONLY	
3052	INT	3 - Stream 3_Active Low Limit Alarms		RD_ONLY	
3053	INT	3 - Stream 3_Active High Limit Alarms		RD_ONLY	
3054	INT	4 - Stream 4_Active Low Limit Alarms		RD_ONLY	
3055	INT	4 - Stream 4_Active High Limit Alarms		RD_ONLY	
3056	INT	5 - Stream 5_Active Low Limit Alarms		RD_ONLY	
3057	INT	5 - Stream 5_Active High Limit Alarms		RD_ONLY	
3058	INT	New Data Flag		RD_WR	
3059	INT	Analy/Calib Flag		RD_ONLY	
5001	LONG	Last Analy_Cycle Time (1/30th sec)		RD_ONLY	
5002	LONG	Last Cal_Cycle Time (1/30th sec)		RD_ONLY	
7001	FLOAT	Last Analy_Mole %[1 - Component 1]		RD_ONLY	
7002	FLOAT	Last Analy_Mole %[2 - Component 2]		RD_ONLY	
7003	FLOAT	Last Analy_Mole %[3 - Component 3]		RD_ONLY	
7004	FLOAT	Last Analy_Mole %[4 - Component 4]		RD_ONLY	
7005	FLOAT	Last Analy_Mole %[5 - Component 5]		RD_ONLY	
7006	FLOAT	Last Analy_Mole %[6 - Component 6]		RD_ONLY	
7007	FLOAT	Last Analy_Mole %[7 - Component 7]		RD_ONLY	
7008	FLOAT	Last Analy_Mole %[8 - Component 8]		RD_ONLY	
7009	FLOAT	Last Analy_Mole %[9 - Component 9]		RD_ONLY	
7010	FLOAT	Last Analy_Mole %[10 - Component 10]		RD_ONLY	
7011	FLOAT	Last Analy_Mole %[11 - Component 11]		RD_ONLY	
7012	FLOAT	Last Analy_Mole %[12 - Component 12]		RD_ONLY	
7013	FLOAT	Last Analy_Mole %[13 - Component 13]		RD_ONLY	
7014	FLOAT	Last Analy_Mole %[14 - Component 14]		RD_ONLY	
7015	FLOAT	Last Analy_Mole %[15 - Component 15]		RD_ONLY	
7016	FLOAT	Last Analy_Mole %[16 - Component 16]		RD_ONLY	
7017	FLOAT	Last Analy_Weight %[1 - Component 1]		RD_ONLY	
7018	FLOAT	Last Analy_Weight %[2 - Component 2]		RD_ONLY	
7019	FLOAT	Last Analy_Weight %[3 - Component 3]		RD_ONLY	
7020	FLOAT	Last Analy_Weight %[4 - Component 4]		RD_ONLY	
7021	FLOAT	Last Analy_Weight %[5 - Component 5]		RD_ONLY	
7022	FLOAT	Last Analy_Weight %[6 - Component 6]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7023	FLOAT	Last Analy_Weight %[7 - Component 7]		RD_ONLY	
7024	FLOAT	Last Analy_Weight %[8 - Component 8]		RD_ONLY	
7025	FLOAT	Last Analy_Weight %[9 - Component 9]		RD_ONLY	
7026	FLOAT	Last Analy_Weight %[10 - Component 10]		RD_ONLY	
7027	FLOAT	Last Analy_Weight %[11 - Component 11]		RD_ONLY	
7028	FLOAT	Last Analy_Weight %[12 - Component 12]		RD_ONLY	
7029	FLOAT	Last Analy_Weight %[13 - Component 13]		RD_ONLY	
7030	FLOAT	Last Analy_Weight %[14 - Component 14]		RD_ONLY	
7031	FLOAT	Last Analy_Weight %[15 - Component 15]		RD_ONLY	
7032	FLOAT	Last Analy_Weight %[16 - Component 16]		RD_ONLY	
7033	FLOAT	Last Analy_HV Gross BTU Dry		RD_ONLY	
7034	FLOAT	Last Analy_HV Gross BTU Sat		RD_ONLY	
7035	FLOAT	Last Analy_GPA Real Rel Den Gas		RD_ONLY	
7036	FLOAT	Last Analy_GPA Z Factor		RD_ONLY	
7037	FLOAT	Last Analy_GPA Wobbe Index		RD_ONLY	
7038	FLOAT	Last Analy_Total Unnormalized Conc		RD_ONLY	
7039	FLOAT	Last Analy_Gal/1000 SCF C2+		RD_ONLY	
7040	FLOAT	Calc Result[1 - User Cal 01]		RD_ONLY	
7041	FLOAT	Calc Result[2 - User Cal 02]		RD_ONLY	
7042	FLOAT	Calc Result[3 - User Cal 03]		RD_ONLY	
7043	FLOAT	Calc Result[4 - User Cal 04]		RD_ONLY	
7044	FLOAT	Calc Result[5 - User Cal 05]		RD_ONLY	
7045	FLOAT	Unused		RD_ONLY	
7046	FLOAT	Unused		RD_ONLY	
7047	FLOAT	Unused		RD_ONLY	
7048	FLOAT	Unused		RD_ONLY	
7049	FLOAT	Unused		RD_ONLY	
7050	FLOAT	Unused		RD_ONLY	
7051	FLOAT	Unused		RD_ONLY	
7052	FLOAT	Unused		RD_ONLY	
7053	FLOAT	Unused		RD_ONLY	
7054	FLOAT	Last Analy_HV Gross BTU Act		RD_ONLY	
7055	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7056	FLOAT	Avg[2 - Average 2]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7057	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7058	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7059	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7060	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7061	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7062	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7063	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7064	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7065	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7066	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7067	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7068	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7069	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7070	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7071	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7072	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7073	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7074	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7075	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7076	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7077	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7078	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7079	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7080	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7081	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7082	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7083	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7084	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7085	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	
7086	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7087	FLOAT	Last FCalib_HV Gross BTU Act		RD_ONLY	
7088	FLOAT	Last FCalib_HV Gross BTU Dry		RD_ONLY	
7089	FLOAT	Last FCalib_HV Gross BTU Sat		RD_ONLY	
7090	FLOAT	Last FCalib_GPA Wobbe Index		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7091	FLOAT	Last FCalib_GPA Real Rel Den Gas		RD_ONLY	
7092	FLOAT	Last FCalib_GPA Z Factor		RD_ONLY	
7093	FLOAT	Last FCalib_Gal/1000 SCF C2+		RD_ONLY	
7094	FLOAT	Last FCalib_Total Unnormalized Conc		RD_ONLY	
7095	FLOAT	Last Analy_Response Factor[1 - Component 1]		RD_ONLY	
7096	FLOAT	Last Analy_Response Factor[2 - Component 2]		RD_ONLY	
7097	FLOAT	Last Analy_Response Factor[3 - Component 3]		RD_ONLY	
7098	FLOAT	Last Analy_Response Factor[4 - Component 4]		RD_ONLY	
7099	FLOAT	Last Analy_Response Factor[5 - Component 5]		RD_ONLY	
7100	FLOAT	Last Analy_Response Factor[6 - Component 6]		RD_ONLY	
7101	FLOAT	Last Analy_Response Factor[7 - Component 7]		RD_ONLY	
7102	FLOAT	Last Analy_Response Factor[8 - Component 8]		RD_ONLY	
7103	FLOAT	Last Analy_Response Factor[9 - Component 9]		RD_ONLY	
7104	FLOAT	Last Analy_Response Factor[10 - Component 10]		RD_ONLY	
7105	FLOAT	Last Analy_Response Factor[11 - Component 11]		RD_ONLY	
7106	FLOAT	Last Analy_Response Factor[12 - Component 12]		RD_ONLY	
7107	FLOAT	Last Analy_Response Factor[13 - Component 13]		RD_ONLY	
7108	FLOAT	Last Analy_Response Factor[14 - Component 14]		RD_ONLY	
7109	FLOAT	Last Analy_Response Factor[15 - Component 15]		RD_ONLY	
7110	FLOAT	Last Analy_Response Factor[16 - Component 16]		RD_ONLY	
7111	FLOAT	Last Analy_Response Factor[1 - Component 1]		RD_ONLY	
7112	FLOAT	Last Analy_Response Factor[2 - Component 2]		RD_ONLY	
7113	FLOAT	Last Analy_Response Factor[3 - Component 3]		RD_ONLY	
7114	FLOAT	Last Analy_Response Factor[4 - Component 4]		RD_ONLY	
7115	FLOAT	Last Analy_Response Factor[5 - Component 5]		RD_ONLY	
7116	FLOAT	Last Analy_Response Factor[6 - Component 6]		RD_ONLY	
7117	FLOAT	Last Analy_Response Factor[7 - Component 7]		RD_ONLY	
7118	FLOAT	Last Analy_Response Factor[8 - Component 8]		RD_ONLY	
7119	FLOAT	Last Analy_Response Factor[9 - Component 9]		RD_ONLY	
7120	FLOAT	Last Analy_Response Factor[10 - Component 10]		RD_ONLY	
7121	FLOAT	Last Analy_Response Factor[11 - Component 11]		RD_ONLY	
7122	FLOAT	Last Analy_Response Factor[12 - Component 12]		RD_ONLY	
7123	FLOAT	Last Analy_Response Factor[13 - Component 13]		RD_ONLY	
7124	FLOAT	Last Analy_Response Factor[14 - Component 14]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7125	FLOAT	Last Analy_Response Factor[15 - Component 15]		RD_ONLY	
7126	FLOAT	Last Analy_Response Factor[16 - Component 16]		RD_ONLY	
7127	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7128	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7129	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7130	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7131	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7132	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7133	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7134	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7135	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7136	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7137	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7138	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7139	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7140	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7141	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7142	FLOAT	Avg[16 - Average 16]		RD_ONLY	
7143	FLOAT	Avg[17 - Average 17]		RD_ONLY	
7144	FLOAT	Avg[18 - Average 18]		RD_ONLY	
7145	FLOAT	Avg[19 - Average 19]		RD_ONLY	
7146	FLOAT	Avg[20 - Average 20]		RD_ONLY	
7147	FLOAT	Avg[21 - Average 21]		RD_ONLY	
7148	FLOAT	Avg[22 - Average 22]		RD_ONLY	
7149	FLOAT	Avg[23 - Average 23]		RD_ONLY	
7150	FLOAT	Avg[24 - Average 24]		RD_ONLY	
7151	FLOAT	Avg[25 - Average 25]		RD_ONLY	
7152	FLOAT	Avg[26 - Average 26]		RD_ONLY	
7153	FLOAT	Avg[27 - Average 27]		RD_ONLY	
7154	FLOAT	Avg[28 - Average 28]		RD_ONLY	
7155	FLOAT	Avg[29 - Average 29]		RD_ONLY	
7156	FLOAT	Avg[30 - Average 30]		RD_ONLY	
7157	FLOAT	Avg[31 - Average 31]		RD_ONLY	
7158	FLOAT	Avg[32 - Average 32]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7159	FLOAT	Avg[33 - Average 33]		RD_ONLY	
7160	FLOAT	Avg[34 - Average 34]		RD_ONLY	
7161	FLOAT	Avg[35 - Average 35]		RD_ONLY	
7162	FLOAT	Avg[36 - Average 36]		RD_ONLY	
7163	FLOAT	Max[1 - Average 1]		RD_ONLY	
7164	FLOAT	Max[2 - Average 2]		RD_ONLY	
7165	FLOAT	Max[3 - Average 3]		RD_ONLY	
7166	FLOAT	Max[4 - Average 4]		RD_ONLY	
7167	FLOAT	Max[5 - Average 5]		RD_ONLY	
7168	FLOAT	Max[6 - Average 6]		RD_ONLY	
7169	FLOAT	Max[7 - Average 7]		RD_ONLY	
7170	FLOAT	Max[8 - Average 8]		RD_ONLY	
7171	FLOAT	Max[9 - Average 9]		RD_ONLY	
7172	FLOAT	Max[10 - Average 10]		RD_ONLY	
7173	FLOAT	Max[11 - Average 11]		RD_ONLY	
7174	FLOAT	Max[12 - Average 12]		RD_ONLY	
7175	FLOAT	Max[13 - Average 13]		RD_ONLY	
7176	FLOAT	Max[14 - Average 14]		RD_ONLY	
7177	FLOAT	Max[15 - Average 15]		RD_ONLY	
7178	FLOAT	Max[16 - Average 16]		RD_ONLY	
7179	FLOAT	Max[17 - Average 17]		RD_ONLY	
7180	FLOAT	Max[18 - Average 18]		RD_ONLY	
7181	FLOAT	Max[19 - Average 19]		RD_ONLY	
7182	FLOAT	Max[20 - Average 20]		RD_ONLY	
7183	FLOAT	Max[21 - Average 21]		RD_ONLY	
7184	FLOAT	Max[22 - Average 22]		RD_ONLY	
7185	FLOAT	Max[23 - Average 23]		RD_ONLY	
7186	FLOAT	Max[24 - Average 24]		RD_ONLY	
7187	FLOAT	Max[25 - Average 25]		RD_ONLY	
7188	FLOAT	Max[26 - Average 26]		RD_ONLY	
7189	FLOAT	Max[27 - Average 27]		RD_ONLY	
7190	FLOAT	Max[28 - Average 28]		RD_ONLY	
7191	FLOAT	Max[29 - Average 29]		RD_ONLY	
7192	FLOAT	Max[30 - Average 30]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7193	FLOAT	Max[31 - Average 31]		RD_ONLY	
7194	FLOAT	Max[32 - Average 32]		RD_ONLY	
7195	FLOAT	Max[33 - Average 33]		RD_ONLY	
7196	FLOAT	Max[34 - Average 34]		RD_ONLY	
7197	FLOAT	Max[35 - Average 35]		RD_ONLY	
7198	FLOAT	Max[36 - Average 36]		RD_ONLY	
7199	FLOAT	Min[1 - Average 1]		RD_ONLY	
7200	FLOAT	Min[2 - Average 2]		RD_ONLY	
7201	FLOAT	Min[3 - Average 3]		RD_ONLY	
7202	FLOAT	Min[4 - Average 4]		RD_ONLY	
7203	FLOAT	Min[5 - Average 5]		RD_ONLY	
7204	FLOAT	Min[6 - Average 6]		RD_ONLY	
7205	FLOAT	Min[7 - Average 7]		RD_ONLY	
7206	FLOAT	Min[8 - Average 8]		RD_ONLY	
7207	FLOAT	Min[9 - Average 9]		RD_ONLY	
7208	FLOAT	Min[10 - Average 10]		RD_ONLY	
7209	FLOAT	Min[11 - Average 11]		RD_ONLY	
7210	FLOAT	Min[12 - Average 12]		RD_ONLY	
7211	FLOAT	Min[13 - Average 13]		RD_ONLY	
7212	FLOAT	Min[14 - Average 14]		RD_ONLY	
7213	FLOAT	Min[15 - Average 15]		RD_ONLY	
7214	FLOAT	Min[16 - Average 16]		RD_ONLY	
7215	FLOAT	Min[17 - Average 17]		RD_ONLY	
7216	FLOAT	Min[18 - Average 18]		RD_ONLY	
7217	FLOAT	Min[19 - Average 19]		RD_ONLY	
7218	FLOAT	Min[20 - Average 20]		RD_ONLY	
7219	FLOAT	Min[21 - Average 21]		RD_ONLY	
7220	FLOAT	Min[22 - Average 22]		RD_ONLY	
7221	FLOAT	Min[23 - Average 23]		RD_ONLY	
7222	FLOAT	Min[24 - Average 24]		RD_ONLY	
7223	FLOAT	Min[25 - Average 25]		RD_ONLY	
7224	FLOAT	Min[26 - Average 26]		RD_ONLY	
7225	FLOAT	Min[27 - Average 27]		RD_ONLY	
7226	FLOAT	Min[28 - Average 28]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7227	FLOAT	Min[29 - Average 29]		RD_ONLY	
7228	FLOAT	Min[30 - Average 30]		RD_ONLY	
7229	FLOAT	Min[31 - Average 31]		RD_ONLY	
7230	FLOAT	Min[32 - Average 32]		RD_ONLY	
7231	FLOAT	Min[33 - Average 33]		RD_ONLY	
7232	FLOAT	Min[34 - Average 34]		RD_ONLY	
7233	FLOAT	Min[35 - Average 35]		RD_ONLY	
7234	FLOAT	Min[36 - Average 36]		RD_ONLY	
7235	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7236	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7237	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7238	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7239	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7240	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7241	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7242	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7243	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7244	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7245	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7246	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7247	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7248	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7249	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7250	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
7251	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
7252	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
7253	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
7254	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
7255	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
7256	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	
7257	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
7258	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
7259	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
7260	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7261	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
7262	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
7263	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
7264	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
7265	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
7266	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
7267	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	
7268	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
7269	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
7270	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
7271	FLOAT	Archive_Max[1 - Average 1]	1	RD_ONLY	
7272	FLOAT	Archive_Max[2 - Average 2]	1	RD_ONLY	
7273	FLOAT	Archive_Max[3 - Average 3]	1	RD_ONLY	
7274	FLOAT	Archive_Max[4 - Average 4]	1	RD_ONLY	
7275	FLOAT	Archive_Max[5 - Average 5]	1	RD_ONLY	
7276	FLOAT	Archive_Max[6 - Average 6]	1	RD_ONLY	
7277	FLOAT	Archive_Max[7 - Average 7]	1	RD_ONLY	
7278	FLOAT	Archive_Max[8 - Average 8]	1	RD_ONLY	
7279	FLOAT	Archive_Max[9 - Average 9]	1	RD_ONLY	
7280	FLOAT	Archive_Max[10 - Average 10]	1	RD_ONLY	
7281	FLOAT	Archive_Max[11 - Average 11]	1	RD_ONLY	
7282	FLOAT	Archive_Max[12 - Average 12]	1	RD_ONLY	
7283	FLOAT	Archive_Max[13 - Average 13]	1	RD_ONLY	
7284	FLOAT	Archive_Max[14 - Average 14]	1	RD_ONLY	
7285	FLOAT	Archive_Max[15 - Average 15]	1	RD_ONLY	
7286	FLOAT	Archive_Max[16 - Average 16]	1	RD_ONLY	
7287	FLOAT	Archive_Max[17 - Average 17]	1	RD_ONLY	
7288	FLOAT	Archive_Max[18 - Average 18]	1	RD_ONLY	
7289	FLOAT	Archive_Max[19 - Average 19]	1	RD_ONLY	
7290	FLOAT	Archive_Max[20 - Average 20]	1	RD_ONLY	
7291	FLOAT	Archive_Max[21 - Average 21]	1	RD_ONLY	
7292	FLOAT	Archive_Max[22 - Average 22]	1	RD_ONLY	
7293	FLOAT	Archive_Max[23 - Average 23]	1	RD_ONLY	
7294	FLOAT	Archive_Max[24 - Average 24]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7295	FLOAT	Archive_Max[25 - Average 25]	1	RD_ONLY	
7296	FLOAT	Archive_Max[26 - Average 26]	1	RD_ONLY	
7297	FLOAT	Archive_Max[27 - Average 27]	1	RD_ONLY	
7298	FLOAT	Archive_Max[28 - Average 28]	1	RD_ONLY	
7299	FLOAT	Archive_Max[29 - Average 29]	1	RD_ONLY	
7300	FLOAT	Archive_Max[30 - Average 30]	1	RD_ONLY	
7301	FLOAT	Archive_Max[31 - Average 31]	1	RD_ONLY	
7302	FLOAT	Archive_Max[32 - Average 32]	1	RD_ONLY	
7303	FLOAT	Archive_Max[33 - Average 33]	1	RD_ONLY	
7304	FLOAT	Archive_Max[34 - Average 34]	1	RD_ONLY	
7305	FLOAT	Archive_Max[35 - Average 35]	1	RD_ONLY	
7306	FLOAT	Archive_Max[36 - Average 36]	1	RD_ONLY	
7307	FLOAT	Archive_Min[1 - Average 1]	1	RD_ONLY	
7308	FLOAT	Archive_Min[2 - Average 2]	1	RD_ONLY	
7309	FLOAT	Archive_Min[3 - Average 3]	1	RD_ONLY	
7310	FLOAT	Archive_Min[4 - Average 4]	1	RD_ONLY	
7311	FLOAT	Archive_Min[5 - Average 5]	1	RD_ONLY	
7312	FLOAT	Archive_Min[6 - Average 6]	1	RD_ONLY	
7313	FLOAT	Archive_Min[7 - Average 7]	1	RD_ONLY	
7314	FLOAT	Archive_Min[8 - Average 8]	1	RD_ONLY	
7315	FLOAT	Archive_Min[9 - Average 9]	1	RD_ONLY	
7316	FLOAT	Archive_Min[10 - Average 10]	1	RD_ONLY	
7317	FLOAT	Archive_Min[11 - Average 11]	1	RD_ONLY	
7318	FLOAT	Archive_Min[12 - Average 12]	1	RD_ONLY	
7319	FLOAT	Archive_Min[13 - Average 13]	1	RD_ONLY	
7320	FLOAT	Archive_Min[14 - Average 14]	1	RD_ONLY	
7321	FLOAT	Archive_Min[15 - Average 15]	1	RD_ONLY	
7322	FLOAT	Archive_Min[16 - Average 16]	1	RD_ONLY	
7323	FLOAT	Archive_Min[17 - Average 17]	1	RD_ONLY	
7324	FLOAT	Archive_Min[18 - Average 18]	1	RD_ONLY	
7325	FLOAT	Archive_Min[19 - Average 19]	1	RD_ONLY	
7326	FLOAT	Archive_Min[20 - Average 20]	1	RD_ONLY	
7327	FLOAT	Archive_Min[21 - Average 21]	1	RD_ONLY	
7328	FLOAT	Archive_Min[22 - Average 22]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7329	FLOAT	Archive_Min[23 - Average 23]	1	RD_ONLY	
7330	FLOAT	Archive_Min[24 - Average 24]	1	RD_ONLY	
7331	FLOAT	Archive_Min[25 - Average 25]	1	RD_ONLY	
7332	FLOAT	Archive_Min[26 - Average 26]	1	RD_ONLY	
7333	FLOAT	Archive_Min[27 - Average 27]	1	RD_ONLY	
7334	FLOAT	Archive_Min[28 - Average 28]	1	RD_ONLY	
7335	FLOAT	Archive_Min[29 - Average 29]	1	RD_ONLY	
7336	FLOAT	Archive_Min[30 - Average 30]	1	RD_ONLY	
7337	FLOAT	Archive_Min[31 - Average 31]	1	RD_ONLY	
7338	FLOAT	Archive_Min[32 - Average 32]	1	RD_ONLY	
7339	FLOAT	Archive_Min[33 - Average 33]	1	RD_ONLY	
7340	FLOAT	Archive_Min[34 - Average 34]	1	RD_ONLY	
7341	FLOAT	Archive_Min[35 - Average 35]	1	RD_ONLY	
7342	FLOAT	Archive_Min[36 - Average 36]	1	RD_ONLY	
7343	FLOAT	Archive_Avg[1 - Average 1]	2	RD_ONLY	
7344	FLOAT	Archive_Avg[2 - Average 2]	2	RD_ONLY	
7345	FLOAT	Archive_Avg[3 - Average 3]	2	RD_ONLY	
7346	FLOAT	Archive_Avg[4 - Average 4]	2	RD_ONLY	
7347	FLOAT	Archive_Avg[5 - Average 5]	2	RD_ONLY	
7348	FLOAT	Archive_Avg[6 - Average 6]	2	RD_ONLY	
7349	FLOAT	Archive_Avg[7 - Average 7]	2	RD_ONLY	
7350	FLOAT	Archive_Avg[8 - Average 8]	2	RD_ONLY	
7351	FLOAT	Archive_Avg[9 - Average 9]	2	RD_ONLY	
7352	FLOAT	Archive_Avg[10 - Average 10]	2	RD_ONLY	
7353	FLOAT	Archive_Avg[11 - Average 11]	2	RD_ONLY	
7354	FLOAT	Archive_Avg[12 - Average 12]	2	RD_ONLY	
7355	FLOAT	Archive_Avg[13 - Average 13]	2	RD_ONLY	
7356	FLOAT	Archive_Avg[14 - Average 14]	2	RD_ONLY	
7357	FLOAT	Archive_Avg[15 - Average 15]	2	RD_ONLY	
7358	FLOAT	Archive_Avg[16 - Average 16]	2	RD_ONLY	
7359	FLOAT	Archive_Avg[17 - Average 17]	2	RD_ONLY	
7360	FLOAT	Archive_Avg[18 - Average 18]	2	RD_ONLY	
7361	FLOAT	Archive_Avg[19 - Average 19]	2	RD_ONLY	
7362	FLOAT	Archive_Avg[20 - Average 20]	2	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7363	FLOAT	Archive_Avg[21 - Average 21]	2	RD_ONLY	
7364	FLOAT	Archive_Avg[22 - Average 22]	2	RD_ONLY	
7365	FLOAT	Archive_Avg[23 - Average 23]	2	RD_ONLY	
7366	FLOAT	Archive_Avg[24 - Average 24]	2	RD_ONLY	
7367	FLOAT	Archive_Avg[25 - Average 25]	2	RD_ONLY	
7368	FLOAT	Archive_Avg[26 - Average 26]	2	RD_ONLY	
7369	FLOAT	Archive_Avg[27 - Average 27]	2	RD_ONLY	
7370	FLOAT	Archive_Avg[28 - Average 28]	2	RD_ONLY	
7371	FLOAT	Archive_Avg[29 - Average 29]	2	RD_ONLY	
7372	FLOAT	Archive_Avg[30 - Average 30]	2	RD_ONLY	
7373	FLOAT	Archive_Avg[31 - Average 31]	2	RD_ONLY	
7374	FLOAT	Archive_Avg[32 - Average 32]	2	RD_ONLY	
7375	FLOAT	Archive_Avg[33 - Average 33]	2	RD_ONLY	
7376	FLOAT	Archive_Avg[34 - Average 34]	2	RD_ONLY	
7377	FLOAT	Archive_Avg[35 - Average 35]	2	RD_ONLY	
7378	FLOAT	Archive_Avg[36 - Average 36]	2	RD_ONLY	
7379	FLOAT	Archive_Max[1 - Average 1]	2	RD_ONLY	
7380	FLOAT	Archive_Max[2 - Average 2]	2	RD_ONLY	
7381	FLOAT	Archive_Max[3 - Average 3]	2	RD_ONLY	
7382	FLOAT	Archive_Max[4 - Average 4]	2	RD_ONLY	
7383	FLOAT	Archive_Max[5 - Average 5]	2	RD_ONLY	
7384	FLOAT	Archive_Max[6 - Average 6]	2	RD_ONLY	
7385	FLOAT	Archive_Max[7 - Average 7]	2	RD_ONLY	
7386	FLOAT	Archive_Max[8 - Average 8]	2	RD_ONLY	
7387	FLOAT	Archive_Max[9 - Average 9]	2	RD_ONLY	
7388	FLOAT	Archive_Max[10 - Average 10]	2	RD_ONLY	
7389	FLOAT	Archive_Max[11 - Average 11]	2	RD_ONLY	
7390	FLOAT	Archive_Max[12 - Average 12]	2	RD_ONLY	
7391	FLOAT	Archive_Max[13 - Average 13]	2	RD_ONLY	
7392	FLOAT	Archive_Max[14 - Average 14]	2	RD_ONLY	
7393	FLOAT	Archive_Max[15 - Average 15]	2	RD_ONLY	
7394	FLOAT	Archive_Max[16 - Average 16]	2	RD_ONLY	
7395	FLOAT	Archive_Max[17 - Average 17]	2	RD_ONLY	
7396	FLOAT	Archive_Max[18 - Average 18]	2	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7397	FLOAT	Archive_Max[19 - Average 19]	2	RD_ONLY	
7398	FLOAT	Archive_Max[20 - Average 20]	2	RD_ONLY	
7399	FLOAT	Archive_Max[21 - Average 21]	2	RD_ONLY	
7400	FLOAT	Archive_Max[22 - Average 22]	2	RD_ONLY	
7401	FLOAT	Archive_Max[23 - Average 23]	2	RD_ONLY	
7402	FLOAT	Archive_Max[24 - Average 24]	2	RD_ONLY	
7403	FLOAT	Archive_Max[25 - Average 25]	2	RD_ONLY	
7404	FLOAT	Archive_Max[26 - Average 26]	2	RD_ONLY	
7405	FLOAT	Archive_Max[27 - Average 27]	2	RD_ONLY	
7406	FLOAT	Archive_Max[28 - Average 28]	2	RD_ONLY	
7407	FLOAT	Archive_Max[29 - Average 29]	2	RD_ONLY	
7408	FLOAT	Archive_Max[30 - Average 30]	2	RD_ONLY	
7409	FLOAT	Archive_Max[31 - Average 31]	2	RD_ONLY	
7410	FLOAT	Archive_Max[32 - Average 32]	2	RD_ONLY	
7411	FLOAT	Archive_Max[33 - Average 33]	2	RD_ONLY	
7412	FLOAT	Archive_Max[34 - Average 34]	2	RD_ONLY	
7413	FLOAT	Archive_Max[35 - Average 35]	2	RD_ONLY	
7414	FLOAT	Archive_Max[36 - Average 36]	2	RD_ONLY	
7415	FLOAT	Archive_Min[1 - Average 1]	2	RD_ONLY	
7416	FLOAT	Archive_Min[2 - Average 2]	2	RD_ONLY	
7417	FLOAT	Archive_Min[3 - Average 3]	2	RD_ONLY	
7418	FLOAT	Archive_Min[4 - Average 4]	2	RD_ONLY	
7419	FLOAT	Archive_Min[5 - Average 5]	2	RD_ONLY	
7420	FLOAT	Archive_Min[6 - Average 6]	2	RD_ONLY	
7421	FLOAT	Archive_Min[7 - Average 7]	2	RD_ONLY	
7422	FLOAT	Archive_Min[8 - Average 8]	2	RD_ONLY	
7423	FLOAT	Archive_Min[9 - Average 9]	2	RD_ONLY	
7424	FLOAT	Archive_Min[10 - Average 10]	2	RD_ONLY	
7425	FLOAT	Archive_Min[11 - Average 11]	2	RD_ONLY	
7426	FLOAT	Archive_Min[12 - Average 12]	2	RD_ONLY	
7427	FLOAT	Archive_Min[13 - Average 13]	2	RD_ONLY	
7428	FLOAT	Archive_Min[14 - Average 14]	2	RD_ONLY	
7429	FLOAT	Archive_Min[15 - Average 15]	2	RD_ONLY	
7430	FLOAT	Archive_Min[16 - Average 16]	2	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7431	FLOAT	Archive_Min[17 - Average 17]	2	RD_ONLY	
7432	FLOAT	Archive_Min[18 - Average 18]	2	RD_ONLY	
7433	FLOAT	Archive_Min[19 - Average 19]	2	RD_ONLY	
7434	FLOAT	Archive_Min[20 - Average 20]	2	RD_ONLY	
7435	FLOAT	Archive_Min[21 - Average 21]	2	RD_ONLY	
7436	FLOAT	Archive_Min[22 - Average 22]	2	RD_ONLY	
7437	FLOAT	Archive_Min[23 - Average 23]	2	RD_ONLY	
7438	FLOAT	Archive_Min[24 - Average 24]	2	RD_ONLY	
7439	FLOAT	Archive_Min[25 - Average 25]	2	RD_ONLY	
7440	FLOAT	Archive_Min[26 - Average 26]	2	RD_ONLY	
7441	FLOAT	Archive_Min[27 - Average 27]	2	RD_ONLY	
7442	FLOAT	Archive_Min[28 - Average 28]	2	RD_ONLY	
7443	FLOAT	Archive_Min[29 - Average 29]	2	RD_ONLY	
7444	FLOAT	Archive_Min[30 - Average 30]	2	RD_ONLY	
7445	FLOAT	Archive_Min[31 - Average 31]	2	RD_ONLY	
7446	FLOAT	Archive_Min[32 - Average 32]	2	RD_ONLY	
7447	FLOAT	Archive_Min[33 - Average 33]	2	RD_ONLY	
7448	FLOAT	Archive_Min[34 - Average 34]	2	RD_ONLY	
7449	FLOAT	Archive_Min[35 - Average 35]	2	RD_ONLY	
7450	FLOAT	Archive_Min[36 - Average 36]	2	RD_ONLY	
7451	FLOAT	Archive_Avg[1 - Average 1]	3	RD_ONLY	
7452	FLOAT	Archive_Avg[2 - Average 2]	3	RD_ONLY	
7453	FLOAT	Archive_Avg[3 - Average 3]	3	RD_ONLY	
7454	FLOAT	Archive_Avg[4 - Average 4]	3	RD_ONLY	
7455	FLOAT	Archive_Avg[5 - Average 5]	3	RD_ONLY	
7456	FLOAT	Archive_Avg[6 - Average 6]	3	RD_ONLY	
7457	FLOAT	Archive_Avg[7 - Average 7]	3	RD_ONLY	
7458	FLOAT	Archive_Avg[8 - Average 8]	3	RD_ONLY	
7459	FLOAT	Archive_Avg[9 - Average 9]	3	RD_ONLY	
7460	FLOAT	Archive_Avg[10 - Average 10]	3	RD_ONLY	
7461	FLOAT	Archive_Avg[11 - Average 11]	3	RD_ONLY	
7462	FLOAT	Archive_Avg[12 - Average 12]	3	RD_ONLY	
7463	FLOAT	Archive_Avg[13 - Average 13]	3	RD_ONLY	
7464	FLOAT	Archive_Avg[14 - Average 14]	3	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7465	FLOAT	Archive_Avg[15 - Average 15]	3	RD_ONLY	
7466	FLOAT	Archive_Avg[16 - Average 16]	3	RD_ONLY	
7467	FLOAT	Archive_Avg[17 - Average 17]	3	RD_ONLY	
7468	FLOAT	Archive_Avg[18 - Average 18]	3	RD_ONLY	
7469	FLOAT	Archive_Avg[19 - Average 19]	3	RD_ONLY	
7470	FLOAT	Archive_Avg[20 - Average 20]	3	RD_ONLY	
7471	FLOAT	Archive_Avg[21 - Average 21]	3	RD_ONLY	
7472	FLOAT	Archive_Avg[22 - Average 22]	3	RD_ONLY	
7473	FLOAT	Archive_Avg[23 - Average 23]	3	RD_ONLY	
7474	FLOAT	Archive_Avg[24 - Average 24]	3	RD_ONLY	
7475	FLOAT	Archive_Avg[25 - Average 25]	3	RD_ONLY	
7476	FLOAT	Archive_Avg[26 - Average 26]	3	RD_ONLY	
7477	FLOAT	Archive_Avg[27 - Average 27]	3	RD_ONLY	
7478	FLOAT	Archive_Avg[28 - Average 28]	3	RD_ONLY	
7479	FLOAT	Archive_Avg[29 - Average 29]	3	RD_ONLY	
7480	FLOAT	Archive_Avg[30 - Average 30]	3	RD_ONLY	
7481	FLOAT	Archive_Avg[31 - Average 31]	3	RD_ONLY	
7482	FLOAT	Archive_Avg[32 - Average 32]	3	RD_ONLY	
7483	FLOAT	Archive_Avg[33 - Average 33]	3	RD_ONLY	
7484	FLOAT	Archive_Avg[34 - Average 34]	3	RD_ONLY	
7485	FLOAT	Archive_Avg[35 - Average 35]	3	RD_ONLY	
7486	FLOAT	Archive_Avg[36 - Average 36]	3	RD_ONLY	
7487	FLOAT	Archive_Max[1 - Average 1]	3	RD_ONLY	
7488	FLOAT	Archive_Max[2 - Average 2]	3	RD_ONLY	
7489	FLOAT	Archive_Max[3 - Average 3]	3	RD_ONLY	
7490	FLOAT	Archive_Max[4 - Average 4]	3	RD_ONLY	
7491	FLOAT	Archive_Max[5 - Average 5]	3	RD_ONLY	
7492	FLOAT	Archive_Max[6 - Average 6]	3	RD_ONLY	
7493	FLOAT	Archive_Max[7 - Average 7]	3	RD_ONLY	
7494	FLOAT	Archive_Max[8 - Average 8]	3	RD_ONLY	
7495	FLOAT	Archive_Max[9 - Average 9]	3	RD_ONLY	
7496	FLOAT	Archive_Max[10 - Average 10]	3	RD_ONLY	
7497	FLOAT	Archive_Max[11 - Average 11]	3	RD_ONLY	
7498	FLOAT	Archive_Max[12 - Average 12]	3	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7499	FLOAT	Archive_Max[13 - Average 13]	3	RD_ONLY	
7500	FLOAT	Archive_Max[14 - Average 14]	3	RD_ONLY	
7501	FLOAT	Archive_Max[15 - Average 15]	3	RD_ONLY	
7502	FLOAT	Archive_Max[16 - Average 16]	3	RD_ONLY	
7503	FLOAT	Archive_Max[17 - Average 17]	3	RD_ONLY	
7504	FLOAT	Archive_Max[18 - Average 18]	3	RD_ONLY	
7505	FLOAT	Archive_Max[19 - Average 19]	3	RD_ONLY	
7506	FLOAT	Archive_Max[20 - Average 20]	3	RD_ONLY	
7507	FLOAT	Archive_Max[21 - Average 21]	3	RD_ONLY	
7508	FLOAT	Archive_Max[22 - Average 22]	3	RD_ONLY	
7509	FLOAT	Archive_Max[23 - Average 23]	3	RD_ONLY	
7510	FLOAT	Archive_Max[24 - Average 24]	3	RD_ONLY	
7511	FLOAT	Archive_Max[25 - Average 25]	3	RD_ONLY	
7512	FLOAT	Archive_Max[26 - Average 26]	3	RD_ONLY	
7513	FLOAT	Archive_Max[27 - Average 27]	3	RD_ONLY	
7514	FLOAT	Archive_Max[28 - Average 28]	3	RD_ONLY	
7515	FLOAT	Archive_Max[29 - Average 29]	3	RD_ONLY	
7516	FLOAT	Archive_Max[30 - Average 30]	3	RD_ONLY	
7517	FLOAT	Archive_Max[31 - Average 31]	3	RD_ONLY	
7518	FLOAT	Archive_Max[32 - Average 32]	3	RD_ONLY	
7519	FLOAT	Archive_Max[33 - Average 33]	3	RD_ONLY	
7520	FLOAT	Archive_Max[34 - Average 34]	3	RD_ONLY	
7521	FLOAT	Archive_Max[35 - Average 35]	3	RD_ONLY	
7522	FLOAT	Archive_Max[36 - Average 36]	3	RD_ONLY	
7523	FLOAT	Archive_Min[1 - Average 1]	3	RD_ONLY	
7524	FLOAT	Archive_Min[2 - Average 2]	3	RD_ONLY	
7525	FLOAT	Archive_Min[3 - Average 3]	3	RD_ONLY	
7526	FLOAT	Archive_Min[4 - Average 4]	3	RD_ONLY	
7527	FLOAT	Archive_Min[5 - Average 5]	3	RD_ONLY	
7528	FLOAT	Archive_Min[6 - Average 6]	3	RD_ONLY	
7529	FLOAT	Archive_Min[7 - Average 7]	3	RD_ONLY	
7530	FLOAT	Archive_Min[8 - Average 8]	3	RD_ONLY	
7531	FLOAT	Archive_Min[9 - Average 9]	3	RD_ONLY	
7532	FLOAT	Archive_Min[10 - Average 10]	3	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7533	FLOAT	Archive_Min[11 - Average 11]	3	RD_ONLY	
7534	FLOAT	Archive_Min[12 - Average 12]	3	RD_ONLY	
7535	FLOAT	Archive_Min[13 - Average 13]	3	RD_ONLY	
7536	FLOAT	Archive_Min[14 - Average 14]	3	RD_ONLY	
7537	FLOAT	Archive_Min[15 - Average 15]	3	RD_ONLY	
7538	FLOAT	Archive_Min[16 - Average 16]	3	RD_ONLY	
7539	FLOAT	Archive_Min[17 - Average 17]	3	RD_ONLY	
7540	FLOAT	Archive_Min[18 - Average 18]	3	RD_ONLY	
7541	FLOAT	Archive_Min[19 - Average 19]	3	RD_ONLY	
7542	FLOAT	Archive_Min[20 - Average 20]	3	RD_ONLY	
7543	FLOAT	Archive_Min[21 - Average 21]	3	RD_ONLY	
7544	FLOAT	Archive_Min[22 - Average 22]	3	RD_ONLY	
7545	FLOAT	Archive_Min[23 - Average 23]	3	RD_ONLY	
7546	FLOAT	Archive_Min[24 - Average 24]	3	RD_ONLY	
7547	FLOAT	Archive_Min[25 - Average 25]	3	RD_ONLY	
7548	FLOAT	Archive_Min[26 - Average 26]	3	RD_ONLY	
7549	FLOAT	Archive_Min[27 - Average 27]	3	RD_ONLY	
7550	FLOAT	Archive_Min[28 - Average 28]	3	RD_ONLY	
7551	FLOAT	Archive_Min[29 - Average 29]	3	RD_ONLY	
7552	FLOAT	Archive_Min[30 - Average 30]	3	RD_ONLY	
7553	FLOAT	Archive_Min[31 - Average 31]	3	RD_ONLY	
7554	FLOAT	Archive_Min[32 - Average 32]	3	RD_ONLY	
7555	FLOAT	Archive_Min[33 - Average 33]	3	RD_ONLY	
7556	FLOAT	Archive_Min[34 - Average 34]	3	RD_ONLY	
7557	FLOAT	Archive_Min[35 - Average 35]	3	RD_ONLY	
7558	FLOAT	Archive_Min[36 - Average 36]	3	RD_ONLY	
7560	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	
7561	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7562	FLOAT	Current Value[3]		RD_ONLY	
7563	FLOAT	Current Value[4]		RD_ONLY	
7564	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	
7565	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7566	FLOAT	Current Value[3]		RD_ONLY	
7567	FLOAT	Current Value[4]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7621	FLOAT	1 - Stream 1_Start Time		RD_ONLY	YYMMDD
7622	FLOAT	1 - Stream 1_Start Time		RD_ONLY	hhmmss
7623	FLOAT	1 - Stream 1_Mole %[1 - Component 1]		RD_ONLY	
7624	FLOAT	1 - Stream 1_Mole %[2 - Component 2]		RD_ONLY	
7625	FLOAT	1 - Stream 1_Mole %[3 - Component 3]		RD_ONLY	
7626	FLOAT	1 - Stream 1_Mole %[4 - Component 4]		RD_ONLY	
7627	FLOAT	1 - Stream 1_Mole %[5 - Component 5]		RD_ONLY	
7628	FLOAT	1 - Stream 1_Mole %[6 - Component 6]		RD_ONLY	
7629	FLOAT	1 - Stream 1_Mole %[7 - Component 7]		RD_ONLY	
7630	FLOAT	1 - Stream 1_Mole %[8 - Component 8]		RD_ONLY	
7631	FLOAT	1 - Stream 1_Mole %[9 - Component 9]		RD_ONLY	
7632	FLOAT	1 - Stream 1_Mole %[10 - Component 10]		RD_ONLY	
7633	FLOAT	1 - Stream 1_Mole %[11 - Component 11]		RD_ONLY	
7634	FLOAT	1 - Stream 1_Mole %[12 - Component 12]		RD_ONLY	
7635	FLOAT	1 - Stream 1_Mole %[13 - Component 13]		RD_ONLY	
7636	FLOAT	1 - Stream 1_Mole %[14 - Component 14]		RD_ONLY	
7637	FLOAT	1 - Stream 1_Mole %[15 - Component 15]		RD_ONLY	
7638	FLOAT	1 - Stream 1_Mole %[16 - Component 16]		RD_ONLY	
7639	FLOAT	1 - Stream 1_Mole %[17 - Component 17]		RD_ONLY	
7640	FLOAT	1 - Stream 1_Mole %[18 - Component 18]		RD_ONLY	
7641	FLOAT	1 - Stream 1_Mole %[19 - Component 19]		RD_ONLY	
7642	FLOAT	1 - Stream 1_Mole %[20 - Component 20]		RD_ONLY	
7643	FLOAT	1 - Stream 1_HV Gross BTU Dry		RD_ONLY	
7644	FLOAT	1 - Stream 1_GPA Real Rel Den Gas		RD_ONLY	
7645	FLOAT	1 - Stream 1_GPA Z Factor		RD_ONLY	
7646	FLOAT	1 - Stream 1_Total Unnormalized Conc		RD_ONLY	
7647	FLOAT	Unused		RD_ONLY	
7648	FLOAT	Unused		RD_ONLY	
7649	FLOAT	Unused		RD_ONLY	
7650	FLOAT	Unused		RD_ONLY	
7651	FLOAT	2 - Stream 2_Start Time		RD_ONLY	YYMMDD
7652	FLOAT	2 - Stream 2_Start Time		RD_ONLY	hhmmss
7653	FLOAT	2 - Stream 2_Mole %[1 - Component 1]		RD_ONLY	
7654	FLOAT	2 - Stream 2_Mole %[2 - Component 2]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7655	FLOAT	2 - Stream 2_Mole %[3 - Component 3]		RD_ONLY	
7656	FLOAT	2 - Stream 2_Mole %[4 - Component 4]		RD_ONLY	
7657	FLOAT	2 - Stream 2_Mole %[5 - Component 5]		RD_ONLY	
7658	FLOAT	2 - Stream 2_Mole %[6 - Component 6]		RD_ONLY	
7659	FLOAT	2 - Stream 2_Mole %[7 - Component 7]		RD_ONLY	
7660	FLOAT	2 - Stream 2_Mole %[8 - Component 8]		RD_ONLY	
7661	FLOAT	2 - Stream 2_Mole %[9 - Component 9]		RD_ONLY	
7662	FLOAT	2 - Stream 2_Mole %[10 - Component 10]		RD_ONLY	
7663	FLOAT	2 - Stream 2_Mole %[11 - Component 11]		RD_ONLY	
7664	FLOAT	2 - Stream 2_Mole %[12 - Component 12]		RD_ONLY	
7665	FLOAT	2 - Stream 2_Mole %[13 - Component 13]		RD_ONLY	
7666	FLOAT	2 - Stream 2_Mole %[14 - Component 14]		RD_ONLY	
7667	FLOAT	2 - Stream 2_Mole %[15 - Component 15]		RD_ONLY	
7668	FLOAT	2 - Stream 2_Mole %[16 - Component 16]		RD_ONLY	
7669	FLOAT	2 - Stream 2_Mole %[17 - Component 17]		RD_ONLY	
7670	FLOAT	2 - Stream 2_Mole %[18 - Component 18]		RD_ONLY	
7671	FLOAT	2 - Stream 2_Mole %[19 - Component 19]		RD_ONLY	
7672	FLOAT	2 - Stream 2_Mole %[20 - Component 20]		RD_ONLY	
7673	FLOAT	2 - Stream 2_HV Gross BTU Dry		RD_ONLY	
7674	FLOAT	2 - Stream 2_GPA Real Rel Den Gas		RD_ONLY	
7675	FLOAT	2 - Stream 2_GPA Z Factor		RD_ONLY	
7676	FLOAT	2 - Stream 2_Total Unnormalized Conc		RD_ONLY	
7677	FLOAT	Unused		RD_ONLY	
7678	FLOAT	Unused		RD_ONLY	
7679	FLOAT	Unused		RD_ONLY	
7680	FLOAT	Unused		RD_ONLY	
7681	FLOAT	3 - Stream 3_Start Time		RD_ONLY	YYMMDD
7682	FLOAT	3 - Stream 3_Start Time		RD_ONLY	hhmmss
7683	FLOAT	3 - Stream 3_Mole %[1 - Component 1]		RD_ONLY	
7684	FLOAT	3 - Stream 3_Mole %[2 - Component 2]		RD_ONLY	
7685	FLOAT	3 - Stream 3_Mole %[3 - Component 3]		RD_ONLY	
7686	FLOAT	3 - Stream 3_Mole %[4 - Component 4]		RD_ONLY	
7687	FLOAT	3 - Stream 3_Mole %[5 - Component 5]		RD_ONLY	
7688	FLOAT	3 - Stream 3_Mole %[6 - Component 6]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7689	FLOAT	3 - Stream 3_Mole %[7 - Component 7]		RD_ONLY	
7690	FLOAT	3 - Stream 3_Mole %[8 - Component 8]		RD_ONLY	
7691	FLOAT	3 - Stream 3_Mole %[9 - Component 9]		RD_ONLY	
7692	FLOAT	3 - Stream 3_Mole %[10 - Component 10]		RD_ONLY	
7693	FLOAT	3 - Stream 3_Mole %[11 - Component 11]		RD_ONLY	
7694	FLOAT	3 - Stream 3_Mole %[12 - Component 12]		RD_ONLY	
7695	FLOAT	3 - Stream 3_Mole %[13 - Component 13]		RD_ONLY	
7696	FLOAT	3 - Stream 3_Mole %[14 - Component 14]		RD_ONLY	
7697	FLOAT	3 - Stream 3_Mole %[15 - Component 15]		RD_ONLY	
7698	FLOAT	3 - Stream 3_Mole %[16 - Component 16]		RD_ONLY	
7699	FLOAT	3 - Stream 3_Mole %[17 - Component 17]		RD_ONLY	
7700	FLOAT	3 - Stream 3_Mole %[18 - Component 18]		RD_ONLY	
7701	FLOAT	3 - Stream 3_Mole %[19 - Component 19]		RD_ONLY	
7702	FLOAT	3 - Stream 3_Mole %[20 - Component 20]		RD_ONLY	
7703	FLOAT	3 - Stream 3_HV Gross BTU Dry		RD_ONLY	
7704	FLOAT	3 - Stream 3_GPA Real Rel Den Gas		RD_ONLY	
7705	FLOAT	3 - Stream 3_GPA Z Factor		RD_ONLY	
7706	FLOAT	3 - Stream 3_Total Unnormalized Conc		RD_ONLY	
7707	FLOAT	Unused		RD_ONLY	
7708	FLOAT	Unused		RD_ONLY	
7709	FLOAT	Unused		RD_ONLY	
7710	FLOAT	Unused		RD_ONLY	
7711	FLOAT	4 - Stream 4_Start Time		RD_ONLY	YYMMDD
7712	FLOAT	4 - Stream 4_Start Time		RD_ONLY	hhmmss
7713	FLOAT	4 - Stream 4_Mole %[1 - Component 1]		RD_ONLY	
7714	FLOAT	4 - Stream 4_Mole %[2 - Component 2]		RD_ONLY	
7715	FLOAT	4 - Stream 4_Mole %[3 - Component 3]		RD_ONLY	
7716	FLOAT	4 - Stream 4_Mole %[4 - Component 4]		RD_ONLY	
7717	FLOAT	4 - Stream 4_Mole %[5 - Component 5]		RD_ONLY	
7718	FLOAT	4 - Stream 4_Mole %[6 - Component 6]		RD_ONLY	
7719	FLOAT	4 - Stream 4_Mole %[7 - Component 7]		RD_ONLY	
7720	FLOAT	4 - Stream 4_Mole %[8 - Component 8]		RD_ONLY	
7721	FLOAT	4 - Stream 4_Mole %[9 - Component 9]		RD_ONLY	
7722	FLOAT	4 - Stream 4_Mole %[10 - Component 10]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7723	FLOAT	4 - Stream 4_Mole %[11 - Component 11]		RD_ONLY	
7724	FLOAT	4 - Stream 4_Mole %[12 - Component 12]		RD_ONLY	
7725	FLOAT	4 - Stream 4_Mole %[13 - Component 13]		RD_ONLY	
7726	FLOAT	4 - Stream 4_Mole %[14 - Component 14]		RD_ONLY	
7727	FLOAT	4 - Stream 4_Mole %[15 - Component 15]		RD_ONLY	
7728	FLOAT	4 - Stream 4_Mole %[16 - Component 16]		RD_ONLY	
7729	FLOAT	4 - Stream 4_Mole %[17 - Component 17]		RD_ONLY	
7730	FLOAT	4 - Stream 4_Mole %[18 - Component 18]		RD_ONLY	
7731	FLOAT	4 - Stream 4_Mole %[19 - Component 19]		RD_ONLY	
7732	FLOAT	4 - Stream 4_Mole %[20 - Component 20]		RD_ONLY	
7733	FLOAT	4 - Stream 4_HV Gross BTU Dry		RD_ONLY	
7734	FLOAT	4 - Stream 4_GPA Real Rel Den Gas		RD_ONLY	
7735	FLOAT	4 - Stream 4_GPA Z Factor		RD_ONLY	
7736	FLOAT	4 - Stream 4_Total Unnormalized Conc		RD_ONLY	
7737	FLOAT	Unused		RD_ONLY	
7738	FLOAT	Unused		RD_ONLY	
7739	FLOAT	Unused		RD_ONLY	
7740	FLOAT	Unused		RD_ONLY	
7741	FLOAT	5 - Stream 5_Start Time		RD_ONLY	YYMMDD
7742	FLOAT	5 - Stream 5_Start Time		RD_ONLY	hhmmss
7743	FLOAT	5 - Stream 5_Mole %[1 - Component 1]		RD_ONLY	
7744	FLOAT	5 - Stream 5_Mole %[2 - Component 2]		RD_ONLY	
7745	FLOAT	5 - Stream 5_Mole %[3 - Component 3]		RD_ONLY	
7746	FLOAT	5 - Stream 5_Mole %[4 - Component 4]		RD_ONLY	
7747	FLOAT	5 - Stream 5_Mole %[5 - Component 5]		RD_ONLY	
7748	FLOAT	5 - Stream 5_Mole %[6 - Component 6]		RD_ONLY	
7749	FLOAT	5 - Stream 5_Mole %[7 - Component 7]		RD_ONLY	
7750	FLOAT	5 - Stream 5_Mole %[8 - Component 8]		RD_ONLY	
7751	FLOAT	5 - Stream 5_Mole %[9 - Component 9]		RD_ONLY	
7752	FLOAT	5 - Stream 5_Mole %[10 - Component 10]		RD_ONLY	
7753	FLOAT	5 - Stream 5_Mole %[11 - Component 11]		RD_ONLY	
7754	FLOAT	5 - Stream 5_Mole %[12 - Component 12]		RD_ONLY	
7755	FLOAT	5 - Stream 5_Mole %[13 - Component 13]		RD_ONLY	
7756	FLOAT	5 - Stream 5_Mole %[14 - Component 14]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7757	FLOAT	5 - Stream 5_Mole %[15 - Component 15]		RD_ONLY	
7758	FLOAT	5 - Stream 5_Mole %[16 - Component 16]		RD_ONLY	
7759	FLOAT	5 - Stream 5_Mole %[17 - Component 17]		RD_ONLY	
7760	FLOAT	5 - Stream 5_Mole %[18 - Component 18]		RD_ONLY	
7761	FLOAT	5 - Stream 5_Mole %[19 - Component 19]		RD_ONLY	
7762	FLOAT	5 - Stream 5_Mole %[20 - Component 20]		RD_ONLY	
7763	FLOAT	5 - Stream 5_HV Gross BTU Dry		RD_ONLY	
7764	FLOAT	5 - Stream 5_GPA Real Rel Den Gas		RD_ONLY	
7765	FLOAT	5 - Stream 5_GPA Z Factor		RD_ONLY	
7766	FLOAT	5 - Stream 5_Total Unnormalized Conc		RD_ONLY	
7767	FLOAT	Unused		RD_ONLY	
7768	FLOAT	Unused		RD_ONLY	
7769	FLOAT	Unused		RD_ONLY	
7770	FLOAT	Unused		RD_ONLY	
7771	FLOAT	6 - Stream 6_Start Time		RD_ONLY	YYMMDD
7772	FLOAT	6 - Stream 6_Start Time		RD_ONLY	hhmmss
7773	FLOAT	6 - Stream 6_Mole %[1 - Component 1]		RD_ONLY	
7774	FLOAT	6 - Stream 6_Mole %[2 - Component 2]		RD_ONLY	
7775	FLOAT	6 - Stream 6_Mole %[3 - Component 3]		RD_ONLY	
7776	FLOAT	6 - Stream 6_Mole %[4 - Component 4]		RD_ONLY	
7777	FLOAT	6 - Stream 6_Mole %[5 - Component 5]		RD_ONLY	
7778	FLOAT	6 - Stream 6_Mole %[6 - Component 6]		RD_ONLY	
7779	FLOAT	6 - Stream 6_Mole %[7 - Component 7]		RD_ONLY	
7780	FLOAT	6 - Stream 6_Mole %[8 - Component 8]		RD_ONLY	
7781	FLOAT	6 - Stream 6_Mole %[9 - Component 9]		RD_ONLY	
7782	FLOAT	6 - Stream 6_Mole %[10 - Component 10]		RD_ONLY	
7783	FLOAT	6 - Stream 6_Mole %[11 - Component 11]		RD_ONLY	
7784	FLOAT	6 - Stream 6_Mole %[12 - Component 12]		RD_ONLY	
7785	FLOAT	6 - Stream 6_Mole %[13 - Component 13]		RD_ONLY	
7786	FLOAT	6 - Stream 6_Mole %[14 - Component 14]		RD_ONLY	
7787	FLOAT	6 - Stream 6_Mole %[15 - Component 15]		RD_ONLY	
7788	FLOAT	6 - Stream 6_Mole %[16 - Component 16]		RD_ONLY	
7789	FLOAT	6 - Stream 6_Mole %[17 - Component 17]		RD_ONLY	
7790	FLOAT	6 - Stream 6_Mole %[18 - Component 18]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7791	FLOAT	6 - Stream 6_Mole %[19 - Component 19]		RD_ONLY	
7792	FLOAT	6 - Stream 6_Mole %[20 - Component 20]		RD_ONLY	
7793	FLOAT	6 - Stream 6_HV Gross BTU Dry		RD_ONLY	
7794	FLOAT	6 - Stream 6_GPA Real Rel Den Gas		RD_ONLY	
7795	FLOAT	6 - Stream 6_GPA Z Factor		RD_ONLY	
7796	FLOAT	6 - Stream 6_Total Unnormalized Conc		RD_ONLY	
7797	FLOAT	Unused		RD_ONLY	
7798	FLOAT	Unused		RD_ONLY	
7799	FLOAT	Unused		RD_ONLY	
7800	FLOAT	Unused		RD_ONLY	
7801	FLOAT	7 - Stream 7_Start Time		RD_ONLY	YYMMDD
7802	FLOAT	7 - Stream 7_Start Time		RD_ONLY	hhmmss
7803	FLOAT	7 - Stream 7_Mole %[1 - Component 1]		RD_ONLY	
7804	FLOAT	7 - Stream 7_Mole %[2 - Component 2]		RD_ONLY	
7805	FLOAT	7 - Stream 7_Mole %[3 - Component 3]		RD_ONLY	
7806	FLOAT	7 - Stream 7_Mole %[4 - Component 4]		RD_ONLY	
7807	FLOAT	7 - Stream 7_Mole %[5 - Component 5]		RD_ONLY	
7808	FLOAT	7 - Stream 7_Mole %[6 - Component 6]		RD_ONLY	
7809	FLOAT	7 - Stream 7_Mole %[7 - Component 7]		RD_ONLY	
7810	FLOAT	7 - Stream 7_Mole %[8 - Component 8]		RD_ONLY	
7811	FLOAT	7 - Stream 7_Mole %[9 - Component 9]		RD_ONLY	
7812	FLOAT	7 - Stream 7_Mole %[10 - Component 10]		RD_ONLY	
7813	FLOAT	7 - Stream 7_Mole %[11 - Component 11]		RD_ONLY	
7814	FLOAT	7 - Stream 7_Mole %[12 - Component 12]		RD_ONLY	
7815	FLOAT	7 - Stream 7_Mole %[13 - Component 13]		RD_ONLY	
7816	FLOAT	7 - Stream 7_Mole %[14 - Component 14]		RD_ONLY	
7817	FLOAT	7 - Stream 7_Mole %[15 - Component 15]		RD_ONLY	
7818	FLOAT	7 - Stream 7_Mole %[16 - Component 16]		RD_ONLY	
7819	FLOAT	7 - Stream 7_Mole %[17 - Component 17]		RD_ONLY	
7820	FLOAT	7 - Stream 7_Mole %[18 - Component 18]		RD_ONLY	
7821	FLOAT	7 - Stream 7_Mole %[19 - Component 19]		RD_ONLY	
7822	FLOAT	7 - Stream 7_Mole %[20 - Component 20]		RD_ONLY	
7823	FLOAT	7 - Stream 7_HV Gross BTU Dry		RD_ONLY	
7824	FLOAT	7 - Stream 7_GPA Real Rel Den Gas		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7825	FLOAT	7 - Stream 7_GPA Z Factor		RD_ONLY	
7826	FLOAT	7 - Stream 7_Total Unnormalized Conc		RD_ONLY	
7827	FLOAT	Unused		RD_ONLY	
7828	FLOAT	Unused		RD_ONLY	
7829	FLOAT	Unused		RD_ONLY	
7830	FLOAT	Unused		RD_ONLY	
7831	FLOAT	8 - Stream 8_Start Time		RD_ONLY	YYMMDD
7832	FLOAT	8 - Stream 8_Start Time		RD_ONLY	hhmmss
7833	FLOAT	8 - Stream 8_Mole %[1 - Component 1]		RD_ONLY	
7834	FLOAT	8 - Stream 8_Mole %[2 - Component 2]		RD_ONLY	
7835	FLOAT	8 - Stream 8_Mole %[3 - Component 3]		RD_ONLY	
7836	FLOAT	8 - Stream 8_Mole %[4 - Component 4]		RD_ONLY	
7837	FLOAT	8 - Stream 8_Mole %[5 - Component 5]		RD_ONLY	
7838	FLOAT	8 - Stream 8_Mole %[6 - Component 6]		RD_ONLY	
7839	FLOAT	8 - Stream 8_Mole %[7 - Component 7]		RD_ONLY	
7840	FLOAT	8 - Stream 8_Mole %[8 - Component 8]		RD_ONLY	
7841	FLOAT	8 - Stream 8_Mole %[9 - Component 9]		RD_ONLY	
7842	FLOAT	8 - Stream 8_Mole %[10 - Component 10]		RD_ONLY	
7843	FLOAT	8 - Stream 8_Mole %[11 - Component 11]		RD_ONLY	
7844	FLOAT	8 - Stream 8_Mole %[12 - Component 12]		RD_ONLY	
7845	FLOAT	8 - Stream 8_Mole %[13 - Component 13]		RD_ONLY	
7846	FLOAT	8 - Stream 8_Mole %[14 - Component 14]		RD_ONLY	
7847	FLOAT	8 - Stream 8_Mole %[15 - Component 15]		RD_ONLY	
7848	FLOAT	8 - Stream 8_Mole %[16 - Component 16]		RD_ONLY	
7849	FLOAT	8 - Stream 8_Mole %[17 - Component 17]		RD_ONLY	
7850	FLOAT	8 - Stream 8_Mole %[18 - Component 18]		RD_ONLY	
7851	FLOAT	8 - Stream 8_Mole %[19 - Component 19]		RD_ONLY	
7852	FLOAT	8 - Stream 8_Mole %[20 - Component 20]		RD_ONLY	
7853	FLOAT	8 - Stream 8_HV Gross BTU Dry		RD_ONLY	
7854	FLOAT	8 - Stream 8_GPA Real Rel Den Gas		RD_ONLY	
7855	FLOAT	8 - Stream 8_GPA Z Factor		RD_ONLY	
7856	FLOAT	8 - Stream 8_Total Unnormalized Conc		RD_ONLY	
7857	FLOAT	Unused		RD_ONLY	
7858	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7859	FLOAT	Unused		RD_ONLY	
7860	FLOAT	Unused		RD_ONLY	
7861	FLOAT	9 - Stream 9_Start Time		RD_ONLY	YYMMDD
7862	FLOAT	9 - Stream 9_Start Time		RD_ONLY	hhmmss
7863	FLOAT	9 - Stream 9_Mole %[1 - Component 1]		RD_ONLY	
7864	FLOAT	9 - Stream 9_Mole %[2 - Component 2]		RD_ONLY	
7865	FLOAT	9 - Stream 9_Mole %[3 - Component 3]		RD_ONLY	
7866	FLOAT	9 - Stream 9_Mole %[4 - Component 4]		RD_ONLY	
7867	FLOAT	9 - Stream 9_Mole %[5 - Component 5]		RD_ONLY	
7868	FLOAT	9 - Stream 9_Mole %[6 - Component 6]		RD_ONLY	
7869	FLOAT	9 - Stream 9_Mole %[7 - Component 7]		RD_ONLY	
7870	FLOAT	9 - Stream 9_Mole %[8 - Component 8]		RD_ONLY	
7871	FLOAT	9 - Stream 9_Mole %[9 - Component 9]		RD_ONLY	
7872	FLOAT	9 - Stream 9_Mole %[10 - Component 10]		RD_ONLY	
7873	FLOAT	9 - Stream 9_Mole %[11 - Component 11]		RD_ONLY	
7874	FLOAT	9 - Stream 9_Mole %[12 - Component 12]		RD_ONLY	
7875	FLOAT	9 - Stream 9_Mole %[13 - Component 13]		RD_ONLY	
7876	FLOAT	9 - Stream 9_Mole %[14 - Component 14]		RD_ONLY	
7877	FLOAT	9 - Stream 9_Mole %[15 - Component 15]		RD_ONLY	
7878	FLOAT	9 - Stream 9_Mole %[16 - Component 16]		RD_ONLY	
7879	FLOAT	9 - Stream 9_Mole %[17 - Component 17]		RD_ONLY	
7880	FLOAT	9 - Stream 9_Mole %[18 - Component 18]		RD_ONLY	
7881	FLOAT	9 - Stream 9_Mole %[19 - Component 19]		RD_ONLY	
7882	FLOAT	9 - Stream 9_Mole %[20 - Component 20]		RD_ONLY	
7883	FLOAT	9 - Stream 9_HV Gross BTU Dry		RD_ONLY	
7884	FLOAT	9 - Stream 9_GPA Real Rel Den Gas		RD_ONLY	
7885	FLOAT	9 - Stream 9_GPA Z Factor		RD_ONLY	
7886	FLOAT	9 - Stream 9_Total Unnormalized Conc		RD_ONLY	
7887	FLOAT	Unused		RD_ONLY	
7888	FLOAT	Unused		RD_ONLY	
7889	FLOAT	Unused		RD_ONLY	
7890	FLOAT	Unused		RD_ONLY	
7891	FLOAT	10 - Stream 10_Start Time		RD_ONLY	YYMMDD
7892	FLOAT	10 - Stream 10_Start Time		RD_ONLY	hhmmss

Register #	Data Type	Variable	Record #	Access	Format
7893	FLOAT	10 - Stream 10_Mole %[1 - Component 1]		RD_ONLY	
7894	FLOAT	10 - Stream 10_Mole %[2 - Component 2]		RD_ONLY	
7895	FLOAT	10 - Stream 10_Mole %[3 - Component 3]		RD_ONLY	
7896	FLOAT	10 - Stream 10_Mole %[4 - Component 4]		RD_ONLY	
7897	FLOAT	10 - Stream 10_Mole %[5 - Component 5]		RD_ONLY	
7898	FLOAT	10 - Stream 10_Mole %[6 - Component 6]		RD_ONLY	
7899	FLOAT	10 - Stream 10_Mole %[7 - Component 7]		RD_ONLY	
7900	FLOAT	10 - Stream 10_Mole %[8 - Component 8]		RD_ONLY	
7901	FLOAT	10 - Stream 10_Mole %[9 - Component 9]		RD_ONLY	
7902	FLOAT	10 - Stream 10_Mole %[10 - Component 10]		RD_ONLY	
7903	FLOAT	10 - Stream 10_Mole %[11 - Component 11]		RD_ONLY	
7904	FLOAT	10 - Stream 10_Mole %[12 - Component 12]		RD_ONLY	
7905	FLOAT	10 - Stream 10_Mole %[13 - Component 13]		RD_ONLY	
7906	FLOAT	10 - Stream 10_Mole %[14 - Component 14]		RD_ONLY	
7907	FLOAT	10 - Stream 10_Mole %[15 - Component 15]		RD_ONLY	
7908	FLOAT	10 - Stream 10_Mole %[16 - Component 16]		RD_ONLY	
7909	FLOAT	10 - Stream 10_Mole %[17 - Component 17]		RD_ONLY	
7910	FLOAT	10 - Stream 10_Mole %[18 - Component 18]		RD_ONLY	
7911	FLOAT	10 - Stream 10_Mole %[19 - Component 19]		RD_ONLY	
7912	FLOAT	10 - Stream 10_Mole %[20 - Component 20]		RD_ONLY	
7913	FLOAT	10 - Stream 10_HV Gross BTU Dry		RD_ONLY	
7914	FLOAT	10 - Stream 10_GPA Real Rel Den Gas		RD_ONLY	
7915	FLOAT	10 - Stream 10_GPA Z Factor		RD_ONLY	
7916	FLOAT	10 - Stream 10_Total Unnormalized Conc		RD_ONLY	
7917	FLOAT	Unused		RD_ONLY	
7918	FLOAT	Unused		RD_ONLY	
7919	FLOAT	Unused		RD_ONLY	
7920	FLOAT	Unused		RD_ONLY	
7921	FLOAT	11 - Stream 11_Start Time		RD_ONLY	YYMMDD
7922	FLOAT	11 - Stream 11_Start Time		RD_ONLY	hhmmss
7923	FLOAT	11 - Stream 11_Mole %[1 - Component 1]		RD_ONLY	
7924	FLOAT	11 - Stream 11_Mole %[2 - Component 2]		RD_ONLY	
7925	FLOAT	11 - Stream 11_Mole %[3 - Component 3]		RD_ONLY	
7926	FLOAT	11 - Stream 11_Mole %[4 - Component 4]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7927	FLOAT	11 - Stream 11_Mole %[5 - Component 5]		RD_ONLY	
7928	FLOAT	11 - Stream 11_Mole %[6 - Component 6]		RD_ONLY	
7929	FLOAT	11 - Stream 11_Mole %[7 - Component 7]		RD_ONLY	
7930	FLOAT	11 - Stream 11_Mole %[8 - Component 8]		RD_ONLY	
7931	FLOAT	11 - Stream 11_Mole %[9 - Component 9]		RD_ONLY	
7932	FLOAT	11 - Stream 11_Mole %[10 - Component 10]		RD_ONLY	
7933	FLOAT	11 - Stream 11_Mole %[11 - Component 11]		RD_ONLY	
7934	FLOAT	11 - Stream 11_Mole %[12 - Component 12]		RD_ONLY	
7935	FLOAT	11 - Stream 11_Mole %[13 - Component 13]		RD_ONLY	
7936	FLOAT	11 - Stream 11_Mole %[14 - Component 14]		RD_ONLY	
7937	FLOAT	11 - Stream 11_Mole %[15 - Component 15]		RD_ONLY	
7938	FLOAT	11 - Stream 11_Mole %[16 - Component 16]		RD_ONLY	
7939	FLOAT	11 - Stream 11_Mole %[17 - Component 17]		RD_ONLY	
7940	FLOAT	11 - Stream 11_Mole %[18 - Component 18]		RD_ONLY	
7941	FLOAT	11 - Stream 11_Mole %[19 - Component 19]		RD_ONLY	
7942	FLOAT	11 - Stream 11_Mole %[20 - Component 20]		RD_ONLY	
7943	FLOAT	11 - Stream 11_HV Gross BTU Dry		RD_ONLY	
7944	FLOAT	11 - Stream 11_GPA Real Rel Den Gas		RD_ONLY	
7945	FLOAT	11 - Stream 11_GPA Z Factor		RD_ONLY	
7946	FLOAT	11 - Stream 11_Total Unnormalized Conc		RD_ONLY	
7947	FLOAT	Unused		RD_ONLY	
7948	FLOAT	Unused		RD_ONLY	
7949	FLOAT	Unused		RD_ONLY	
7950	FLOAT	Unused		RD_ONLY	
7951	FLOAT	12 - Stream 12_Start Time		RD_ONLY	YYMMDD
7952	FLOAT	12 - Stream 12_Start Time		RD_ONLY	hhmmss
7953	FLOAT	12 - Stream 12_Mole %[1 - Component 1]		RD_ONLY	
7954	FLOAT	12 - Stream 12_Mole %[2 - Component 2]		RD_ONLY	
7955	FLOAT	12 - Stream 12_Mole %[3 - Component 3]		RD_ONLY	
7956	FLOAT	12 - Stream 12_Mole %[4 - Component 4]		RD_ONLY	
7957	FLOAT	12 - Stream 12_Mole %[5 - Component 5]		RD_ONLY	
7958	FLOAT	12 - Stream 12_Mole %[6 - Component 6]		RD_ONLY	
7959	FLOAT	12 - Stream 12_Mole %[7 - Component 7]		RD_ONLY	
7960	FLOAT	12 - Stream 12_Mole %[8 - Component 8]		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7961	FLOAT	12 - Stream 12_Mole %[9 - Component 9]		RD_ONLY	
7962	FLOAT	12 - Stream 12_Mole %[10 - Component 10]		RD_ONLY	
7963	FLOAT	12 - Stream 12_Mole %[11 - Component 11]		RD_ONLY	
7964	FLOAT	12 - Stream 12_Mole %[12 - Component 12]		RD_ONLY	
7965	FLOAT	12 - Stream 12_Mole %[13 - Component 13]		RD_ONLY	
7966	FLOAT	12 - Stream 12_Mole %[14 - Component 14]		RD_ONLY	
7967	FLOAT	12 - Stream 12_Mole %[15 - Component 15]		RD_ONLY	
7968	FLOAT	12 - Stream 12_Mole %[16 - Component 16]		RD_ONLY	
7969	FLOAT	12 - Stream 12_Mole %[17 - Component 17]		RD_ONLY	
7970	FLOAT	12 - Stream 12_Mole %[18 - Component 18]		RD_ONLY	
7971	FLOAT	12 - Stream 12_Mole %[19 - Component 19]		RD_ONLY	
7972	FLOAT	12 - Stream 12_Mole %[20 - Component 20]		RD_ONLY	
7973	FLOAT	12 - Stream 12_HV Gross BTU Dry		RD_ONLY	
7974	FLOAT	12 - Stream 12_GPA Real Rel Den Gas		RD_ONLY	
7975	FLOAT	12 - Stream 12_GPA Z Factor		RD_ONLY	
7976	FLOAT	12 - Stream 12_Total Unnormalized Conc		RD_ONLY	
7977	FLOAT	Unused		RD_ONLY	
7978	FLOAT	Unused		RD_ONLY	
7979	FLOAT	Unused		RD_ONLY	
7980	FLOAT	Unused		RD_ONLY	
7981	FLOAT	Unused		RD_ONLY	
7982	FLOAT	Unused		RD_ONLY	
7983	FLOAT	Unused		RD_ONLY	
7984	FLOAT	Unused		RD_ONLY	
7985	FLOAT	Unused		RD_ONLY	
7986	FLOAT	Unused		RD_ONLY	
7987	FLOAT	Unused		RD_ONLY	
7988	FLOAT	Unused		RD_ONLY	
7989	FLOAT	Unused		RD_ONLY	
7990	FLOAT	Unused		RD_ONLY	
7991	FLOAT	Unused		RD_ONLY	
7992	FLOAT	Unused		RD_ONLY	
7993	FLOAT	Unused		RD_ONLY	
7994	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
7995	FLOAT	Unused		RD_ONLY	
7996	FLOAT	GC Control_Auto Sequence		RD_WR	
7997	FLOAT	GC Control_Halt		RD_WR	
7998	FLOAT	GC Control_Calibration		RD_WR	
7999	FLOAT	GC Control_Single Stream		RD_WR	
8000	FLOAT	Current Stream		RD_ONLY	
8001	FLOAT	GC Calibrating		RD_ONLY	
8002	FLOAT	GC Running		RD_ONLY	
8003	FLOAT	Unused		RD_ONLY	
8004	FLOAT	Run Time		RD_ONLY	
8005	FLOAT	Current Analysis Mode		RD_ONLY	
8006	FLOAT	GC Control_Validation		RD_WR	
8007	FLOAT	Unused		RD_ONLY	
8008	FLOAT	Unused		RD_ONLY	
8009	FLOAT	Unused		RD_ONLY	
8010	FLOAT	Unused		RD_ONLY	
8011	FLOAT	Unused		RD_ONLY	
8012	FLOAT	Unused		RD_ONLY	
8013	FLOAT	Unused		RD_ONLY	
8014	FLOAT	Unused		RD_ONLY	
8015	FLOAT	Unused		RD_ONLY	
8016	FLOAT	Unused		RD_ONLY	
8017	FLOAT	Unused		RD_ONLY	
8018	FLOAT	Unused		RD_ONLY	
8019	FLOAT	Unused		RD_ONLY	
8020	FLOAT	Unused		RD_ONLY	
8021	FLOAT	Unused		RD_ONLY	
8022	FLOAT	Unused		RD_ONLY	
8023	FLOAT	Unused		RD_ONLY	
8024	FLOAT	Unused		RD_ONLY	
8025	FLOAT	Unused		RD_ONLY	
8026	FLOAT	Unused		RD_ONLY	
8027	FLOAT	Unused		RD_ONLY	
8028	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8029	FLOAT	Unused		RD_ONLY	
8030	FLOAT	Unused		RD_ONLY	
8031	FLOAT	Unused		RD_ONLY	
8032	FLOAT	Unused		RD_ONLY	
8033	FLOAT	Unused		RD_ONLY	
8034	FLOAT	Unused		RD_ONLY	
8035	FLOAT	Unused		RD_ONLY	
8036	FLOAT	Unused		RD_ONLY	
8037	FLOAT	Unused		RD_ONLY	
8038	FLOAT	Unused		RD_ONLY	
8039	FLOAT	Unused		RD_ONLY	
8040	FLOAT	Unused		RD_ONLY	
8041	FLOAT	Unused		RD_ONLY	
8042	FLOAT	Unused		RD_ONLY	
8043	FLOAT	Unused		RD_ONLY	
8044	FLOAT	Unused		RD_ONLY	
8045	FLOAT	Unused		RD_ONLY	
8046	FLOAT	Unused		RD_ONLY	
8047	FLOAT	Unused		RD_ONLY	
8048	FLOAT	Unused		RD_ONLY	
8049	FLOAT	Unused		RD_ONLY	
8050	FLOAT	Unused		RD_ONLY	
8051	FLOAT	Unused		RD_ONLY	
8052	FLOAT	Unused		RD_ONLY	
8053	FLOAT	Unused		RD_ONLY	
8054	FLOAT	Unused		RD_ONLY	
8055	FLOAT	Unused		RD_ONLY	
8056	FLOAT	Unused		RD_ONLY	
8057	FLOAT	Unused		RD_ONLY	
8058	FLOAT	Unused		RD_ONLY	
8059	FLOAT	Unused		RD_ONLY	
8060	FLOAT	Unused		RD_ONLY	
8061	FLOAT	Unused		RD_ONLY	
8062	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8063	FLOAT	Unused		RD_ONLY	
8064	FLOAT	Unused		RD_ONLY	
8065	FLOAT	Unused		RD_ONLY	
8066	FLOAT	Unused		RD_ONLY	
8067	FLOAT	Unused		RD_ONLY	
8068	FLOAT	Unused		RD_ONLY	
8069	FLOAT	Unused		RD_ONLY	
8070	FLOAT	Unused		RD_ONLY	
8071	FLOAT	Unused		RD_ONLY	
8072	FLOAT	Unused		RD_ONLY	
8073	FLOAT	Unused		RD_ONLY	
8074	FLOAT	Unused		RD_ONLY	
8075	FLOAT	Unused		RD_ONLY	
8076	FLOAT	Unused		RD_ONLY	
8077	FLOAT	Unused		RD_ONLY	
8078	FLOAT	Unused		RD_ONLY	
8079	FLOAT	Unused		RD_ONLY	
8080	FLOAT	Unused		RD_ONLY	
8081	FLOAT	Unused		RD_ONLY	
8082	FLOAT	Unused		RD_ONLY	
8083	FLOAT	Unused		RD_ONLY	
8084	FLOAT	Unused		RD_ONLY	
8085	FLOAT	Unused		RD_ONLY	
8086	FLOAT	Unused		RD_ONLY	
8087	FLOAT	Unused		RD_ONLY	
8088	FLOAT	Unused		RD_ONLY	
8089	FLOAT	Unused		RD_ONLY	
8090	FLOAT	Unused		RD_ONLY	
8091	FLOAT	Unused		RD_ONLY	
8092	FLOAT	Unused		RD_ONLY	
8093	FLOAT	Unused		RD_ONLY	
8094	FLOAT	Unused		RD_ONLY	
8095	FLOAT	Unused		RD_ONLY	
8096	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8097	FLOAT	Unused		RD_ONLY	
8098	FLOAT	Unused		RD_ONLY	
8099	FLOAT	Unused		RD_ONLY	
8100	FLOAT	Unused		RD_ONLY	
8101	FLOAT	Unused		RD_ONLY	
8102	FLOAT	Unused		RD_ONLY	
8103	FLOAT	Unused		RD_ONLY	
8104	FLOAT	Unused		RD_ONLY	
8105	FLOAT	Unused		RD_ONLY	
8106	FLOAT	Unused		RD_ONLY	
8107	FLOAT	Unused		RD_ONLY	
8108	FLOAT	Unused		RD_ONLY	
8109	FLOAT	Unused		RD_ONLY	
8110	FLOAT	Unused		RD_ONLY	
8111	FLOAT	Unused		RD_ONLY	
8112	FLOAT	Unused		RD_ONLY	
8113	FLOAT	Unused		RD_ONLY	
8114	FLOAT	Unused		RD_ONLY	
8115	FLOAT	Unused		RD_ONLY	
8116	FLOAT	Unused		RD_ONLY	
8117	FLOAT	Unused		RD_ONLY	
8118	FLOAT	Unused		RD_ONLY	
8119	FLOAT	Unused		RD_ONLY	
8120	FLOAT	Unused		RD_ONLY	
8121	FLOAT	Unused		RD_ONLY	
8122	FLOAT	Unused		RD_ONLY	
8123	FLOAT	Unused		RD_ONLY	
8124	FLOAT	Unused		RD_ONLY	
8125	FLOAT	Unused		RD_ONLY	
8126	FLOAT	Unused		RD_ONLY	
8127	FLOAT	Unused		RD_ONLY	
8128	FLOAT	Unused		RD_ONLY	
8129	FLOAT	Unused		RD_ONLY	
8130	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8131	FLOAT	Unused		RD_ONLY	
8132	FLOAT	Unused		RD_ONLY	
8133	FLOAT	Unused		RD_ONLY	
8134	FLOAT	Unused		RD_ONLY	
8135	FLOAT	Unused		RD_ONLY	
8136	FLOAT	Unused		RD_ONLY	
8137	FLOAT	Unused		RD_ONLY	
8138	FLOAT	Unused		RD_ONLY	
8139	FLOAT	Unused		RD_ONLY	
8140	FLOAT	Unused		RD_ONLY	
8141	FLOAT	Unused		RD_ONLY	
8142	FLOAT	Unused		RD_ONLY	
8143	FLOAT	Unused		RD_ONLY	
8144	FLOAT	Unused		RD_ONLY	
8145	FLOAT	Unused		RD_ONLY	
8146	FLOAT	Unused		RD_ONLY	
8147	FLOAT	Unused		RD_ONLY	
8148	FLOAT	Unused		RD_ONLY	
8149	FLOAT	Unused		RD_ONLY	
8150	FLOAT	Unused		RD_ONLY	
8151	FLOAT	Unused		RD_ONLY	
8152	FLOAT	Unused		RD_ONLY	
8153	FLOAT	Unused		RD_ONLY	
8154	FLOAT	Unused		RD_ONLY	
8155	FLOAT	Unused		RD_ONLY	
8156	FLOAT	Unused		RD_ONLY	
8157	FLOAT	Unused		RD_ONLY	
8158	FLOAT	Unused		RD_ONLY	
8159	FLOAT	Unused		RD_ONLY	
8160	FLOAT	Unused		RD_ONLY	
8161	FLOAT	Unused		RD_ONLY	
8162	FLOAT	Unused		RD_ONLY	
8163	FLOAT	Unused		RD_ONLY	
8164	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8165	FLOAT	Unused		RD_ONLY	
8166	FLOAT	Unused		RD_ONLY	
8167	FLOAT	Unused		RD_ONLY	
8168	FLOAT	Unused		RD_ONLY	
8169	FLOAT	Unused		RD_ONLY	
8170	FLOAT	Unused		RD_ONLY	
8171	FLOAT	Unused		RD_ONLY	
8172	FLOAT	Unused		RD_ONLY	
8173	FLOAT	Unused		RD_ONLY	
8174	FLOAT	Unused		RD_ONLY	
8175	FLOAT	Unused		RD_ONLY	
8176	FLOAT	Unused		RD_ONLY	
8177	FLOAT	Unused		RD_ONLY	
8178	FLOAT	Unused		RD_ONLY	
8179	FLOAT	Unused		RD_ONLY	
8180	FLOAT	Unused		RD_ONLY	
8181	FLOAT	Unused		RD_ONLY	
8182	FLOAT	Unused		RD_ONLY	
8183	FLOAT	Unused		RD_ONLY	
8184	FLOAT	Unused		RD_ONLY	
8185	FLOAT	Unused		RD_ONLY	
8186	FLOAT	Unused		RD_ONLY	
8187	FLOAT	Unused		RD_ONLY	
8188	FLOAT	Unused		RD_ONLY	
8189	FLOAT	Unused		RD_ONLY	
8190	FLOAT	Unused		RD_ONLY	
8191	FLOAT	Unused		RD_ONLY	
8192	FLOAT	Unused		RD_ONLY	
8193	FLOAT	Unused		RD_ONLY	
8194	FLOAT	Unused		RD_ONLY	
8195	FLOAT	Unused		RD_ONLY	
8196	FLOAT	Unused		RD_ONLY	
8197	FLOAT	Unused		RD_ONLY	
8198	FLOAT	Unused		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8199	FLOAT	Unused		RD_ONLY	
8200	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
8201	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
8202	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
8203	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
8204	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
8205	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
8206	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
8207	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
8208	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
8209	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
8210	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
8211	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
8212	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
8213	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
8214	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
8215	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
8216	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
8217	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
8218	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
8219	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
8220	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
8221	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	
8222	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
8223	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
8224	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
8225	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	
8226	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
8227	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
8228	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
8229	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
8230	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
8231	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
8232	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8233	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
8234	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
8235	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
8236	FLOAT	Archive_Avg[37 - Average 37]	1	RD_ONLY	
8237	FLOAT	Archive_Avg[38 - Average 38]	1	RD_ONLY	
8238	FLOAT	Archive_Avg[39 - Average 39]	1	RD_ONLY	
8239	FLOAT	Archive_Avg[40 - Average 40]	1	RD_ONLY	
8240	FLOAT	Archive_Avg[41 - Average 41]	1	RD_ONLY	
8241	FLOAT	Archive_Avg[42 - Average 42]	1	RD_ONLY	
8242	FLOAT	Archive_Avg[43 - Average 43]	1	RD_ONLY	
8243	FLOAT	Archive_Avg[44 - Average 44]	1	RD_ONLY	
8244	FLOAT	Archive_Avg[45 - Average 45]	1	RD_ONLY	
8245	FLOAT	Archive_Avg[46 - Average 46]	1	RD_ONLY	
8246	FLOAT	Archive_Avg[47 - Average 47]	1	RD_ONLY	
8247	FLOAT	Archive_Avg[48 - Average 48]	1	RD_ONLY	
8248	FLOAT	Archive_Avg[49 - Average 49]	1	RD_ONLY	
8249	FLOAT	Archive_Avg[50 - Average 50]	1	RD_ONLY	
8250	FLOAT	Archive_Avg[51 - Average 51]	1	RD_ONLY	
8251	FLOAT	Archive_Avg[52 - Average 52]	1	RD_ONLY	
8252	FLOAT	Archive_Avg[53 - Average 53]	1	RD_ONLY	
8253	FLOAT	Archive_Avg[54 - Average 54]	1	RD_ONLY	
8254	FLOAT	Archive_Avg[55 - Average 55]	1	RD_ONLY	
8255	FLOAT	Archive_Avg[56 - Average 56]	1	RD_ONLY	
8256	FLOAT	Archive_Avg[57 - Average 57]	1	RD_ONLY	
8257	FLOAT	Archive_Avg[58 - Average 58]	1	RD_ONLY	
8258	FLOAT	Archive_Avg[59 - Average 59]	1	RD_ONLY	
8259	FLOAT	Archive_Avg[60 - Average 60]	1	RD_ONLY	
8260	FLOAT	Archive_Avg[61 - Average 61]	1	RD_ONLY	
8261	FLOAT	Archive_Avg[62 - Average 62]	1	RD_ONLY	
8262	FLOAT	Archive_Avg[63 - Average 63]	1	RD_ONLY	
8263	FLOAT	Archive_Avg[64 - Average 64]	1	RD_ONLY	
8264	FLOAT	Archive_Avg[65 - Average 65]	1	RD_ONLY	
8265	FLOAT	Archive_Avg[66 - Average 66]	1	RD_ONLY	
8266	FLOAT	Archive_Avg[67 - Average 67]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8267	FLOAT	Archive_Avg[68 - Average 68]	1	RD_ONLY	
8268	FLOAT	Archive_Avg[69 - Average 69]	1	RD_ONLY	
8269	FLOAT	Archive_Avg[70 - Average 70]	1	RD_ONLY	
8270	FLOAT	Archive_Avg[71 - Average 71]	1	RD_ONLY	
8271	FLOAT	Archive_Avg[72 - Average 72]	1	RD_ONLY	
8272	FLOAT	Archive_Avg[73 - Average 73]	1	RD_ONLY	
8273	FLOAT	Archive_Avg[74 - Average 74]	1	RD_ONLY	
8274	FLOAT	Archive_Avg[75 - Average 75]	1	RD_ONLY	
8275	FLOAT	Archive_Avg[76 - Average 76]	1	RD_ONLY	
8276	FLOAT	Archive_Avg[77 - Average 77]	1	RD_ONLY	
8277	FLOAT	Archive_Avg[78 - Average 78]	1	RD_ONLY	
8278	FLOAT	Archive_Avg[79 - Average 79]	1	RD_ONLY	
8279	FLOAT	Archive_Avg[80 - Average 80]	1	RD_ONLY	
8280	FLOAT	Archive_Avg[81 - Average 81]	1	RD_ONLY	
8281	FLOAT	Archive_Avg[82 - Average 82]	1	RD_ONLY	
8282	FLOAT	Archive_Avg[83 - Average 83]	1	RD_ONLY	
8283	FLOAT	Archive_Avg[84 - Average 84]	1	RD_ONLY	
8284	FLOAT	Archive_Avg[85 - Average 85]	1	RD_ONLY	
8285	FLOAT	Archive_Avg[86 - Average 86]	1	RD_ONLY	
8286	FLOAT	Archive_Avg[87 - Average 87]	1	RD_ONLY	
8287	FLOAT	Archive_Avg[88 - Average 88]	1	RD_ONLY	
8288	FLOAT	Archive_Avg[89 - Average 89]	1	RD_ONLY	
8289	FLOAT	Archive_Avg[90 - Average 90]	1	RD_ONLY	
8290	FLOAT	Archive_Avg[91 - Average 91]	1	RD_ONLY	
8291	FLOAT	Archive_Avg[92 - Average 92]	1	RD_ONLY	
8292	FLOAT	Archive_Avg[93 - Average 93]	1	RD_ONLY	
8293	FLOAT	Archive_Avg[94 - Average 94]	1	RD_ONLY	
8294	FLOAT	Archive_Avg[95 - Average 95]	1	RD_ONLY	
8295	FLOAT	Archive_Avg[96 - Average 96]	1	RD_ONLY	
8296	FLOAT	Archive_Avg[97 - Average 97]	1	RD_ONLY	
8297	FLOAT	Archive_Avg[98 - Average 98]	1	RD_ONLY	
8298	FLOAT	Archive_Avg[99 - Average 99]	1	RD_ONLY	
8299	FLOAT	Archive_Avg[100 - Average 100]	1	RD_ONLY	
8300	FLOAT	Archive_Avg[101 - Average 101]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8301	FLOAT	Archive_Avg[102 - Average 102]	1	RD_ONLY	
8302	FLOAT	Archive_Avg[103 - Average 103]	1	RD_ONLY	
8303	FLOAT	Archive_Avg[104 - Average 104]	1	RD_ONLY	
8304	FLOAT	Archive_Avg[105 - Average 105]	1	RD_ONLY	
8305	FLOAT	Archive_Avg[106 - Average 106]	1	RD_ONLY	
8306	FLOAT	Archive_Avg[107 - Average 107]	1	RD_ONLY	
8307	FLOAT	Archive_Avg[108 - Average 108]	1	RD_ONLY	
8308	FLOAT	Archive_Avg[109 - Average 109]	1	RD_ONLY	
8309	FLOAT	Archive_Avg[110 - Average 110]	1	RD_ONLY	
8310	FLOAT	Archive_Avg[111 - Average 111]	1	RD_ONLY	
8311	FLOAT	Archive_Avg[112 - Average 112]	1	RD_ONLY	
8312	FLOAT	Archive_Avg[113 - Average 113]	1	RD_ONLY	
8313	FLOAT	Archive_Avg[114 - Average 114]	1	RD_ONLY	
8314	FLOAT	Archive_Avg[115 - Average 115]	1	RD_ONLY	
8315	FLOAT	Archive_Avg[116 - Average 116]	1	RD_ONLY	
8316	FLOAT	Archive_Avg[117 - Average 117]	1	RD_ONLY	
8317	FLOAT	Archive_Avg[118 - Average 118]	1	RD_ONLY	
8318	FLOAT	Archive_Avg[119 - Average 119]	1	RD_ONLY	
8319	FLOAT	Archive_Avg[120 - Average 120]	1	RD_ONLY	
8320	FLOAT	Archive_Avg[121 - Average 121]	1	RD_ONLY	
8321	FLOAT	Archive_Avg[122 - Average 122]	1	RD_ONLY	
8322	FLOAT	Archive_Avg[123 - Average 123]	1	RD_ONLY	
8323	FLOAT	Archive_Avg[124 - Average 124]	1	RD_ONLY	
8324	FLOAT	Archive_Avg[125 - Average 125]	1	RD_ONLY	
8325	FLOAT	Archive_Avg[126 - Average 126]	1	RD_ONLY	
8326	FLOAT	Archive_Avg[127 - Average 127]	1	RD_ONLY	
8327	FLOAT	Archive_Avg[128 - Average 128]	1	RD_ONLY	
8328	FLOAT	Archive_Avg[129 - Average 129]	1	RD_ONLY	
8329	FLOAT	Archive_Avg[130 - Average 130]	1	RD_ONLY	
8330	FLOAT	Archive_Avg[131 - Average 131]	1	RD_ONLY	
8331	FLOAT	Archive_Avg[132 - Average 132]	1	RD_ONLY	
8332	FLOAT	Archive_Avg[133 - Average 133]	1	RD_ONLY	
8333	FLOAT	Archive_Avg[134 - Average 134]	1	RD_ONLY	
8334	FLOAT	Archive_Avg[135 - Average 135]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8335	FLOAT	Archive_Avg[136 - Average 136]	1	RD_ONLY	
8336	FLOAT	Archive_Avg[137 - Average 137]	1	RD_ONLY	
8337	FLOAT	Archive_Avg[138 - Average 138]	1	RD_ONLY	
8338	FLOAT	Archive_Avg[139 - Average 139]	1	RD_ONLY	
8339	FLOAT	Archive_Avg[140 - Average 140]	1	RD_ONLY	
8340	FLOAT	Archive_Avg[141 - Average 141]	1	RD_ONLY	
8341	FLOAT	Archive_Avg[142 - Average 142]	1	RD_ONLY	
8342	FLOAT	Archive_Avg[143 - Average 143]	1	RD_ONLY	
8343	FLOAT	Archive_Avg[144 - Average 144]	1	RD_ONLY	
8344	FLOAT	Archive_Avg[145 - Average 145]	1	RD_ONLY	
8345	FLOAT	Archive_Avg[146 - Average 146]	1	RD_ONLY	
8346	FLOAT	Archive_Avg[147 - Average 147]	1	RD_ONLY	
8347	FLOAT	Archive_Avg[148 - Average 148]	1	RD_ONLY	
8348	FLOAT	Archive_Avg[149 - Average 149]	1	RD_ONLY	
8349	FLOAT	Archive_Avg[150 - Average 150]	1	RD_ONLY	
8350	FLOAT	Archive_Avg[151 - Average 151]	1	RD_ONLY	
8351	FLOAT	Archive_Avg[152 - Average 152]	1	RD_ONLY	
8352	FLOAT	Archive_Avg[153 - Average 153]	1	RD_ONLY	
8353	FLOAT	Archive_Avg[154 - Average 154]	1	RD_ONLY	
8354	FLOAT	Archive_Avg[155 - Average 155]	1	RD_ONLY	
8355	FLOAT	Archive_Avg[156 - Average 156]	1	RD_ONLY	
8356	FLOAT	Archive_Avg[157 - Average 157]	1	RD_ONLY	
8357	FLOAT	Archive_Avg[158 - Average 158]	1	RD_ONLY	
8358	FLOAT	Archive_Avg[159 - Average 159]	1	RD_ONLY	
8359	FLOAT	Archive_Avg[160 - Average 160]	1	RD_ONLY	
8360	FLOAT	Archive_Avg[161 - Average 161]	1	RD_ONLY	
8361	FLOAT	Archive_Avg[162 - Average 162]	1	RD_ONLY	
8362	FLOAT	Archive_Avg[163 - Average 163]	1	RD_ONLY	
8363	FLOAT	Archive_Avg[164 - Average 164]	1	RD_ONLY	
8364	FLOAT	Archive_Avg[165 - Average 165]	1	RD_ONLY	
8365	FLOAT	Archive_Avg[166 - Average 166]	1	RD_ONLY	
8366	FLOAT	Archive_Avg[167 - Average 167]	1	RD_ONLY	
8367	FLOAT	Archive_Avg[168 - Average 168]	1	RD_ONLY	
8368	FLOAT	Archive_Avg[169 - Average 169]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8369	FLOAT	Archive_Avg[170 - Average 170]	1	RD_ONLY	
8370	FLOAT	Archive_Avg[171 - Average 171]	1	RD_ONLY	
8371	FLOAT	Archive_Avg[172 - Average 172]	1	RD_ONLY	
8372	FLOAT	Archive_Avg[173 - Average 173]	1	RD_ONLY	
8373	FLOAT	Archive_Avg[174 - Average 174]	1	RD_ONLY	
8374	FLOAT	Archive_Avg[175 - Average 175]	1	RD_ONLY	
8375	FLOAT	Archive_Avg[176 - Average 176]	1	RD_ONLY	
8376	FLOAT	Archive_Avg[177 - Average 177]	1	RD_ONLY	
8377	FLOAT	Archive_Avg[178 - Average 178]	1	RD_ONLY	
8378	FLOAT	Archive_Avg[179 - Average 179]	1	RD_ONLY	
8379	FLOAT	Archive_Avg[180 - Average 180]	1	RD_ONLY	
8380	FLOAT	Archive_Avg[181 - Average 181]	1	RD_ONLY	
8381	FLOAT	Archive_Avg[182 - Average 182]	1	RD_ONLY	
8382	FLOAT	Archive_Avg[183 - Average 183]	1	RD_ONLY	
8383	FLOAT	Archive_Avg[184 - Average 184]	1	RD_ONLY	
8384	FLOAT	Archive_Avg[185 - Average 185]	1	RD_ONLY	
8385	FLOAT	Archive_Avg[186 - Average 186]	1	RD_ONLY	
8386	FLOAT	Archive_Avg[187 - Average 187]	1	RD_ONLY	
8387	FLOAT	Archive_Avg[188 - Average 188]	1	RD_ONLY	
8388	FLOAT	Archive_Avg[189 - Average 189]	1	RD_ONLY	
8389	FLOAT	Archive_Avg[190 - Average 190]	1	RD_ONLY	
8390	FLOAT	Archive_Avg[191 - Average 191]	1	RD_ONLY	
8391	FLOAT	Archive_Avg[192 - Average 192]	1	RD_ONLY	
8392	FLOAT	Archive_Avg[193 - Average 193]	1	RD_ONLY	
8393	FLOAT	Archive_Avg[194 - Average 194]	1	RD_ONLY	
8394	FLOAT	Archive_Avg[195 - Average 195]	1	RD_ONLY	
8395	FLOAT	Archive_Avg[196 - Average 196]	1	RD_ONLY	
8396	FLOAT	Archive_Avg[197 - Average 197]	1	RD_ONLY	
8397	FLOAT	Archive_Avg[198 - Average 198]	1	RD_ONLY	
8398	FLOAT	Archive_Avg[199 - Average 199]	1	RD_ONLY	
8399	FLOAT	Archive_Avg[200 - Average 200]	1	RD_ONLY	
8400	FLOAT	Archive_Avg[201 - Average 201]	1	RD_ONLY	
8401	FLOAT	Archive_Avg[202 - Average 202]	1	RD_ONLY	
8402	FLOAT	Archive_Avg[203 - Average 203]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8403	FLOAT	Archive_Avg[204 - Average 204]	1	RD_ONLY	
8404	FLOAT	Archive_Avg[205 - Average 205]	1	RD_ONLY	
8405	FLOAT	Archive_Avg[206 - Average 206]	1	RD_ONLY	
8406	FLOAT	Archive_Avg[207 - Average 207]	1	RD_ONLY	
8407	FLOAT	Archive_Avg[208 - Average 208]	1	RD_ONLY	
8408	FLOAT	Archive_Avg[209 - Average 209]	1	RD_ONLY	
8409	FLOAT	Archive_Avg[210 - Average 210]	1	RD_ONLY	
8410	FLOAT	Archive_Avg[211 - Average 211]	1	RD_ONLY	
8411	FLOAT	Archive_Avg[212 - Average 212]	1	RD_ONLY	
8412	FLOAT	Archive_Avg[213 - Average 213]	1	RD_ONLY	
8413	FLOAT	Archive_Avg[214 - Average 214]	1	RD_ONLY	
8414	FLOAT	Archive_Avg[215 - Average 215]	1	RD_ONLY	
8415	FLOAT	Archive_Avg[216 - Average 216]	1	RD_ONLY	
8416	FLOAT	Archive_Avg[217 - Average 217]	1	RD_ONLY	
8417	FLOAT	Archive_Avg[218 - Average 218]	1	RD_ONLY	
8418	FLOAT	Archive_Avg[219 - Average 219]	1	RD_ONLY	
8419	FLOAT	Archive_Avg[220 - Average 220]	1	RD_ONLY	
8420	FLOAT	Archive_Avg[221 - Average 221]	1	RD_ONLY	
8421	FLOAT	Archive_Avg[222 - Average 222]	1	RD_ONLY	
8422	FLOAT	Archive_Avg[223 - Average 223]	1	RD_ONLY	
8423	FLOAT	Archive_Avg[224 - Average 224]	1	RD_ONLY	
8424	FLOAT	Archive_Avg[225 - Average 225]	1	RD_ONLY	
8425	FLOAT	Archive_Avg[226 - Average 226]	1	RD_ONLY	
8426	FLOAT	Archive_Avg[227 - Average 227]	1	RD_ONLY	
8427	FLOAT	Archive_Avg[228 - Average 228]	1	RD_ONLY	
8428	FLOAT	Archive_Avg[229 - Average 229]	1	RD_ONLY	
8429	FLOAT	Archive_Avg[230 - Average 230]	1	RD_ONLY	
8430	FLOAT	Archive_Avg[231 - Average 231]	1	RD_ONLY	
8431	FLOAT	Archive_Avg[232 - Average 232]	1	RD_ONLY	
8432	FLOAT	Archive_Avg[233 - Average 233]	1	RD_ONLY	
8433	FLOAT	Archive_Avg[234 - Average 234]	1	RD_ONLY	
8434	FLOAT	Archive_Avg[235 - Average 235]	1	RD_ONLY	
8435	FLOAT	Archive_Avg[236 - Average 236]	1	RD_ONLY	
8436	FLOAT	Archive_Avg[237 - Average 237]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8437	FLOAT	Archive_Avg[238 - Average 238]	1	RD_ONLY	
8438	FLOAT	Archive_Avg[239 - Average 239]	1	RD_ONLY	
8439	FLOAT	Archive_Avg[240 - Average 240]	1	RD_ONLY	
8440	FLOAT	Archive_Avg[241 - Average 241]	1	RD_ONLY	
8441	FLOAT	Archive_Avg[242 - Average 242]	1	RD_ONLY	
8442	FLOAT	Archive_Avg[243 - Average 243]	1	RD_ONLY	
8443	FLOAT	Archive_Avg[244 - Average 244]	1	RD_ONLY	
8444	FLOAT	Archive_Avg[245 - Average 245]	1	RD_ONLY	
8445	FLOAT	Archive_Avg[246 - Average 246]	1	RD_ONLY	
8446	FLOAT	Archive_Avg[247 - Average 247]	1	RD_ONLY	
8447	FLOAT	Archive_Avg[248 - Average 248]	1	RD_ONLY	
8448	FLOAT	Archive_Avg[249 - Average 249]	1	RD_ONLY	
8449	FLOAT	Archive_Avg[250 - Average 250]	1	RD_ONLY	
8450	FLOAT	Unused		RD_ONLY	
8451	FLOAT	Unused		RD_ONLY	
8452	FLOAT	Unused		RD_ONLY	
8453	FLOAT	Unused		RD_ONLY	
8454	FLOAT	Archive_Max[1 - Average 1]	1	RD_ONLY	
8455	FLOAT	Archive_Max[2 - Average 2]	1	RD_ONLY	
8456	FLOAT	Archive_Max[3 - Average 3]	1	RD_ONLY	
8457	FLOAT	Archive_Max[4 - Average 4]	1	RD_ONLY	
8458	FLOAT	Archive_Max[5 - Average 5]	1	RD_ONLY	
8459	FLOAT	Archive_Max[6 - Average 6]	1	RD_ONLY	
8460	FLOAT	Archive_Max[7 - Average 7]	1	RD_ONLY	
8461	FLOAT	Archive_Max[8 - Average 8]	1	RD_ONLY	
8462	FLOAT	Archive_Max[9 - Average 9]	1	RD_ONLY	
8463	FLOAT	Archive_Max[10 - Average 10]	1	RD_ONLY	
8464	FLOAT	Archive_Max[11 - Average 11]	1	RD_ONLY	
8465	FLOAT	Archive_Max[12 - Average 12]	1	RD_ONLY	
8466	FLOAT	Archive_Max[13 - Average 13]	1	RD_ONLY	
8467	FLOAT	Archive_Max[14 - Average 14]	1	RD_ONLY	
8468	FLOAT	Archive_Max[15 - Average 15]	1	RD_ONLY	
8469	FLOAT	Archive_Max[16 - Average 16]	1	RD_ONLY	
8470	FLOAT	Archive_Max[17 - Average 17]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8471	FLOAT	Archive_Max[18 - Average 18]	1	RD_ONLY	
8472	FLOAT	Archive_Max[19 - Average 19]	1	RD_ONLY	
8473	FLOAT	Archive_Max[20 - Average 20]	1	RD_ONLY	
8474	FLOAT	Archive_Max[21 - Average 21]	1	RD_ONLY	
8475	FLOAT	Archive_Max[22 - Average 22]	1	RD_ONLY	
8476	FLOAT	Archive_Max[23 - Average 23]	1	RD_ONLY	
8477	FLOAT	Archive_Max[24 - Average 24]	1	RD_ONLY	
8478	FLOAT	Archive_Max[25 - Average 25]	1	RD_ONLY	
8479	FLOAT	Archive_Max[26 - Average 26]	1	RD_ONLY	
8480	FLOAT	Archive_Max[27 - Average 27]	1	RD_ONLY	
8481	FLOAT	Archive_Max[28 - Average 28]	1	RD_ONLY	
8482	FLOAT	Archive_Max[29 - Average 29]	1	RD_ONLY	
8483	FLOAT	Archive_Max[30 - Average 30]	1	RD_ONLY	
8484	FLOAT	Archive_Max[31 - Average 31]	1	RD_ONLY	
8485	FLOAT	Archive_Max[32 - Average 32]	1	RD_ONLY	
8486	FLOAT	Archive_Max[33 - Average 33]	1	RD_ONLY	
8487	FLOAT	Archive_Max[34 - Average 34]	1	RD_ONLY	
8488	FLOAT	Archive_Max[35 - Average 35]	1	RD_ONLY	
8489	FLOAT	Archive_Max[36 - Average 36]	1	RD_ONLY	
8490	FLOAT	Archive_Max[37 - Average 37]	1	RD_ONLY	
8491	FLOAT	Archive_Max[38 - Average 38]	1	RD_ONLY	
8492	FLOAT	Archive_Max[39 - Average 39]	1	RD_ONLY	
8493	FLOAT	Archive_Max[40 - Average 40]	1	RD_ONLY	
8494	FLOAT	Archive_Max[41 - Average 41]	1	RD_ONLY	
8495	FLOAT	Archive_Max[42 - Average 42]	1	RD_ONLY	
8496	FLOAT	Archive_Max[43 - Average 43]	1	RD_ONLY	
8497	FLOAT	Archive_Max[44 - Average 44]	1	RD_ONLY	
8498	FLOAT	Archive_Max[45 - Average 45]	1	RD_ONLY	
8499	FLOAT	Archive_Max[46 - Average 46]	1	RD_ONLY	
8500	FLOAT	Archive_Max[47 - Average 47]	1	RD_ONLY	
8501	FLOAT	Archive_Max[48 - Average 48]	1	RD_ONLY	
8502	FLOAT	Archive_Max[49 - Average 49]	1	RD_ONLY	
8503	FLOAT	Archive_Max[50 - Average 50]	1	RD_ONLY	
8504	FLOAT	Archive_Max[51 - Average 51]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8505	FLOAT	Archive_Max[52 - Average 52]	1	RD_ONLY	
8506	FLOAT	Archive_Max[53 - Average 53]	1	RD_ONLY	
8507	FLOAT	Archive_Max[54 - Average 54]	1	RD_ONLY	
8508	FLOAT	Archive_Max[55 - Average 55]	1	RD_ONLY	
8509	FLOAT	Archive_Max[56 - Average 56]	1	RD_ONLY	
8510	FLOAT	Archive_Max[57 - Average 57]	1	RD_ONLY	
8511	FLOAT	Archive_Max[58 - Average 58]	1	RD_ONLY	
8512	FLOAT	Archive_Max[59 - Average 59]	1	RD_ONLY	
8513	FLOAT	Archive_Max[60 - Average 60]	1	RD_ONLY	
8514	FLOAT	Archive_Max[61 - Average 61]	1	RD_ONLY	
8515	FLOAT	Archive_Max[62 - Average 62]	1	RD_ONLY	
8516	FLOAT	Archive_Max[63 - Average 63]	1	RD_ONLY	
8517	FLOAT	Archive_Max[64 - Average 64]	1	RD_ONLY	
8518	FLOAT	Archive_Max[65 - Average 65]	1	RD_ONLY	
8519	FLOAT	Archive_Max[66 - Average 66]	1	RD_ONLY	
8520	FLOAT	Archive_Max[67 - Average 67]	1	RD_ONLY	
8521	FLOAT	Archive_Max[68 - Average 68]	1	RD_ONLY	
8522	FLOAT	Archive_Max[69 - Average 69]	1	RD_ONLY	
8523	FLOAT	Archive_Max[70 - Average 70]	1	RD_ONLY	
8524	FLOAT	Archive_Max[71 - Average 71]	1	RD_ONLY	
8525	FLOAT	Archive_Max[72 - Average 72]	1	RD_ONLY	
8526	FLOAT	Archive_Max[73 - Average 73]	1	RD_ONLY	
8527	FLOAT	Archive_Max[74 - Average 74]	1	RD_ONLY	
8528	FLOAT	Archive_Max[75 - Average 75]	1	RD_ONLY	
8529	FLOAT	Archive_Max[76 - Average 76]	1	RD_ONLY	
8530	FLOAT	Archive_Max[77 - Average 77]	1	RD_ONLY	
8531	FLOAT	Archive_Max[78 - Average 78]	1	RD_ONLY	
8532	FLOAT	Archive_Max[79 - Average 79]	1	RD_ONLY	
8533	FLOAT	Archive_Max[80 - Average 80]	1	RD_ONLY	
8534	FLOAT	Archive_Max[81 - Average 81]	1	RD_ONLY	
8535	FLOAT	Archive_Max[82 - Average 82]	1	RD_ONLY	
8536	FLOAT	Archive_Max[83 - Average 83]	1	RD_ONLY	
8537	FLOAT	Archive_Max[84 - Average 84]	1	RD_ONLY	
8538	FLOAT	Archive_Max[85 - Average 85]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8539	FLOAT	Archive_Max[86 - Average 86]	1	RD_ONLY	
8540	FLOAT	Archive_Max[87 - Average 87]	1	RD_ONLY	
8541	FLOAT	Archive_Max[88 - Average 88]	1	RD_ONLY	
8542	FLOAT	Archive_Max[89 - Average 89]	1	RD_ONLY	
8543	FLOAT	Archive_Max[90 - Average 90]	1	RD_ONLY	
8544	FLOAT	Archive_Max[91 - Average 91]	1	RD_ONLY	
8545	FLOAT	Archive_Max[92 - Average 92]	1	RD_ONLY	
8546	FLOAT	Archive_Max[93 - Average 93]	1	RD_ONLY	
8547	FLOAT	Archive_Max[94 - Average 94]	1	RD_ONLY	
8548	FLOAT	Archive_Max[95 - Average 95]	1	RD_ONLY	
8549	FLOAT	Archive_Max[96 - Average 96]	1	RD_ONLY	
8550	FLOAT	Archive_Max[97 - Average 97]	1	RD_ONLY	
8551	FLOAT	Archive_Max[98 - Average 98]	1	RD_ONLY	
8552	FLOAT	Archive_Max[99 - Average 99]	1	RD_ONLY	
8553	FLOAT	Archive_Max[100 - Average 100]	1	RD_ONLY	
8554	FLOAT	Archive_Max[101 - Average 101]	1	RD_ONLY	
8555	FLOAT	Archive_Max[102 - Average 102]	1	RD_ONLY	
8556	FLOAT	Archive_Max[103 - Average 103]	1	RD_ONLY	
8557	FLOAT	Archive_Max[104 - Average 104]	1	RD_ONLY	
8558	FLOAT	Archive_Max[105 - Average 105]	1	RD_ONLY	
8559	FLOAT	Archive_Max[106 - Average 106]	1	RD_ONLY	
8560	FLOAT	Archive_Max[107 - Average 107]	1	RD_ONLY	
8561	FLOAT	Archive_Max[108 - Average 108]	1	RD_ONLY	
8562	FLOAT	Archive_Max[109 - Average 109]	1	RD_ONLY	
8563	FLOAT	Archive_Max[110 - Average 110]	1	RD_ONLY	
8564	FLOAT	Archive_Max[111 - Average 111]	1	RD_ONLY	
8565	FLOAT	Archive_Max[112 - Average 112]	1	RD_ONLY	
8566	FLOAT	Archive_Max[113 - Average 113]	1	RD_ONLY	
8567	FLOAT	Archive_Max[114 - Average 114]	1	RD_ONLY	
8568	FLOAT	Archive_Max[115 - Average 115]	1	RD_ONLY	
8569	FLOAT	Archive_Max[116 - Average 116]	1	RD_ONLY	
8570	FLOAT	Archive_Max[117 - Average 117]	1	RD_ONLY	
8571	FLOAT	Archive_Max[118 - Average 118]	1	RD_ONLY	
8572	FLOAT	Archive_Max[119 - Average 119]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8573	FLOAT	Archive_Max[120 - Average 120]	1	RD_ONLY	
8574	FLOAT	Archive_Max[121 - Average 121]	1	RD_ONLY	
8575	FLOAT	Archive_Max[122 - Average 122]	1	RD_ONLY	
8576	FLOAT	Archive_Max[123 - Average 123]	1	RD_ONLY	
8577	FLOAT	Archive_Max[124 - Average 124]	1	RD_ONLY	
8578	FLOAT	Archive_Max[125 - Average 125]	1	RD_ONLY	
8579	FLOAT	Archive_Max[126 - Average 126]	1	RD_ONLY	
8580	FLOAT	Archive_Max[127 - Average 127]	1	RD_ONLY	
8581	FLOAT	Archive_Max[128 - Average 128]	1	RD_ONLY	
8582	FLOAT	Archive_Max[129 - Average 129]	1	RD_ONLY	
8583	FLOAT	Archive_Max[130 - Average 130]	1	RD_ONLY	
8584	FLOAT	Archive_Max[131 - Average 131]	1	RD_ONLY	
8585	FLOAT	Archive_Max[132 - Average 132]	1	RD_ONLY	
8586	FLOAT	Archive_Max[133 - Average 133]	1	RD_ONLY	
8587	FLOAT	Archive_Max[134 - Average 134]	1	RD_ONLY	
8588	FLOAT	Archive_Max[135 - Average 135]	1	RD_ONLY	
8589	FLOAT	Archive_Max[136 - Average 136]	1	RD_ONLY	
8590	FLOAT	Archive_Max[137 - Average 137]	1	RD_ONLY	
8591	FLOAT	Archive_Max[138 - Average 138]	1	RD_ONLY	
8592	FLOAT	Archive_Max[139 - Average 139]	1	RD_ONLY	
8593	FLOAT	Archive_Max[140 - Average 140]	1	RD_ONLY	
8594	FLOAT	Archive_Max[141 - Average 141]	1	RD_ONLY	
8595	FLOAT	Archive_Max[142 - Average 142]	1	RD_ONLY	
8596	FLOAT	Archive_Max[143 - Average 143]	1	RD_ONLY	
8597	FLOAT	Archive_Max[144 - Average 144]	1	RD_ONLY	
8598	FLOAT	Archive_Max[145 - Average 145]	1	RD_ONLY	
8599	FLOAT	Archive_Max[146 - Average 146]	1	RD_ONLY	
8600	FLOAT	Archive_Max[147 - Average 147]	1	RD_ONLY	
8601	FLOAT	Archive_Max[148 - Average 148]	1	RD_ONLY	
8602	FLOAT	Archive_Max[149 - Average 149]	1	RD_ONLY	
8603	FLOAT	Archive_Max[150 - Average 150]	1	RD_ONLY	
8604	FLOAT	Archive_Max[151 - Average 151]	1	RD_ONLY	
8605	FLOAT	Archive_Max[152 - Average 152]	1	RD_ONLY	
8606	FLOAT	Archive_Max[153 - Average 153]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8607	FLOAT	Archive_Max[154 - Average 154]	1	RD_ONLY	
8608	FLOAT	Archive_Max[155 - Average 155]	1	RD_ONLY	
8609	FLOAT	Archive_Max[156 - Average 156]	1	RD_ONLY	
8610	FLOAT	Archive_Max[157 - Average 157]	1	RD_ONLY	
8611	FLOAT	Archive_Max[158 - Average 158]	1	RD_ONLY	
8612	FLOAT	Archive_Max[159 - Average 159]	1	RD_ONLY	
8613	FLOAT	Archive_Max[160 - Average 160]	1	RD_ONLY	
8614	FLOAT	Archive_Max[161 - Average 161]	1	RD_ONLY	
8615	FLOAT	Archive_Max[162 - Average 162]	1	RD_ONLY	
8616	FLOAT	Archive_Max[163 - Average 163]	1	RD_ONLY	
8617	FLOAT	Archive_Max[164 - Average 164]	1	RD_ONLY	
8618	FLOAT	Archive_Max[165 - Average 165]	1	RD_ONLY	
8619	FLOAT	Archive_Max[166 - Average 166]	1	RD_ONLY	
8620	FLOAT	Archive_Max[167 - Average 167]	1	RD_ONLY	
8621	FLOAT	Archive_Max[168 - Average 168]	1	RD_ONLY	
8622	FLOAT	Archive_Max[169 - Average 169]	1	RD_ONLY	
8623	FLOAT	Archive_Max[170 - Average 170]	1	RD_ONLY	
8624	FLOAT	Archive_Max[171 - Average 171]	1	RD_ONLY	
8625	FLOAT	Archive_Max[172 - Average 172]	1	RD_ONLY	
8626	FLOAT	Archive_Max[173 - Average 173]	1	RD_ONLY	
8627	FLOAT	Archive_Max[174 - Average 174]	1	RD_ONLY	
8628	FLOAT	Archive_Max[175 - Average 175]	1	RD_ONLY	
8629	FLOAT	Archive_Max[176 - Average 176]	1	RD_ONLY	
8630	FLOAT	Archive_Max[177 - Average 177]	1	RD_ONLY	
8631	FLOAT	Archive_Max[178 - Average 178]	1	RD_ONLY	
8632	FLOAT	Archive_Max[179 - Average 179]	1	RD_ONLY	
8633	FLOAT	Archive_Max[180 - Average 180]	1	RD_ONLY	
8634	FLOAT	Archive_Max[181 - Average 181]	1	RD_ONLY	
8635	FLOAT	Archive_Max[182 - Average 182]	1	RD_ONLY	
8636	FLOAT	Archive_Max[183 - Average 183]	1	RD_ONLY	
8637	FLOAT	Archive_Max[184 - Average 184]	1	RD_ONLY	
8638	FLOAT	Archive_Max[185 - Average 185]	1	RD_ONLY	
8639	FLOAT	Archive_Max[186 - Average 186]	1	RD_ONLY	
8640	FLOAT	Archive_Max[187 - Average 187]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8641	FLOAT	Archive_Max[188 - Average 188]	1	RD_ONLY	
8642	FLOAT	Archive_Max[189 - Average 189]	1	RD_ONLY	
8643	FLOAT	Archive_Max[190 - Average 190]	1	RD_ONLY	
8644	FLOAT	Archive_Max[191 - Average 191]	1	RD_ONLY	
8645	FLOAT	Archive_Max[192 - Average 192]	1	RD_ONLY	
8646	FLOAT	Archive_Max[193 - Average 193]	1	RD_ONLY	
8647	FLOAT	Archive_Max[194 - Average 194]	1	RD_ONLY	
8648	FLOAT	Archive_Max[195 - Average 195]	1	RD_ONLY	
8649	FLOAT	Archive_Max[196 - Average 196]	1	RD_ONLY	
8650	FLOAT	Archive_Max[197 - Average 197]	1	RD_ONLY	
8651	FLOAT	Archive_Max[198 - Average 198]	1	RD_ONLY	
8652	FLOAT	Archive_Max[199 - Average 199]	1	RD_ONLY	
8653	FLOAT	Archive_Max[200 - Average 200]	1	RD_ONLY	
8654	FLOAT	Archive_Max[201 - Average 201]	1	RD_ONLY	
8655	FLOAT	Archive_Max[202 - Average 202]	1	RD_ONLY	
8656	FLOAT	Archive_Max[203 - Average 203]	1	RD_ONLY	
8657	FLOAT	Archive_Max[204 - Average 204]	1	RD_ONLY	
8658	FLOAT	Archive_Max[205 - Average 205]	1	RD_ONLY	
8659	FLOAT	Archive_Max[206 - Average 206]	1	RD_ONLY	
8660	FLOAT	Archive_Max[207 - Average 207]	1	RD_ONLY	
8661	FLOAT	Archive_Max[208 - Average 208]	1	RD_ONLY	
8662	FLOAT	Archive_Max[209 - Average 209]	1	RD_ONLY	
8663	FLOAT	Archive_Max[210 - Average 210]	1	RD_ONLY	
8664	FLOAT	Archive_Max[211 - Average 211]	1	RD_ONLY	
8665	FLOAT	Archive_Max[212 - Average 212]	1	RD_ONLY	
8666	FLOAT	Archive_Max[213 - Average 213]	1	RD_ONLY	
8667	FLOAT	Archive_Max[214 - Average 214]	1	RD_ONLY	
8668	FLOAT	Archive_Max[215 - Average 215]	1	RD_ONLY	
8669	FLOAT	Archive_Max[216 - Average 216]	1	RD_ONLY	
8670	FLOAT	Archive_Max[217 - Average 217]	1	RD_ONLY	
8671	FLOAT	Archive_Max[218 - Average 218]	1	RD_ONLY	
8672	FLOAT	Archive_Max[219 - Average 219]	1	RD_ONLY	
8673	FLOAT	Archive_Max[220 - Average 220]	1	RD_ONLY	
8674	FLOAT	Archive_Max[221 - Average 221]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8675	FLOAT	Archive_Max[222 - Average 222]	1	RD_ONLY	
8676	FLOAT	Archive_Max[223 - Average 223]	1	RD_ONLY	
8677	FLOAT	Archive_Max[224 - Average 224]	1	RD_ONLY	
8678	FLOAT	Archive_Max[225 - Average 225]	1	RD_ONLY	
8679	FLOAT	Archive_Max[226 - Average 226]	1	RD_ONLY	
8680	FLOAT	Archive_Max[227 - Average 227]	1	RD_ONLY	
8681	FLOAT	Archive_Max[228 - Average 228]	1	RD_ONLY	
8682	FLOAT	Archive_Max[229 - Average 229]	1	RD_ONLY	
8683	FLOAT	Archive_Max[230 - Average 230]	1	RD_ONLY	
8684	FLOAT	Archive_Max[231 - Average 231]	1	RD_ONLY	
8685	FLOAT	Archive_Max[232 - Average 232]	1	RD_ONLY	
8686	FLOAT	Archive_Max[233 - Average 233]	1	RD_ONLY	
8687	FLOAT	Archive_Max[234 - Average 234]	1	RD_ONLY	
8688	FLOAT	Archive_Max[235 - Average 235]	1	RD_ONLY	
8689	FLOAT	Archive_Max[236 - Average 236]	1	RD_ONLY	
8690	FLOAT	Archive_Max[237 - Average 237]	1	RD_ONLY	
8691	FLOAT	Archive_Max[238 - Average 238]	1	RD_ONLY	
8692	FLOAT	Archive_Max[239 - Average 239]	1	RD_ONLY	
8693	FLOAT	Archive_Max[240 - Average 240]	1	RD_ONLY	
8694	FLOAT	Archive_Max[241 - Average 241]	1	RD_ONLY	
8695	FLOAT	Archive_Max[242 - Average 242]	1	RD_ONLY	
8696	FLOAT	Archive_Max[243 - Average 243]	1	RD_ONLY	
8697	FLOAT	Archive_Max[244 - Average 244]	1	RD_ONLY	
8698	FLOAT	Archive_Max[245 - Average 245]	1	RD_ONLY	
8699	FLOAT	Archive_Max[246 - Average 246]	1	RD_ONLY	
8700	FLOAT	Archive_Max[247 - Average 247]	1	RD_ONLY	
8701	FLOAT	Archive_Max[248 - Average 248]	1	RD_ONLY	
8702	FLOAT	Archive_Max[249 - Average 249]	1	RD_ONLY	
8703	FLOAT	Archive_Max[250 - Average 250]	1	RD_ONLY	
8704	FLOAT	Unused		RD_ONLY	
8705	FLOAT	Unused		RD_ONLY	
8706	FLOAT	Unused		RD_ONLY	
8707	FLOAT	Unused		RD_ONLY	
8708	FLOAT	Archive_Min[1 - Average 1]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8709	FLOAT	Archive_Min[2 - Average 2]	1	RD_ONLY	
8710	FLOAT	Archive_Min[3 - Average 3]	1	RD_ONLY	
8711	FLOAT	Archive_Min[4 - Average 4]	1	RD_ONLY	
8712	FLOAT	Archive_Min[5 - Average 5]	1	RD_ONLY	
8713	FLOAT	Archive_Min[6 - Average 6]	1	RD_ONLY	
8714	FLOAT	Archive_Min[7 - Average 7]	1	RD_ONLY	
8715	FLOAT	Archive_Min[8 - Average 8]	1	RD_ONLY	
8716	FLOAT	Archive_Min[9 - Average 9]	1	RD_ONLY	
8717	FLOAT	Archive_Min[10 - Average 10]	1	RD_ONLY	
8718	FLOAT	Archive_Min[11 - Average 11]	1	RD_ONLY	
8719	FLOAT	Archive_Min[12 - Average 12]	1	RD_ONLY	
8720	FLOAT	Archive_Min[13 - Average 13]	1	RD_ONLY	
8721	FLOAT	Archive_Min[14 - Average 14]	1	RD_ONLY	
8722	FLOAT	Archive_Min[15 - Average 15]	1	RD_ONLY	
8723	FLOAT	Archive_Min[16 - Average 16]	1	RD_ONLY	
8724	FLOAT	Archive_Min[17 - Average 17]	1	RD_ONLY	
8725	FLOAT	Archive_Min[18 - Average 18]	1	RD_ONLY	
8726	FLOAT	Archive_Min[19 - Average 19]	1	RD_ONLY	
8727	FLOAT	Archive_Min[20 - Average 20]	1	RD_ONLY	
8728	FLOAT	Archive_Min[21 - Average 21]	1	RD_ONLY	
8729	FLOAT	Archive_Min[22 - Average 22]	1	RD_ONLY	
8730	FLOAT	Archive_Min[23 - Average 23]	1	RD_ONLY	
8731	FLOAT	Archive_Min[24 - Average 24]	1	RD_ONLY	
8732	FLOAT	Archive_Min[25 - Average 25]	1	RD_ONLY	
8733	FLOAT	Archive_Min[26 - Average 26]	1	RD_ONLY	
8734	FLOAT	Archive_Min[27 - Average 27]	1	RD_ONLY	
8735	FLOAT	Archive_Min[28 - Average 28]	1	RD_ONLY	
8736	FLOAT	Archive_Min[29 - Average 29]	1	RD_ONLY	
8737	FLOAT	Archive_Min[30 - Average 30]	1	RD_ONLY	
8738	FLOAT	Archive_Min[31 - Average 31]	1	RD_ONLY	
8739	FLOAT	Archive_Min[32 - Average 32]	1	RD_ONLY	
8740	FLOAT	Archive_Min[33 - Average 33]	1	RD_ONLY	
8741	FLOAT	Archive_Min[34 - Average 34]	1	RD_ONLY	
8742	FLOAT	Archive_Min[35 - Average 35]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8743	FLOAT	Archive_Min[36 - Average 36]	1	RD_ONLY	
8744	FLOAT	Archive_Min[37 - Average 37]	1	RD_ONLY	
8745	FLOAT	Archive_Min[38 - Average 38]	1	RD_ONLY	
8746	FLOAT	Archive_Min[39 - Average 39]	1	RD_ONLY	
8747	FLOAT	Archive_Min[40 - Average 40]	1	RD_ONLY	
8748	FLOAT	Archive_Min[41 - Average 41]	1	RD_ONLY	
8749	FLOAT	Archive_Min[42 - Average 42]	1	RD_ONLY	
8750	FLOAT	Archive_Min[43 - Average 43]	1	RD_ONLY	
8751	FLOAT	Archive_Min[44 - Average 44]	1	RD_ONLY	
8752	FLOAT	Archive_Min[45 - Average 45]	1	RD_ONLY	
8753	FLOAT	Archive_Min[46 - Average 46]	1	RD_ONLY	
8754	FLOAT	Archive_Min[47 - Average 47]	1	RD_ONLY	
8755	FLOAT	Archive_Min[48 - Average 48]	1	RD_ONLY	
8756	FLOAT	Archive_Min[49 - Average 49]	1	RD_ONLY	
8757	FLOAT	Archive_Min[50 - Average 50]	1	RD_ONLY	
8758	FLOAT	Archive_Min[51 - Average 51]	1	RD_ONLY	
8759	FLOAT	Archive_Min[52 - Average 52]	1	RD_ONLY	
8760	FLOAT	Archive_Min[53 - Average 53]	1	RD_ONLY	
8761	FLOAT	Archive_Min[54 - Average 54]	1	RD_ONLY	
8762	FLOAT	Archive_Min[55 - Average 55]	1	RD_ONLY	
8763	FLOAT	Archive_Min[56 - Average 56]	1	RD_ONLY	
8764	FLOAT	Archive_Min[57 - Average 57]	1	RD_ONLY	
8765	FLOAT	Archive_Min[58 - Average 58]	1	RD_ONLY	
8766	FLOAT	Archive_Min[59 - Average 59]	1	RD_ONLY	
8767	FLOAT	Archive_Min[60 - Average 60]	1	RD_ONLY	
8768	FLOAT	Archive_Min[61 - Average 61]	1	RD_ONLY	
8769	FLOAT	Archive_Min[62 - Average 62]	1	RD_ONLY	
8770	FLOAT	Archive_Min[63 - Average 63]	1	RD_ONLY	
8771	FLOAT	Archive_Min[64 - Average 64]	1	RD_ONLY	
8772	FLOAT	Archive_Min[65 - Average 65]	1	RD_ONLY	
8773	FLOAT	Archive_Min[66 - Average 66]	1	RD_ONLY	
8774	FLOAT	Archive_Min[67 - Average 67]	1	RD_ONLY	
8775	FLOAT	Archive_Min[68 - Average 68]	1	RD_ONLY	
8776	FLOAT	Archive_Min[69 - Average 69]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8777	FLOAT	Archive_Min[70 - Average 70]	1	RD_ONLY	
8778	FLOAT	Archive_Min[71 - Average 71]	1	RD_ONLY	
8779	FLOAT	Archive_Min[72 - Average 72]	1	RD_ONLY	
8780	FLOAT	Archive_Min[73 - Average 73]	1	RD_ONLY	
8781	FLOAT	Archive_Min[74 - Average 74]	1	RD_ONLY	
8782	FLOAT	Archive_Min[75 - Average 75]	1	RD_ONLY	
8783	FLOAT	Archive_Min[76 - Average 76]	1	RD_ONLY	
8784	FLOAT	Archive_Min[77 - Average 77]	1	RD_ONLY	
8785	FLOAT	Archive_Min[78 - Average 78]	1	RD_ONLY	
8786	FLOAT	Archive_Min[79 - Average 79]	1	RD_ONLY	
8787	FLOAT	Archive_Min[80 - Average 80]	1	RD_ONLY	
8788	FLOAT	Archive_Min[81 - Average 81]	1	RD_ONLY	
8789	FLOAT	Archive_Min[82 - Average 82]	1	RD_ONLY	
8790	FLOAT	Archive_Min[83 - Average 83]	1	RD_ONLY	
8791	FLOAT	Archive_Min[84 - Average 84]	1	RD_ONLY	
8792	FLOAT	Archive_Min[85 - Average 85]	1	RD_ONLY	
8793	FLOAT	Archive_Min[86 - Average 86]	1	RD_ONLY	
8794	FLOAT	Archive_Min[87 - Average 87]	1	RD_ONLY	
8795	FLOAT	Archive_Min[88 - Average 88]	1	RD_ONLY	
8796	FLOAT	Archive_Min[89 - Average 89]	1	RD_ONLY	
8797	FLOAT	Archive_Min[90 - Average 90]	1	RD_ONLY	
8798	FLOAT	Archive_Min[91 - Average 91]	1	RD_ONLY	
8799	FLOAT	Archive_Min[92 - Average 92]	1	RD_ONLY	
8800	FLOAT	Archive_Min[93 - Average 93]	1	RD_ONLY	
8801	FLOAT	Archive_Min[94 - Average 94]	1	RD_ONLY	
8802	FLOAT	Archive_Min[95 - Average 95]	1	RD_ONLY	
8803	FLOAT	Archive_Min[96 - Average 96]	1	RD_ONLY	
8804	FLOAT	Archive_Min[97 - Average 97]	1	RD_ONLY	
8805	FLOAT	Archive_Min[98 - Average 98]	1	RD_ONLY	
8806	FLOAT	Archive_Min[99 - Average 99]	1	RD_ONLY	
8807	FLOAT	Archive_Min[100 - Average 100]	1	RD_ONLY	
8808	FLOAT	Archive_Min[101 - Average 101]	1	RD_ONLY	
8809	FLOAT	Archive_Min[102 - Average 102]	1	RD_ONLY	
8810	FLOAT	Archive_Min[103 - Average 103]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8811	FLOAT	Archive_Min[104 - Average 104]	1	RD_ONLY	
8812	FLOAT	Archive_Min[105 - Average 105]	1	RD_ONLY	
8813	FLOAT	Archive_Min[106 - Average 106]	1	RD_ONLY	
8814	FLOAT	Archive_Min[107 - Average 107]	1	RD_ONLY	
8815	FLOAT	Archive_Min[108 - Average 108]	1	RD_ONLY	
8816	FLOAT	Archive_Min[109 - Average 109]	1	RD_ONLY	
8817	FLOAT	Archive_Min[110 - Average 110]	1	RD_ONLY	
8818	FLOAT	Archive_Min[111 - Average 111]	1	RD_ONLY	
8819	FLOAT	Archive_Min[112 - Average 112]	1	RD_ONLY	
8820	FLOAT	Archive_Min[113 - Average 113]	1	RD_ONLY	
8821	FLOAT	Archive_Min[114 - Average 114]	1	RD_ONLY	
8822	FLOAT	Archive_Min[115 - Average 115]	1	RD_ONLY	
8823	FLOAT	Archive_Min[116 - Average 116]	1	RD_ONLY	
8824	FLOAT	Archive_Min[117 - Average 117]	1	RD_ONLY	
8825	FLOAT	Archive_Min[118 - Average 118]	1	RD_ONLY	
8826	FLOAT	Archive_Min[119 - Average 119]	1	RD_ONLY	
8827	FLOAT	Archive_Min[120 - Average 120]	1	RD_ONLY	
8828	FLOAT	Archive_Min[121 - Average 121]	1	RD_ONLY	
8829	FLOAT	Archive_Min[122 - Average 122]	1	RD_ONLY	
8830	FLOAT	Archive_Min[123 - Average 123]	1	RD_ONLY	
8831	FLOAT	Archive_Min[124 - Average 124]	1	RD_ONLY	
8832	FLOAT	Archive_Min[125 - Average 125]	1	RD_ONLY	
8833	FLOAT	Archive_Min[126 - Average 126]	1	RD_ONLY	
8834	FLOAT	Archive_Min[127 - Average 127]	1	RD_ONLY	
8835	FLOAT	Archive_Min[128 - Average 128]	1	RD_ONLY	
8836	FLOAT	Archive_Min[129 - Average 129]	1	RD_ONLY	
8837	FLOAT	Archive_Min[130 - Average 130]	1	RD_ONLY	
8838	FLOAT	Archive_Min[131 - Average 131]	1	RD_ONLY	
8839	FLOAT	Archive_Min[132 - Average 132]	1	RD_ONLY	
8840	FLOAT	Archive_Min[133 - Average 133]	1	RD_ONLY	
8841	FLOAT	Archive_Min[134 - Average 134]	1	RD_ONLY	
8842	FLOAT	Archive_Min[135 - Average 135]	1	RD_ONLY	
8843	FLOAT	Archive_Min[136 - Average 136]	1	RD_ONLY	
8844	FLOAT	Archive_Min[137 - Average 137]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8845	FLOAT	Archive_Min[138 - Average 138]	1	RD_ONLY	
8846	FLOAT	Archive_Min[139 - Average 139]	1	RD_ONLY	
8847	FLOAT	Archive_Min[140 - Average 140]	1	RD_ONLY	
8848	FLOAT	Archive_Min[141 - Average 141]	1	RD_ONLY	
8849	FLOAT	Archive_Min[142 - Average 142]	1	RD_ONLY	
8850	FLOAT	Archive_Min[143 - Average 143]	1	RD_ONLY	
8851	FLOAT	Archive_Min[144 - Average 144]	1	RD_ONLY	
8852	FLOAT	Archive_Min[145 - Average 145]	1	RD_ONLY	
8853	FLOAT	Archive_Min[146 - Average 146]	1	RD_ONLY	
8854	FLOAT	Archive_Min[147 - Average 147]	1	RD_ONLY	
8855	FLOAT	Archive_Min[148 - Average 148]	1	RD_ONLY	
8856	FLOAT	Archive_Min[149 - Average 149]	1	RD_ONLY	
8857	FLOAT	Archive_Min[150 - Average 150]	1	RD_ONLY	
8858	FLOAT	Archive_Min[151 - Average 151]	1	RD_ONLY	
8859	FLOAT	Archive_Min[152 - Average 152]	1	RD_ONLY	
8860	FLOAT	Archive_Min[153 - Average 153]	1	RD_ONLY	
8861	FLOAT	Archive_Min[154 - Average 154]	1	RD_ONLY	
8862	FLOAT	Archive_Min[155 - Average 155]	1	RD_ONLY	
8863	FLOAT	Archive_Min[156 - Average 156]	1	RD_ONLY	
8864	FLOAT	Archive_Min[157 - Average 157]	1	RD_ONLY	
8865	FLOAT	Archive_Min[158 - Average 158]	1	RD_ONLY	
8866	FLOAT	Archive_Min[159 - Average 159]	1	RD_ONLY	
8867	FLOAT	Archive_Min[160 - Average 160]	1	RD_ONLY	
8868	FLOAT	Archive_Min[161 - Average 161]	1	RD_ONLY	
8869	FLOAT	Archive_Min[162 - Average 162]	1	RD_ONLY	
8870	FLOAT	Archive_Min[163 - Average 163]	1	RD_ONLY	
8871	FLOAT	Archive_Min[164 - Average 164]	1	RD_ONLY	
8872	FLOAT	Archive_Min[165 - Average 165]	1	RD_ONLY	
8873	FLOAT	Archive_Min[166 - Average 166]	1	RD_ONLY	
8874	FLOAT	Archive_Min[167 - Average 167]	1	RD_ONLY	
8875	FLOAT	Archive_Min[168 - Average 168]	1	RD_ONLY	
8876	FLOAT	Archive_Min[169 - Average 169]	1	RD_ONLY	
8877	FLOAT	Archive_Min[170 - Average 170]	1	RD_ONLY	
8878	FLOAT	Archive_Min[171 - Average 171]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8879	FLOAT	Archive_Min[172 - Average 172]	1	RD_ONLY	
8880	FLOAT	Archive_Min[173 - Average 173]	1	RD_ONLY	
8881	FLOAT	Archive_Min[174 - Average 174]	1	RD_ONLY	
8882	FLOAT	Archive_Min[175 - Average 175]	1	RD_ONLY	
8883	FLOAT	Archive_Min[176 - Average 176]	1	RD_ONLY	
8884	FLOAT	Archive_Min[177 - Average 177]	1	RD_ONLY	
8885	FLOAT	Archive_Min[178 - Average 178]	1	RD_ONLY	
8886	FLOAT	Archive_Min[179 - Average 179]	1	RD_ONLY	
8887	FLOAT	Archive_Min[180 - Average 180]	1	RD_ONLY	
8888	FLOAT	Archive_Min[181 - Average 181]	1	RD_ONLY	
8889	FLOAT	Archive_Min[182 - Average 182]	1	RD_ONLY	
8890	FLOAT	Archive_Min[183 - Average 183]	1	RD_ONLY	
8891	FLOAT	Archive_Min[184 - Average 184]	1	RD_ONLY	
8892	FLOAT	Archive_Min[185 - Average 185]	1	RD_ONLY	
8893	FLOAT	Archive_Min[186 - Average 186]	1	RD_ONLY	
8894	FLOAT	Archive_Min[187 - Average 187]	1	RD_ONLY	
8895	FLOAT	Archive_Min[188 - Average 188]	1	RD_ONLY	
8896	FLOAT	Archive_Min[189 - Average 189]	1	RD_ONLY	
8897	FLOAT	Archive_Min[190 - Average 190]	1	RD_ONLY	
8898	FLOAT	Archive_Min[191 - Average 191]	1	RD_ONLY	
8899	FLOAT	Archive_Min[192 - Average 192]	1	RD_ONLY	
8900	FLOAT	Archive_Min[193 - Average 193]	1	RD_ONLY	
8901	FLOAT	Archive_Min[194 - Average 194]	1	RD_ONLY	
8902	FLOAT	Archive_Min[195 - Average 195]	1	RD_ONLY	
8903	FLOAT	Archive_Min[196 - Average 196]	1	RD_ONLY	
8904	FLOAT	Archive_Min[197 - Average 197]	1	RD_ONLY	
8905	FLOAT	Archive_Min[198 - Average 198]	1	RD_ONLY	
8906	FLOAT	Archive_Min[199 - Average 199]	1	RD_ONLY	
8907	FLOAT	Archive_Min[200 - Average 200]	1	RD_ONLY	
8908	FLOAT	Archive_Min[201 - Average 201]	1	RD_ONLY	
8909	FLOAT	Archive_Min[202 - Average 202]	1	RD_ONLY	
8910	FLOAT	Archive_Min[203 - Average 203]	1	RD_ONLY	
8911	FLOAT	Archive_Min[204 - Average 204]	1	RD_ONLY	
8912	FLOAT	Archive_Min[205 - Average 205]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8913	FLOAT	Archive_Min[206 - Average 206]	1	RD_ONLY	
8914	FLOAT	Archive_Min[207 - Average 207]	1	RD_ONLY	
8915	FLOAT	Archive_Min[208 - Average 208]	1	RD_ONLY	
8916	FLOAT	Archive_Min[209 - Average 209]	1	RD_ONLY	
8917	FLOAT	Archive_Min[210 - Average 210]	1	RD_ONLY	
8918	FLOAT	Archive_Min[211 - Average 211]	1	RD_ONLY	
8919	FLOAT	Archive_Min[212 - Average 212]	1	RD_ONLY	
8920	FLOAT	Archive_Min[213 - Average 213]	1	RD_ONLY	
8921	FLOAT	Archive_Min[214 - Average 214]	1	RD_ONLY	
8922	FLOAT	Archive_Min[215 - Average 215]	1	RD_ONLY	
8923	FLOAT	Archive_Min[216 - Average 216]	1	RD_ONLY	
8924	FLOAT	Archive_Min[217 - Average 217]	1	RD_ONLY	
8925	FLOAT	Archive_Min[218 - Average 218]	1	RD_ONLY	
8926	FLOAT	Archive_Min[219 - Average 219]	1	RD_ONLY	
8927	FLOAT	Archive_Min[220 - Average 220]	1	RD_ONLY	
8928	FLOAT	Archive_Min[221 - Average 221]	1	RD_ONLY	
8929	FLOAT	Archive_Min[222 - Average 222]	1	RD_ONLY	
8930	FLOAT	Archive_Min[223 - Average 223]	1	RD_ONLY	
8931	FLOAT	Archive_Min[224 - Average 224]	1	RD_ONLY	
8932	FLOAT	Archive_Min[225 - Average 225]	1	RD_ONLY	
8933	FLOAT	Archive_Min[226 - Average 226]	1	RD_ONLY	
8934	FLOAT	Archive_Min[227 - Average 227]	1	RD_ONLY	
8935	FLOAT	Archive_Min[228 - Average 228]	1	RD_ONLY	
8936	FLOAT	Archive_Min[229 - Average 229]	1	RD_ONLY	
8937	FLOAT	Archive_Min[230 - Average 230]	1	RD_ONLY	
8938	FLOAT	Archive_Min[231 - Average 231]	1	RD_ONLY	
8939	FLOAT	Archive_Min[232 - Average 232]	1	RD_ONLY	
8940	FLOAT	Archive_Min[233 - Average 233]	1	RD_ONLY	
8941	FLOAT	Archive_Min[234 - Average 234]	1	RD_ONLY	
8942	FLOAT	Archive_Min[235 - Average 235]	1	RD_ONLY	
8943	FLOAT	Archive_Min[236 - Average 236]	1	RD_ONLY	
8944	FLOAT	Archive_Min[237 - Average 237]	1	RD_ONLY	
8945	FLOAT	Archive_Min[238 - Average 238]	1	RD_ONLY	
8946	FLOAT	Archive_Min[239 - Average 239]	1	RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
8947	FLOAT	Archive_Min[240 - Average 240]	1	RD_ONLY	
8948	FLOAT	Archive_Min[241 - Average 241]	1	RD_ONLY	
8949	FLOAT	Archive_Min[242 - Average 242]	1	RD_ONLY	
8950	FLOAT	Archive_Min[243 - Average 243]	1	RD_ONLY	
8951	FLOAT	Archive_Min[244 - Average 244]	1	RD_ONLY	
8952	FLOAT	Archive_Min[245 - Average 245]	1	RD_ONLY	
8953	FLOAT	Archive_Min[246 - Average 246]	1	RD_ONLY	
8954	FLOAT	Archive_Min[247 - Average 247]	1	RD_ONLY	
8955	FLOAT	Archive_Min[248 - Average 248]	1	RD_ONLY	
8956	FLOAT	Archive_Min[249 - Average 249]	1	RD_ONLY	
8957	FLOAT	Archive_Min[250 - Average 250]	1	RD_ONLY	
8958	FLOAT	Unused		RD_ONLY	
8959	FLOAT	Unused		RD_ONLY	
8960	FLOAT	Unused		RD_ONLY	
8961	FLOAT	Unused		RD_ONLY	
8962	FLOAT	Unused		RD_ONLY	
8963	FLOAT	Clear All Alarms		RD_WR	
8964	FLOAT	Acknowledge All Alarms		RD_WR	
9006	INT	Current Time(time_t)		RD_WR	MM
9007	INT	Current Time(time_t)		RD_WR	DD
9008	INT	Current Time(time_t)		RD_WR	YYYY
9009	INT	Current Time(time_t)		RD_WR	hh
9010	INT	Current Time(time_t)		RD_WR	mm
9011	INT	Current Time(time_t)		RD_WR	ss
9012	INT	Unused		RD_ONLY	
9013	INT	Modbus Id[1 - Port 0]		RD_ONLY	
9014	INT	Site Id		RD_WR	
9022	INT	Analysis Time		RD_ONLY	
9023	INT	Unused		RD_ONLY	
9024	INT	Cycle Time		RD_ONLY	
9025	INT	Unused		RD_ONLY	
9026	INT	Run Time		RD_ONLY	
9027	INT	Unused		RD_ONLY	
9028	INT	Current Stream		RD_ONLY	

Register #	Data Type	Variable	Record #	Access	Format
9029	INT	Unused		RD_ONLY	
9030	INT	GC Control_Analyser Control (Write Reg 9030)		RD_WR	
9031	INT	Unused		RD_ONLY	
9032	INT	GC Calibrating		RD_ONLY	
9033	INT	Unused		RD_ONLY	
9034	INT	Active Alarm Flag		RD_ONLY	
9035	INT	UnAck Alarm Flag		RD_ONLY	
9036	INT	Hourly Average Reset time		RD_ONLY	YY
9037	INT	Hourly Average Reset time		RD_ONLY	MM
9038	INT	Hourly Average Reset time		RD_ONLY	DD
9039	INT	Hourly Average Reset time		RD_ONLY	hh
9040	INT	Hourly Average Reset time		RD_ONLY	mm
9041	INT	Daily Average Reset time		RD_ONLY	YY
9042	INT	Daily Average Reset time		RD_ONLY	MM
9043	INT	Daily Average Reset time		RD_ONLY	DD
9044	INT	Daily Average Reset time		RD_ONLY	hh
9045	INT	Daily Average Reset time		RD_ONLY	mm
9046	INT	Weekly Average Reset time		RD_ONLY	YY
9047	INT	Weekly Average Reset time		RD_ONLY	MM
9048	INT	Weekly Average Reset time		RD_ONLY	DD
9049	INT	Weekly Average Reset time		RD_ONLY	hh
9050	INT	Weekly Average Reset time		RD_ONLY	mm
9051	INT	Monthly Average Reset time		RD_ONLY	YY
9052	INT	Monthly Average Reset time		RD_ONLY	MM
9053	INT	Monthly Average Reset time		RD_ONLY	DD
9054	INT	Monthly Average Reset time		RD_ONLY	hh
9055	INT	Monthly Average Reset time		RD_ONLY	mm
9056	INT	Variable Average Reset time		RD_ONLY	YY
9057	INT	Variable Average Reset time		RD_ONLY	MM
9058	INT	Variable Average Reset time		RD_ONLY	DD
9059	INT	Variable Average Reset time		RD_ONLY	hh
9060	INT	Variable Average Reset time		RD_ONLY	mm

3001..3016/3017..3032 (Component Code): Component Codes for components whose mole % results are available in Registers 7001..7016.

3033 (Run Time in 1/30th Sec): Current GC Run Time. If Run Time = 200 seconds, then this register reads **6000**.

3034 (Last Analy_Stream Number): Stream that was analyzed last.

3035 (Last Analy_CDT Stream Mask):

- Bit 0: Holds **1** if Stream 1 uses CDT1, **0** otherwise
- Bit 1: Holds **1** if Stream 2 uses CDT1, **0** otherwise
- Bit 2: Holds **1** if Stream 3 uses CDT1, **0** otherwise
- ...
- Bit 15: Holds **1** if Stream 16 uses CDT1, **0** otherwise

3036..3040 (Current GC Time): Holds the current GC Time. Can be written to update GC date/time.

3041..3045 (Last Analy_Start Time): Sample inject time for the stream that was analyzed last.

3046..3047 (Alarm Bitmaps): Boolean alarm conditions. **1** – Alarm Active, **0** – Alarm Inactive.

3046 Bit 14 (Analyzer Failure): This bit is set to **1** if any of the Carrier Pressure/Low Pressure Limit Switch alarms are active.

3048 (Stream 1 Active Low Limit Alarms):

- Bit 0: Holds **1** if, User Limit Alarm 1 is associated with Stream 1 and if a Low Limit condition is currently active. This bit holds **0** if either User Limit Alarm 1 is not associated with Stream 1 or no Low Limit alarm condition exists.
- Bit 1: Holds **1** if, User Limit Alarm 2 is associated with Stream 1 and if a Low Limit condition is currently active. This bit holds **0** if either User Limit Alarm 2 is not associated with Stream 1 or no Low Limit alarm condition exists.
- ...
- Bit 15: Holds **1** if, User Limit Alarm 16 is associated with Stream 1 and if a Low Limit condition is currently active. This bit holds **0** if either User Limit Alarm 16 is not associated with Stream 1 or no Low Limit alarm condition exists.

3049 (Stream 1 Active High Limit Alarms):

- Bit 0: Holds **1** if, User Limit Alarm 1 is associated with Stream 1 and if a High Limit condition is currently active. This bit holds **0** if either User Limit Alarm 1 is not associated with Stream 1 or no High Limit alarm condition exists.
- Bit 1: Holds **1** if, User Limit Alarm 2 is associated with Stream 1 and if a High Limit condition is currently active. This bit holds **0** if either User Limit Alarm 2 is not associated with Stream 1 or no High Limit alarm condition exists.
- ...
- Bit 15: Holds **1** if, User Limit Alarm 16 is associated with Stream 1 and if a High Limit condition is currently active. This bit holds **0** if either User Limit Alarm 16 is not associated with Stream 1 or no High Limit alarm condition exists.

3050 .. 3057 (Stream 2..5 Active High/Low Limit Alarms): These registers hold limit alarm status for Streams 2 through 5. The implementation of these registers is similar to the Stream 1 Active Low/High Alarms (Registers 3048/3049).

3058 (New Data Flag): This flag is set to **1** when new data is available in the Last Analysis Results registers. This is a read-write register, so a Modbus Master can clear the flag once the new results are read.

3059 (Anly/Calib Flag): This flag is set to **1** to indicate the last analysis results were from an Analysis run. This flag is set to **0** to indicate the last analysis results were from a Calibration run. A Modbus Master can use Registers 3058 and 3059 to determine when new analysis results are available on the GC.

5001 (Last Analy_Cycle Time (1/30th sec)): Cycle time for last analysis in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

5002 (Last Cal_Cycle Time (1/30th sec)): Cycle time for last calibration run in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

7001..7016 (Last Analy Mole %): These registers hold the mole % Results for the last analysis run. The order of components in these registers can be determined by reading Register 3001..3016 which contain the component codes.

7017..7032 (Last Analy Weight %): These registers hold the weight % results for the last analysis run. The order of components in these registers can be determined by reading Register 3001..3016 which contain the component codes.

7033..7039, 7054: Last analysis stream results

7040..7044: User calculation results 1..5

7055..7069: Current running average for Averages 1 through 15

7070..7084: Most recent archive average for Averages 1 through 15

7085..7086: Current analog input values for Analog Input 1 and 2

7087..7094: Last Calibration Stream Results

7095..7110/7111..7126: Response factors used for last analysis run

7127..7162: Current running average for Averages 1 through 36

7163..7198: Maximum sample value during current averaging period for Averages 1 through 36

7199..7234: Minimum sample value during current averaging period for Averages 1 through 36

7235..7270: Most recent archived average for Averages 1 through 36

7271..7306: Maximum sample value in the most recent archived average for Averages 1 through 36.

7307..7342: Minimum sample value in the most recent archived average for Averages 1 through 36.

7343..7378: Second most recent archived average for Averages 1 through 36

7379..7414: Maximum sample value in the second most recent archived average for Averages 1 through 36.

7415..7450: Minimum sample value in the second most recent archived average for Averages 1 through 36.

7451..7486: Third most recent archived average for Averages 1 through 36

7487..7522: Maximum sample value in the third most recent archived average for Averages 1 through 36.

7523..7558: Minimum sample value in the third most recent archived average for Averages 1 through 36.

7560..7563/7564..7567: Analog Input Current Value for AI 1 through 4.

7621..7646: Stream 1 results

7651..7676: Stream 2 results

7681..7706: Stream 3 results

7711..7736: Stream 4 results

7741..7766: Stream 5 results

7771..7796: Stream 6 results

7801..7826: Stream 7 results

7831..7856: Stream 8 results

7861..7886: Stream 9 results

7891..7916: Stream 10 results

7921..7946: Stream 11 results

7951..7976: Stream 12 results

7996..8006: Remote control registers

8200..8449: Most recent archived average for Averages 1 through 250.

8454..8703: Maximum sample value in the most recent archived average for Averages 1 through 250.

8708..8957: Minimum sample value in the most recent archived average for Averages 1 through 250.

8963 (Clear All Alarms): Write **1** to this register to clear all active alarms.

8964 (Acknowledge All Alarms): Write **1** to this register to acknowledge all alarms.

9006..9011: GC System Date/Time Read/Write Registers.

9013 (Modbus Id[Port 0]): Modbus ID for Serial Port 0.

9014 (Site ID): GC Site ID read/write register.

9022 (Analysis Time): Analysis time

9024 (Cycle Time): Cycle time

9026 (Run Time): Run rime

9028 (Current Stream): Stream number

9030 (Analyzer Control): Read-write remote control register (9030)

9032 (GC Calibrating): Tells you if the GC is calibrating. A value of **1** means GC is calibrating, **0** otherwise.

9034 (Active Alarm Flag): Tells you if the GC has any active alarms. A value of **1** indicates that there are active alarms, **0** otherwise.

9035 (UnAck Alarm Flag): Tells you if the GC has any unacknowledged alarms. A value of **1** indicates that there are unacknowledged alarms, **0** otherwise.

9036..9040 (Hourly Average Reset Time): Date/time when hourly average results were archived.

9041..9045 (Daily Average Reset Time): Date/time when daily average results were archived.

9046..9047 (Weekly Average Reset Time): Date/time when weekly average results were archived.

9051..9055 (Monthly Average Reset Time): Date/time when monthly average results were archived.

9056..9060 (Variable Average Reset Time): Date/time when variable average results were archived.

B.3 SIM_2251 C9 + Hydrocarbon Dewpoint map

This map file is an extension of the SIM2251 map file with the following additional registers.

Register #	Data type	Variable	Access
3101	INT	1 - Stream 1_Dew Status 1	RD_ONLY
3102	INT	1 - Stream 1_Dew Status 2	RD_ONLY
3103	INT	1 - Stream 1_Dew Status 3	RD_ONLY
3104	INT	1 - Stream 1_Dew Status 4	RD_ONLY
3105	INT	1 - Stream 1_Cri Status	RD_ONLY
3106	INT	2 - Calibration_Dew Status 1	RD_ONLY
3107	INT	2 - Calibration_Dew Status 2	RD_ONLY
3108	INT	2 - Calibration_Dew Status 3	RD_ONLY
3109	INT	2 - Calibration_Dew Status 4	RD_ONLY
3110	INT	2 - Calibration_Cri Status	RD_ONLY
3111	INT	3 - Stream 3_Dew Status 1	RD_ONLY
3112	INT	3 - Stream 3_Dew Status 2	RD_ONLY
3113	INT	3 - Stream 3_Dew Status 3	RD_ONLY
3114	INT	3 - Stream 3_Dew Status 4	RD_ONLY
3115	INT	3 - Stream 3_Cri Status	RD_ONLY
3116	INT	4 - Stream 4_Dew Status 1	RD_ONLY
3117	INT	4 - Stream 4_Dew Status 2	RD_ONLY
3118	INT	4 - Stream 4_Dew Status 3	RD_ONLY
3119	INT	4 - Stream 4_Dew Status 4	RD_ONLY
3120	INT	4 - Stream 4_Cri Status	RD_ONLY
3121	INT	5 - Stream 5_Dew Status 1	RD_ONLY
3122	INT	5 - Stream 5_Dew Status 2	RD_ONLY
3123	INT	5 - Stream 5_Dew Status 3	RD_ONLY
3124	INT	5 - Stream 5_Dew Status 4	RD_ONLY
3125	INT	5 - Stream 5_Cri Status	RD_ONLY
3126	INT	6 - Stream 6_Dew Status 1	RD_ONLY
3127	INT	6 - Stream 6_Dew Status 2	RD_ONLY
3128	INT	6 - Stream 6_Dew Status 3	RD_ONLY
3129	INT	6 - Stream 6_Dew Status 4	RD_ONLY
3130	INT	6 - Stream 6_Cri Status	RD_ONLY
3131	INT	7 - Stream 7_Dew Status 1	RD_ONLY

Register #	Data type	Variable	Access
3132	INT	7 - Stream 7_Dew Status 2	RD_ONLY
3133	INT	7 - Stream 7_Dew Status 3	RD_ONLY
3134	INT	7 - Stream 7_Dew Status 4	RD_ONLY
3135	INT	7 - Stream 7_Cri Status	RD_ONLY
3136	INT	8 - Stream 8_Dew Status 1	RD_ONLY
3137	INT	8 - Stream 8_Dew Status 2	RD_ONLY
3138	INT	8 - Stream 8_Dew Status 3	RD_ONLY
3139	INT	8 - Stream 8_Dew Status 4	RD_ONLY
3140	INT	8 - Stream 8_Cri Status	RD_ONLY
8100	FLOAT	Dewpoint Configuration 1_Pressure 1	RD_WR
8101	FLOAT	Dewpoint Configuration 1_Pressure 2	RD_WR
8102	FLOAT	Dewpoint Configuration 1_Pressure 3	RD_WR
8103	FLOAT	Dewpoint Configuration 1_Pressure 4	RD_WR
8104	FLOAT	Dewpoint Configuration 2_Pressure 1	RD_WR
8105	FLOAT	Dewpoint Configuration 2_Pressure 2	RD_WR
8106	FLOAT	Dewpoint Configuration 3_Pressure 1	RD_WR
8107	FLOAT	Dewpoint Configuration 3_Pressure 2	RD_WR
8108	FLOAT	Dewpoint Configuration 4_Pressure 1	RD_WR
8109	FLOAT	Dewpoint Configuration 4_Pressure 2	RD_WR
8110	FLOAT	1 - Stream 1_Dewpoint Temp 1	RD_ONLY
8111	FLOAT	1 - Stream 1_Dewpoint Temp 2	RD_ONLY
8112	FLOAT	1 - Stream 1_Dewpoint Temp 3	RD_ONLY
8113	FLOAT	1 - Stream 1_Dewpoint Temp 4	RD_ONLY
8114	FLOAT	1 - Stream 1_Dewpoint Pres 1	RD_ONLY
8115	FLOAT	1 - Stream 1_Dewpoint Pres 2	RD_ONLY
8116	FLOAT	1 - Stream 1_Dewpoint Pres 3	RD_ONLY
8117	FLOAT	1 - Stream 1_Dewpoint Pres 4	RD_ONLY
8118	FLOAT	1 - Stream 1_CricondenTherm Temp	RD_ONLY
8119	FLOAT	1 - Stream 1_CricondenTherm Pres	RD_ONLY
8120	FLOAT	2 - Calibration_Dewpoint Temp 1	RD_ONLY
8121	FLOAT	2 - Calibration_Dewpoint Temp 2	RD_ONLY
8122	FLOAT	2 - Calibration_Dewpoint Temp 3	RD_ONLY
8123	FLOAT	2 - Calibration_Dewpoint Temp 4	RD_ONLY
8124	FLOAT	2 - Calibration_Dewpoint Pres 1	RD_ONLY

Register #	Data type	Variable	Access
8125	FLOAT	2 - Calibration_Dewpoint Pres 2	RD_ONLY
8126	FLOAT	2 - Calibration_Dewpoint Pres 3	RD_ONLY
8127	FLOAT	2 - Calibration_Dewpoint Pres 4	RD_ONLY
8128	FLOAT	2 - Calibration_CricondenTherm Temp	RD_ONLY
8129	FLOAT	2 - Calibration_CricondenTherm Pres	RD_ONLY
8130	FLOAT	3 - Stream 3_Dewpoint Temp 1	RD_ONLY
8131	FLOAT	3 - Stream 3_Dewpoint Temp 2	RD_ONLY
8132	FLOAT	3 - Stream 3_Dewpoint Temp 3	RD_ONLY
8133	FLOAT	3 - Stream 3_Dewpoint Temp 4	RD_ONLY
8134	FLOAT	3 - Stream 3_Dewpoint Pres 1	RD_ONLY
8135	FLOAT	3 - Stream 3_Dewpoint Pres 2	RD_ONLY
8136	FLOAT	3 - Stream 3_Dewpoint Pres 3	RD_ONLY
8137	FLOAT	3 - Stream 3_Dewpoint Pres 4	RD_ONLY
8138	FLOAT	3 - Stream 3_CricondenTherm Temp	RD_ONLY
8139	FLOAT	3 - Stream 3_CricondenTherm Pres	RD_ONLY
8140	FLOAT	4 - Stream 4_Dewpoint Temp 1	RD_ONLY
8141	FLOAT	4 - Stream 4_Dewpoint Temp 2	RD_ONLY
8142	FLOAT	4 - Stream 4_Dewpoint Temp 3	RD_ONLY
8143	FLOAT	4 - Stream 4_Dewpoint Temp 4	RD_ONLY
8144	FLOAT	4 - Stream 4_Dewpoint Pres 1	RD_ONLY
8145	FLOAT	4 - Stream 4_Dewpoint Pres 2	RD_ONLY
8146	FLOAT	4 - Stream 4_Dewpoint Pres 3	RD_ONLY
8147	FLOAT	4 - Stream 4_Dewpoint Pres 4	RD_ONLY
8148	FLOAT	4 - Stream 4_CricondenTherm Temp	RD_ONLY
8149	FLOAT	4 - Stream 4_CricondenTherm Pres	RD_ONLY
8150	FLOAT	5 - Stream 5_Dewpoint Temp 1	RD_ONLY
8151	FLOAT	5 - Stream 5_Dewpoint Temp 2	RD_ONLY
8152	FLOAT	5 - Stream 5_Dewpoint Temp 3	RD_ONLY
8153	FLOAT	5 - Stream 5_Dewpoint Temp 4	RD_ONLY
8154	FLOAT	5 - Stream 5_Dewpoint Pres 1	RD_ONLY
8155	FLOAT	5 - Stream 5_Dewpoint Pres 2	RD_ONLY
8156	FLOAT	5 - Stream 5_Dewpoint Pres 3	RD_ONLY
8157	FLOAT	5 - Stream 5_Dewpoint Pres 4	RD_ONLY
8158	FLOAT	5 - Stream 5_CricondenTherm Temp	RD_ONLY

Register #	Data type	Variable	Access
8159	FLOAT	5 - Stream 5_CricondenTherm Pres	RD_ONLY
8160	FLOAT	6 - Stream 6_Dewpoint Temp 1	RD_ONLY
8161	FLOAT	6 - Stream 6_Dewpoint Temp 2	RD_ONLY
8162	FLOAT	6 - Stream 6_Dewpoint Temp 3	RD_ONLY
8163	FLOAT	6 - Stream 6_Dewpoint Temp 4	RD_ONLY
8164	FLOAT	6 - Stream 6_Dewpoint Pres 1	RD_ONLY
8165	FLOAT	6 - Stream 6_Dewpoint Pres 2	RD_ONLY
8166	FLOAT	6 - Stream 6_Dewpoint Pres 3	RD_ONLY
8167	FLOAT	6 - Stream 6_Dewpoint Pres 4	RD_ONLY
8168	FLOAT	6 - Stream 6_CricondenTherm Temp	RD_ONLY
8169	FLOAT	6 - Stream 6_CricondenTherm Pres	RD_ONLY
8170	FLOAT	7 - Stream 7_Dewpoint Temp 1	RD_ONLY
8171	FLOAT	7 - Stream 7_Dewpoint Temp 2	RD_ONLY
8172	FLOAT	7 - Stream 7_Dewpoint Temp 3	RD_ONLY
8173	FLOAT	7 - Stream 7_Dewpoint Temp 4	RD_ONLY
8174	FLOAT	7 - Stream 7_Dewpoint Pres 1	RD_ONLY
8175	FLOAT	7 - Stream 7_Dewpoint Pres 2	RD_ONLY
8176	FLOAT	7 - Stream 7_Dewpoint Pres 3	RD_ONLY
8177	FLOAT	7 - Stream 7_Dewpoint Pres 4	RD_ONLY
8178	FLOAT	7 - Stream 7_CricondenTherm Temp	RD_ONLY
8179	FLOAT	7 - Stream 7_CricondenTherm Pres	RD_ONLY
8180	FLOAT	8 - Stream 8_Dewpoint Temp 1	RD_ONLY
8181	FLOAT	8 - Stream 8_Dewpoint Temp 2	RD_ONLY
8182	FLOAT	8 - Stream 8_Dewpoint Temp 3	RD_ONLY
8183	FLOAT	8 - Stream 8_Dewpoint Temp 4	RD_ONLY
8184	FLOAT	8 - Stream 8_Dewpoint Pres 1	RD_ONLY
8185	FLOAT	8 - Stream 8_Dewpoint Pres 2	RD_ONLY
8186	FLOAT	8 - Stream 8_Dewpoint Pres 3	RD_ONLY
8187	FLOAT	8 - Stream 8_Dewpoint Pres 4	RD_ONLY
8188	FLOAT	8 - Stream 8_CricondenTherm Temp	RD_ONLY
8189	FLOAT	8 - Stream 8_CricondenTherm Pres	RD_ONLY

3101...3140 (Dewpoint status): Dewpoint calculation status for Streams 1 to 8 (read only). Here are the possible values for these registers and their descriptions.

8100...8109 (Dewpoint pressure setpoints): Pressure setpoints at which dewpoint calculation results are performed (read-write). The setpoint can be changed through a Modbus Master.

8110...8189 (Dewpoint results): Dewpoint temperature and pressure, cricondentherm temperature and pressure.

Value	Description	Remarks
0	OK	Calculation is valid
1	Error 1	No valid solution to gas equation found
2	Error 2	Mole% values are all zero – if analysis is OK check Numeric data
3	Error 3	Calculated fugacities too large – probably unrealistic composition
4	Error 4	Single phase – no liquid phase at this pressure
5	Error 5	Pressure value (from operator or Modbus) is negative
6	Error 6	(Cricondentherm only) – no maximum found – next analysis normally OK
7	Error 7	Single phase – no gas phase at this pressure

B.4 User Modbus mapping template

Register #	Data type	Variable	Access	Format
1	BOOLEAN	Unused	RD_ONLY	
2	BOOLEAN	Unused	RD_ONLY	
3	BOOLEAN	Unused	RD_ONLY	
4	BOOLEAN	Unused	RD_ONLY	
5	BOOLEAN	Unused	RD_ONLY	
6	BOOLEAN	Unused	RD_ONLY	
7	BOOLEAN	Unused	RD_ONLY	
8	BOOLEAN	Unused	RD_ONLY	
9	BOOLEAN	Unused	RD_ONLY	
10	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 1 Out Of Range	RD_ONLY	
11	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 2 Out Of Range	RD_ONLY	
12	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 3 Out Of Range	RD_ONLY	
13	BOOLEAN	System Alarm_Alarm On - Current Analysis_Heater 4 Out Of Range	RD_ONLY	

Register #	Data type	Variable	Access	Format
14	BOOLEAN	Unused	RD_ONLY	
15	BOOLEAN	Unused	RD_ONLY	
16	BOOLEAN	System Alarm_Alarm On - Current Analysis_Flame Out	RD_ONLY	
17	BOOLEAN	System Alarm_Alarm On - Current Analysis_Warm Start Failed	RD_ONLY	
18	BOOLEAN	Unused	RD_ONLY	
19	BOOLEAN	Calibration Failed	RD_ONLY	
20	BOOLEAN	System Alarm_Alarm On - Current Analysis_Low Carrier Pressure 1	RD_ONLY	
21	BOOLEAN	System Alarm_Alarm On - Current Analysis_Low Carrier Pressure 2	RD_ONLY	
22	BOOLEAN	System Alarm_Alarm On - Current Analysis_No Sample Flow 1	RD_ONLY	
23	BOOLEAN	System Alarm_Alarm On - Current Analysis_No Sample Flow 2	RD_ONLY	
24	BOOLEAN	System Alarm_Alarm On - Current Analysis_Maintenance Mode	RD_ONLY	
25	BOOLEAN	Calibration Failed	RD_ONLY	
26	BOOLEAN	Unused	RD_ONLY	
27	BOOLEAN	Unused	RD_ONLY	
28	BOOLEAN	Unused	RD_ONLY	
29	BOOLEAN	Unused	RD_ONLY	
30	BOOLEAN	Unused	RD_ONLY	
31	BOOLEAN	System Alarm_Alarm On - Current Analysis_Detector 1 Scaling Factor Failure	RD_ONLY	
32	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 1 High Signal	RD_ONLY	
33	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 2 High Signal	RD_ONLY	
34	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 3 High Signal	RD_ONLY	
35	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 4 High Signal	RD_ONLY	
36	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 5 High Signal	RD_ONLY	
37	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 6 High Signal	RD_ONLY	
38	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 7 High Signal	RD_ONLY	

Register #	Data type	Variable	Access	Format
39	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 8 High Signal	RD_ONLY	
40	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 9 High Signal	RD_ONLY	
41	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 10 High Signal	RD_ONLY	
42	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 11 High Signal	RD_ONLY	
43	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 12 High Signal	RD_ONLY	
44	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 13 High Signal	RD_ONLY	
45	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 14 High Signal	RD_ONLY	
46	BOOLEAN	Unused	RD_ONLY	
47	BOOLEAN	Unused	RD_ONLY	
48	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 1 Low Signal	RD_ONLY	
49	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 2 Low Signal	RD_ONLY	
50	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 3 Low Signal	RD_ONLY	
51	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 4 Low Signal	RD_ONLY	
52	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 5 Low Signal	RD_ONLY	
53	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 6 Low Signal	RD_ONLY	
54	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 7 Low Signal	RD_ONLY	
55	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 8 Low Signal	RD_ONLY	
56	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 9 Low Signal	RD_ONLY	
57	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 10 Low Signal	RD_ONLY	
58	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 11 Low Signal	RD_ONLY	
59	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 12 Low Signal	RD_ONLY	
60	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 13 Low Signal	RD_ONLY	

Register #	Data type	Variable	Access	Format
61	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Output 14 Low Signal	RD_ONLY	
62	BOOLEAN	Unused	RD_ONLY	
63	BOOLEAN	Unused	RD_ONLY	
64	BOOLEAN	Analyzer Failure	RD_ONLY	
65	BOOLEAN	System Alarm_Alarm On - Current Analysis_Power Failure	RD_ONLY	
66	BOOLEAN	Unused	RD_ONLY	
67	BOOLEAN	System Alarm_Alarm On - Current Analysis_Low Battery Voltage	RD_ONLY	
68	BOOLEAN	System Alarm_Alarm On - Current Analysis_GC Idle	RD_ONLY	
69	BOOLEAN	Unused	RD_ONLY	
70	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 1 High Signal	RD_ONLY	
71	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 2 High Signal	RD_ONLY	
72	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 3 High Signal	RD_ONLY	
73	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 4 High Signal	RD_ONLY	
74	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 1 Low Signal	RD_ONLY	
75	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 2 Low Signal	RD_ONLY	
76	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 3 Low Signal	RD_ONLY	
77	BOOLEAN	System Alarm_Alarm On - Current Analysis_Analog Input 4 Low Signal	RD_ONLY	
78	BOOLEAN	Unused	RD_ONLY	
79	BOOLEAN	Unused	RD_ONLY	
80	BOOLEAN	Unused	RD_ONLY	
81	BOOLEAN	Unused	RD_ONLY	
82	BOOLEAN	Unused	RD_ONLY	
83	BOOLEAN	Unused	RD_ONLY	
84	BOOLEAN	Unused	RD_ONLY	
85	BOOLEAN	Alarm On[1 - Alarm 1]	RD_ONLY	
86	BOOLEAN	Alarm On[2 - Alarm 2]	RD_ONLY	
87	BOOLEAN	Alarm On[3 - Alarm 3]	RD_ONLY	
88	BOOLEAN	Alarm On[4 - Alarm 4]	RD_ONLY	

Register #	Data type	Variable	Access	Format
89	BOOLEAN	Alarm On[5 - Alarm 5]	RD_ONLY	
90	BOOLEAN	Alarm On[6 - Alarm 6]	RD_ONLY	
91	BOOLEAN	Alarm On[7 - Alarm 7]	RD_ONLY	
92	BOOLEAN	Alarm On[8 - Alarm 8]	RD_ONLY	
93	BOOLEAN	Alarm On[9 - Alarm 9]	RD_ONLY	
94	BOOLEAN	Alarm On[10 - Alarm 10]	RD_ONLY	
95	BOOLEAN	Alarm On[11 - Alarm 11]	RD_ONLY	
96	BOOLEAN	Alarm On[12 - Alarm 12]	RD_ONLY	
97	BOOLEAN	Alarm On[13 - Alarm 13]	RD_ONLY	
98	BOOLEAN	Alarm On[14 - Alarm 14]	RD_ONLY	
99	BOOLEAN	Alarm On[15 - Alarm 15]	RD_ONLY	
100	BOOLEAN	Alarm On[16 - Alarm 16]	RD_ONLY	
101	BOOLEAN	Alarm On[17 - Alarm 17]	RD_ONLY	
102	BOOLEAN	Alarm On[18 - Alarm 18]	RD_ONLY	
103	BOOLEAN	Alarm On[19 - Alarm 19]	RD_ONLY	
104	BOOLEAN	Alarm On[20 - Alarm 20]	RD_ONLY	
105	BOOLEAN	1 - Stream 1_Stream Toggle	RD_ONLY	
106	BOOLEAN	2 - Stream 2_Stream Toggle	RD_ONLY	
107	BOOLEAN	3 - Stream 3_Stream Toggle	RD_ONLY	
108	BOOLEAN	4 - Stream 4_Stream Toggle	RD_ONLY	
109	BOOLEAN	5 - Stream 5_Stream Toggle	RD_ONLY	
110	BOOLEAN	6 - Stream 6_Stream Toggle	RD_ONLY	
111	BOOLEAN	7 - Stream 7_Stream Toggle	RD_ONLY	
112	BOOLEAN	8 - Stream 8_Stream Toggle	RD_ONLY	
113	BOOLEAN	Current Value[1 - Discrete Output 1]	RD_ONLY	
114	BOOLEAN	Current Value[2 - Discrete Output 2]	RD_ONLY	
115	BOOLEAN	Current Value[3 - Discrete Output 3]	RD_ONLY	
116	BOOLEAN	Current Value[4 - Discrete Output 4]	RD_ONLY	
117	BOOLEAN	Current Value[5 - Discrete Output 5]	RD_ONLY	
118	BOOLEAN	Switch[1 - Discrete Output 1]	RD_WR	
119	BOOLEAN	Switch[2 - Discrete Output 2]	RD_WR	
120	BOOLEAN	Switch[3 - Discrete Output 3]	RD_WR	
121	BOOLEAN	Switch[4 - Discrete Output 4]	RD_WR	
122	BOOLEAN	Switch[5 - Discrete Output 5]	RD_WR	

Register #	Data type	Variable	Access	Format
123	INT	Switch[1 - Discrete Output 1]	RD_WR	
124	INT	Switch[2 - Discrete Output 2]	RD_WR	
125	INT	Switch[3 - Discrete Output 3]	RD_WR	
126	INT	Switch[4 - Discrete Output 4]	RD_WR	
127	INT	Switch[5 - Discrete Output 5]	RD_WR	
9006	INT	Current Time(time_t)	RD_WR	MM
9007	INT	Current Time(time_t)	RD_WR	DD
9008	INT	Current Time(time_t)	RD_WR	YYYY
9009	INT	Current Time(time_t)	RD_WR	hh
9010	INT	Current Time(time_t)	RD_WR	mm
9011	INT	Current Time(time_t)	RD_WR	ss
9012	INT	Unused	RD_ONLY	
9013	INT	Modbus Id[1 - Port 0]	RD_ONLY	
9014	INT	Site Id	RD_WR	
9022	INT	Analysis Time	RD_ONLY	
9023	INT	Unused	RD_ONLY	
9024	INT	Cycle Time	RD_ONLY	
9025	INT	Unused	RD_ONLY	
9026	INT	Run Time	RD_ONLY	
9027	INT	Unused	RD_ONLY	
9028	INT	Current Stream	RD_ONLY	
9029	INT	Unused	RD_ONLY	
9030	INT	GC Control_Analyzer Control (Write Reg 9030)	RD_WR	
9031	INT	Unused	RD_ONLY	
9032	INT	GC Calibrating	RD_ONLY	
9033	INT	Unused	RD_ONLY	
9034	INT	Active Alarm Flag	RD_ONLY	
9035	INT	UnAck Alarm Flag	RD_ONLY	
9036	INT	Hourly Average Reset time	RD_ONLY	YY
9037	INT	Hourly Average Reset time	RD_ONLY	MM
9038	INT	Hourly Average Reset time	RD_ONLY	DD
9039	INT	Hourly Average Reset time	RD_ONLY	hh
9040	INT	Hourly Average Reset time	RD_ONLY	mm
9041	INT	Daily Average Reset time	RD_ONLY	YY

Register #	Data type	Variable	Access	Format
9042	INT	Daily Average Reset time	RD_ONLY	MM
9043	INT	Daily Average Reset time	RD_ONLY	DD
9044	INT	Daily Average Reset time	RD_ONLY	hh
9045	INT	Daily Average Reset time	RD_ONLY	mm
9046	INT	Weekly Average Reset time	RD_ONLY	YY
9047	INT	Weekly Average Reset time	RD_ONLY	MM
9048	INT	Weekly Average Reset time	RD_ONLY	DD
9049	INT	Weekly Average Reset time	RD_ONLY	hh
9050	INT	Weekly Average Reset time	RD_ONLY	mm
9051	INT	Monthly Average Reset time	RD_ONLY	YY
9052	INT	Monthly Average Reset time	RD_ONLY	MM
9053	INT	Monthly Average Reset time	RD_ONLY	DD
9054	INT	Monthly Average Reset time	RD_ONLY	hh
9055	INT	Monthly Average Reset time	RD_ONLY	mm
9056	INT	Variable Average Reset time	RD_ONLY	YY
9057	INT	Variable Average Reset time	RD_ONLY	MM
9058	INT	Variable Average Reset time	RD_ONLY	DD
9059	INT	Variable Average Reset time	RD_ONLY	hh
9060	INT	Variable Average Reset time	RD_ONLY	mm

10...13 (Heater 1...4 out of range): **1** if heater is out of range, **0** otherwise

16 (FID flame out): **1** if FID flame has gone out, **0** otherwise

17 (Warmstart failed): **1** if GC warmstart was unable to stabilize temperature/pressure in analytical oven within pre-defined warmstart duration, **0** otherwise

19 (Calibration failed): **1** if last calibration sequence failed, **0** otherwise

20...21 (Low carrier pressure 1...2): **1** if the carrier pressure is low, **0** otherwise

22...23 (No sample flow 1...2): **1** if there is no sample flow in the sample conditioning system, **0** otherwise

24 (Maintenance mode): **1** if a technician has put the GC into *Maintenance* mode to perform repairs, **0** otherwise

25 (Calibration failed): **1** if last calibration sequence failed, **0** otherwise

31 (Preamp scaling factor): **1** if there is an electronics failure on the preamp board, **0** otherwise

32...45 (Analog output high signal 1...14): **1** if the variable associated with analog output has a value that is greater than the zero scale value assigned to the analog output, **0** otherwise

48...61 (Analog output low signal 1...14): **1** if the variable associated with analog output has a value that is lesser than the zero scale value assigned to the analog output, **0** otherwise

64 (Analyzer failure): **1** indicates that the carrier pressure is either too low or the GC cannot control the carrier pressure to the desired setpoint, **0** otherwise

65 (Power failure): **1** indicates that the GC lost power and is currently executing the warmstart sequence, **0** otherwise

67 (Low battery voltage): **1** indicates that the battery used to back up configuration and real-time clock on the main CPU board is low, **0** otherwise

68 (GC idle): **1** indicates that the GC is not performing an analysis, **0** otherwise

Note
If the GC is halted by the operator using MON2020, then the *Idle* alarm is not raised. It is raised only if the GC goes into the *Idle* state due to alarm condition that has the Halt on Alarm flag enabled.

Note
If the GC is halted by the operator using MON2020 and if he disconnects from the GC without restarting normal operation, then the GC *Idle* alarm is raised.

70...77 (Analog input low signal 1...8): **1** indicates that the analog input is sensing a current that is lower than 4 mA, **0** otherwise

85...104 (User limit alarm 1...20): **1** indicates that the user limit alarm is active, **0** otherwise

105...112 (Stream toggle 1...5): Each time new results are available for a particular stream, this flag is toggled.

113...117 (Discrete output 1...5 current value): Current state of the discrete output, **1** indicates that it is *On*; **0** indicates it is *Off*.

118...122 (Switch discrete output 1...5): Read/write register for changing the state of the discrete output. Write **1** to this register to set output state to *On*, **0** to set output state to *Off*.

123...127 (Switch discrete output 1...5): Read/write register for changing the state of the discrete output. Write **1** to this register to set output state to *On*, **0** to set output state to *Off*, and **2** to set the register to *Auto* mode.

9006...9011: GC system date/time read-write registers

9013 (Modbus ID [Port 0]): Modbus ID for serial port 0

9014 (Site ID): GC site ID read/write register

9022 (Analysis time): Analysis time

9024 (Cycle time): Cycle time

9026 (Run time): Run time

9028 (Current stream): Stream number

9030 (Analyzer control): User Modbus mapping template

9032 (GC calibrating): Tells you if the GC is calibrating. A value of **1** means GC is calibrating, **0** otherwise.

9034 (Active alarm flag): Tells you if the GC has any active alarms. A value of **1** indicates that there are active alarms, **0** otherwise.

9035 (UnAck alarm flag): Tells you if the GC has any unacknowledged alarms. A value of **1** indicates that there are unacknowledged alarms, **0** otherwise.

9036...9040 (Hourly average reset time): Date/time when hourly average results was archived

9041...9045 (Daily average reset time): Date/time when daily average results was archived

9046...9047 (Weekly average reset time): Date/time when weekly average result was archived

9051...9055 (Monthly average reset time): Date/time when monthly average results was archived

9056...9060 (Variable average reset time): Date/time when variable average results was archived

B.5 SIM_2251 UK (with ISO results)

Register #	Data type	Variable	Record #	Access	Format
1001	BOOLEAN	Current Value[1 - Discrete Output 1]		RD_ONLY	
1002	BOOLEAN	Current Value[2 - Discrete Output 2]		RD_ONLY	
1003	BOOLEAN	Current Value[3 - Discrete Output 3]		RD_ONLY	
1004	BOOLEAN	Current Value[4 - Discrete Output 4]		RD_ONLY	
1005	BOOLEAN	Current Value[5 - Discrete Output 5]		RD_ONLY	
1006	BOOLEAN	Current Value[1 - Discrete Input 1]		RD_ONLY	
1007	BOOLEAN	Current Value[2 - Discrete Input 2]		RD_ONLY	
1008	BOOLEAN	Current Value[3 - Discrete Input 3]		RD_ONLY	
1009	BOOLEAN	Current Value[4 - Discrete Input 4]		RD_ONLY	
1010	BOOLEAN	Current Value[5 - Discrete Input 5]		RD_ONLY	
3001	INT	Last Analy_Component Code(UK)[1 - Component 1]		RD_ONLY	
3002	INT	Last Analy_Component Code(UK)[2 - Component 2]		RD_ONLY	
3003	INT	Last Analy_Component Code(UK)[3 - Component 3]		RD_ONLY	
3004	INT	Last Analy_Component Code(UK)[4 - Component 4]		RD_ONLY	
3005	INT	Last Analy_Component Code(UK)[5 - Component 5]		RD_ONLY	
3006	INT	Last Analy_Component Code(UK)[6 - Component 6]		RD_ONLY	
3007	INT	Last Analy_Component Code(UK)[7 - Component 7]		RD_ONLY	
3008	INT	Last Analy_Component Code(UK)[8 - Component 8]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
3009	INT	Last Analy_Component Code(UK)[9 - Component 9]		RD_ONLY	
3010	INT	Last Analy_Component Code(UK)[10 - Component 10]		RD_ONLY	
3011	INT	Last Analy_Component Code(UK)[11 - Component 11]		RD_ONLY	
3012	INT	Last Analy_Component Code(UK)[12 - Component 12]		RD_ONLY	
3013	INT	Last Analy_Component Code(UK)[13 - Component 13]		RD_ONLY	
3014	INT	Last Analy_Component Code(UK)[14 - Component 14]		RD_ONLY	
3015	INT	Last Analy_Component Code(UK)[15 - Component 15]		RD_ONLY	
3016	INT	Last Analy_Component Code(UK)[16 - Component 16]		RD_ONLY	
3017	INT	Last Analy_Component Code(UK)[1 - Component 1]		RD_ONLY	
3018	INT	Last Analy_Component Code(UK)[2 - Component 2]		RD_ONLY	
3019	INT	Last Analy_Component Code(UK)[3 - Component 3]		RD_ONLY	
3020	INT	Last Analy_Component Code(UK)[4 - Component 4]		RD_ONLY	
3021	INT	Last Analy_Component Code(UK)[5 - Component 5]		RD_ONLY	
3022	INT	Last Analy_Component Code(UK)[6 - Component 6]		RD_ONLY	
3023	INT	Last Analy_Component Code(UK)[7 - Component 7]		RD_ONLY	
3024	INT	Last Analy_Component Code(UK)[8 - Component 8]		RD_ONLY	
3025	INT	Last Analy_Component Code(UK)[9 - Component 9]		RD_ONLY	
3026	INT	Last Analy_Component Code(UK)[10 - Component 10]		RD_ONLY	
3027	INT	Last Analy_Component Code(UK)[11 - Component 11]		RD_ONLY	
3028	INT	Last Analy_Component Code(UK)[12 - Component 12]		RD_ONLY	
3029	INT	Last Analy_Component Code(UK)[13 - Component 13]		RD_ONLY	
3030	INT	Last Analy_Component Code(UK)[14 - Component 14]		RD_ONLY	
3031	INT	Last Analy_Component Code(UK)[15 - Component 15]		RD_ONLY	
3032	INT	Last Analy_Component Code(UK)[16 - Component 16]		RD_ONLY	
3033	INT	Run Time(1/30th Sec)		RD_ONLY	
3034	INT	Last Analy_Stream Number		RD_ONLY	
3035	INT	Last Analy_CDT Stream Mask		RD_ONLY	
3036	INT	Current Time(time_t)		RD_WR	MM
3037	INT	Current Time(time_t)		RD_WR	DD
3038	INT	Current Time(time_t)		RD_WR	YY
3039	INT	Current Time(time_t)		RD_WR	hh
3040	INT	Current Time(time_t)		RD_WR	mm
3041	INT	Last Analy_Start Time		RD_ONLY	MM
3042	INT	Last Analy_Start Time		RD_ONLY	DD

Register #	Data type	Variable	Record #	Access	Format
3043	INT	Last Analy_Start Time		RD_ONLY	YY
3044	INT	Last Analy_Start Time		RD_ONLY	hh
3045	INT	Last Analy_Start Time		RD_ONLY	mm
3046	Bitmap(INT)	0:Unused, 1:Unused, 2:System Alarm_Alarm On - Last Analysis_Analog Input 1 Low Signal, 3:System Alarm_Alarm On - Last Analysis_Analog Input 1 High Signal, 4:System Alarm_Alarm On - Last Analysis_Analog Input 2 Low Signal, 5:System Alarm_Alarm On - Last Analysis_Analog Input 2 High Signal, 6:Unused, 7:Unused, 8:System Alarm_Alarm On - Last Analysis_Analog Output 1 Low Signal, 9:System Alarm_Alarm On - Last Analysis_Analog Output 1 High Signal, 10:System Alarm_Alarm On - Last Analysis_Analog Output 2 Low Signal, 11:System Alarm_Alarm On - Last Analysis_Analog Output 2 High Signal, 12:System Alarm_Alarm On - Last Analysis_Analog Output 3 Low Signal, 13:System Alarm_Alarm On - Last Analysis_Analog Output 3 High Signal, 14:Analyzer Failure, 15:Unused		RD_ONLY	
3047	Bitmap(INT)	0:System Alarm_Alarm On - Current Analysis_Power Failure, 1:Calibration Failed, 2:Preamp Failure, 3:Unused, 4:Unused, 5:Unused, 6:Unused, 7:Unused, 8:Unused, 9:Unused, 10:Unused, 11:Unused, 12:Unused, 13:Unused, 14:Unused, 15:Unused		RD_ONLY	
3048	INT	1 - Stream 1_Active Low Limit Alarms		RD_ONLY	
3049	INT	1 - Stream 1_Active High Limit Alarms		RD_ONLY	
3050	INT	2 - Stream 2_Active Low Limit Alarms		RD_ONLY	
3051	INT	2 - Stream 2_Active High Limit Alarms		RD_ONLY	
3052	INT	3 - Stream 3_Active Low Limit Alarms		RD_ONLY	
3053	INT	3 - Stream 3_Active High Limit Alarms		RD_ONLY	
3054	INT	4 - Stream 4_Active Low Limit Alarms		RD_ONLY	
3055	INT	4 - Stream 4_Active High Limit Alarms		RD_ONLY	
3056	INT	5 - Stream 5_Active Low Limit Alarms		RD_ONLY	
3057	INT	5 - Stream 5_Active High Limit Alarms		RD_ONLY	
3058	INT	New Data Flag		RD_WR	
3059	INT	Analy/Calib Flag		RD_ONLY	
3060	INT	Daily Avg Updated		RD_WR	
3061	INT	Last Stream		RD_ONLY	
3062	INT	2 - Stream 2_New Data Available		RD_WR	
3063	INT	3 - Stream 3_New Data Available		RD_WR	
3064	INT	4 - Stream 4_New Data Available		RD_WR	
3065	INT	5 - Stream 5_New Data Available		RD_WR	

Register #	Data type	Variable	Record #	Access	Format
3066	INT	Component Data 1_Reference Code[1]		RD_ONLY	
3067	INT	Component Data 1_Reference Code[2]		RD_ONLY	
3068	INT	Component Data 1_Reference Code[3]		RD_ONLY	
3069	INT	Component Data 1_Reference Code[4]		RD_ONLY	
3070	INT	Component Data 1_Reference Code[5]		RD_ONLY	
3071	INT	Component Data 1_Reference Code[6]		RD_ONLY	
3072	INT	Component Data 1_Reference Code[7]		RD_ONLY	
3073	INT	Component Data 1_Reference Code[8]		RD_ONLY	
3074	INT	Component Data 1_Reference Code[9]		RD_ONLY	
3075	INT	Component Data 1_Reference Code[10]		RD_ONLY	
3076	INT	Component Data 1_Reference Code[11]		RD_ONLY	
3077	INT	Component Data 1_Reference Code[12]		RD_ONLY	
3078	INT	Component Data 1_Reference Code[13]		RD_ONLY	
3079	INT	Component Data 1_Reference Code[14]		RD_ONLY	
3080	INT	Component Data 1_Reference Code[15]		RD_ONLY	
3081	INT	Component Data 1_Reference Code[16]		RD_ONLY	
3082	INT	Component Data 2_Reference Code[1]		RD_ONLY	
3083	INT	Component Data 2_Reference Code[2]		RD_ONLY	
3084	INT	Component Data 2_Reference Code[3]		RD_ONLY	
3085	INT	Component Data 2_Reference Code[4]		RD_ONLY	
3086	INT	Component Data 2_Reference Code[5]		RD_ONLY	
3087	INT	Component Data 2_Reference Code[6]		RD_ONLY	
3088	INT	Component Data 2_Reference Code[7]		RD_ONLY	
3089	INT	Component Data 2_Reference Code[8]		RD_ONLY	
3090	INT	Component Data 2_Reference Code[9]		RD_ONLY	
3091	INT	Component Data 2_Reference Code[10]		RD_ONLY	
3092	INT	Component Data 2_Reference Code[11]		RD_ONLY	
3093	INT	Component Data 2_Reference Code[12]		RD_ONLY	
3094	INT	Component Data 2_Reference Code[13]		RD_ONLY	
3095	INT	Component Data 2_Reference Code[14]		RD_ONLY	
3096	INT	Component Data 2_Reference Code[15]		RD_ONLY	
3097	INT	Component Data 2_Reference Code[16]		RD_ONLY	
3098	INT	Calculations Configuration_Primary CV Units		RD_ONLY	
3099	INT	Last Run Data Valid 1		RD_WR	

Register #	Data type	Variable	Record #	Access	Format
3100	INT	Last Run Data Valid 2		RD_WR	
3101	INT	Last Run Data Valid 3		RD_WR	
3102	INT	Last Run Data Valid 4		RD_WR	
3103	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3104	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3105	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3106	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3107	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	
3108	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3109	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3110	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3111	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3112	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3113	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	
3114	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3115	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3116	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3117	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3118	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3119	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3120	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3121	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3122	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
3123	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3124	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3125	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3126	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3127	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	
3128	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3129	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3130	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3131	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3132	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3133	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
3134	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3135	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3136	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3137	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3138	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3139	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3140	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3141	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3142	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
3143	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3144	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3145	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3146	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3147	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	
3148	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3149	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3150	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3151	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3152	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3153	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	
3154	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3155	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3156	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3157	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3158	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3159	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3160	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3161	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3162	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
3163	INT	Last FCalib_New RF Update Flag[1 - Component 1]		RD_ONLY	
3164	INT	Last FCalib_New RF Update Flag[2 - Component 2]		RD_ONLY	
3165	INT	Last FCalib_New RF Update Flag[3 - Component 3]		RD_ONLY	
3166	INT	Last FCalib_New RF Update Flag[4 - Component 4]		RD_ONLY	
3167	INT	Last FCalib_New RF Update Flag[5 - Component 5]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
3168	INT	Last FCalib_New RF Update Flag[6 - Component 6]		RD_ONLY	
3169	INT	Last FCalib_New RF Update Flag[7 - Component 7]		RD_ONLY	
3170	INT	Last FCalib_New RF Update Flag[8 - Component 8]		RD_ONLY	
3171	INT	Last FCalib_New RF Update Flag[9 - Component 9]		RD_ONLY	
3172	INT	Last FCalib_New RF Update Flag[10 - Component 10]		RD_ONLY	
3173	INT	Last FCalib_New RF Update Flag[11 - Component 11]		RD_ONLY	
3174	INT	Last FCalib_New RF Update Flag[12 - Component 12]		RD_ONLY	
3175	INT	Last FCalib_New RF Update Flag[13 - Component 13]		RD_ONLY	
3176	INT	Last FCalib_New RF Update Flag[14 - Component 14]		RD_ONLY	
3177	INT	Last FCalib_New RF Update Flag[15 - Component 15]		RD_ONLY	
3178	INT	Last FCalib_New RF Update Flag[16 - Component 16]		RD_ONLY	
3179	INT	Last FCalib_New RF Update Flag[17 - Component 17]		RD_ONLY	
3180	INT	Last FCalib_New RF Update Flag[18 - Component 18]		RD_ONLY	
3181	INT	Last FCalib_New RF Update Flag[19 - Component 19]		RD_ONLY	
3182	INT	Last FCalib_New RF Update Flag[20 - Component 20]		RD_ONLY	
5001	LONG	Last Analy_Cycle Time (1/30th sec)		RD_ONLY	
5002	LONG	Last Calib_Calib Time(1/30th sec)		RD_ONLY	
7001	FLOAT	Last Analy_Mole %[1 - Component 1]		RD_ONLY	
7002	FLOAT	Last Analy_Mole %[2 - Component 2]		RD_ONLY	
7003	FLOAT	Last Analy_Mole %[3 - Component 3]		RD_ONLY	
7004	FLOAT	Last Analy_Mole %[4 - Component 4]		RD_ONLY	
7005	FLOAT	Last Analy_Mole %[5 - Component 5]		RD_ONLY	
7006	FLOAT	Last Analy_Mole %[6 - Component 6]		RD_ONLY	
7007	FLOAT	Last Analy_Mole %[7 - Component 7]		RD_ONLY	
7008	FLOAT	Last Analy_Mole %[8 - Component 8]		RD_ONLY	
7009	FLOAT	Last Analy_Mole %[9 - Component 9]		RD_ONLY	
7010	FLOAT	Last Analy_Mole %[10 - Component 10]		RD_ONLY	
7011	FLOAT	Last Analy_Mole %[11 - Component 11]		RD_ONLY	
7012	FLOAT	Last Analy_Mole %[12 - Component 12]		RD_ONLY	
7013	FLOAT	Last Analy_Mole %[13 - Component 13]		RD_ONLY	
7014	FLOAT	Last Analy_Mole %[14 - Component 14]		RD_ONLY	
7015	FLOAT	Last Analy_Mole %[15 - Component 15]		RD_ONLY	
7016	FLOAT	Last Analy_Mole %[16 - Component 16]		RD_ONLY	
7017	FLOAT	Last Analy_Weight %[1 - Component 1]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7018	FLOAT	Last Analy_Weight %[2 - Component 2]		RD_ONLY	
7019	FLOAT	Last Analy_Weight %[3 - Component 3]		RD_ONLY	
7020	FLOAT	Last Analy_Weight %[4 - Component 4]		RD_ONLY	
7021	FLOAT	Last Analy_Weight %[5 - Component 5]		RD_ONLY	
7022	FLOAT	Last Analy_Weight %[6 - Component 6]		RD_ONLY	
7023	FLOAT	Last Analy_Weight %[7 - Component 7]		RD_ONLY	
7024	FLOAT	Last Analy_Weight %[8 - Component 8]		RD_ONLY	
7025	FLOAT	Last Analy_Weight %[9 - Component 9]		RD_ONLY	
7026	FLOAT	Last Analy_Weight %[10 - Component 10]		RD_ONLY	
7027	FLOAT	Last Analy_Weight %[11 - Component 11]		RD_ONLY	
7028	FLOAT	Last Analy_Weight %[12 - Component 12]		RD_ONLY	
7029	FLOAT	Last Analy_Weight %[13 - Component 13]		RD_ONLY	
7030	FLOAT	Last Analy_Weight %[14 - Component 14]		RD_ONLY	
7031	FLOAT	Last Analy_Weight %[15 - Component 15]		RD_ONLY	
7032	FLOAT	Last Analy_Weight %[16 - Component 16]		RD_ONLY	
7033	FLOAT	Last Analy_ISO CV Sup Dry - Pri		RD_ONLY	
7034	FLOAT	Last Analy_ISO CV Sup Sat - Pri		RD_ONLY	
7035	FLOAT	Last Analy_ISO Real Rel Den Gas - Pri		RD_ONLY	
7036	FLOAT	Last Analy_ISO Z Factor - Pri		RD_ONLY	
7037	FLOAT	Last Analy_ISO Wobbe Index Sup - Pri		RD_ONLY	
7038	FLOAT	Last Analy_Total Unnormalized Conc		RD_ONLY	
7039	FLOAT	Last Analy_ISO Avg Molar Mass		RD_ONLY	
7040	FLOAT	Calc Result[1 - User Cal 1]		RD_ONLY	
7041	FLOAT	Calc Result[2 - User Cal 2]		RD_ONLY	
7042	FLOAT	Calc Result[3 - User Cal 3]		RD_ONLY	
7043	FLOAT	Calc Result[4 - User Cal 4]		RD_ONLY	
7044	FLOAT	Calc Result[5 - User Cal 5]		RD_ONLY	
7045	FLOAT	Unused		RD_ONLY	
7046	FLOAT	Last Analy_ISO CV Sup Dry - Sec		RD_ONLY	
7047	FLOAT	Last Analy_ISO CV Sup Sat - Sec		RD_ONLY	
7048	FLOAT	Last Analy_ISO CV Inf Dry - Sec		RD_ONLY	
7049	FLOAT	Last Analy_ISO CV Inf Sat - Sec		RD_ONLY	
7050	FLOAT	Last Analy_ISO Z Factor - Sec		RD_ONLY	
7051	FLOAT	Last Analy_ISO Real Rel Den Gas - Sec		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7052	FLOAT	Last Analy_ISO Gas Den kg/m3 - Sec		RD_ONLY	
7053	FLOAT	Last Analy_ISO Wobbe Index Sup - Sec		RD_ONLY	
7054	FLOAT	Last Analy_ISO Wobbe Index Inf - Sec		RD_ONLY	
7055	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7056	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7057	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7058	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7059	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7060	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7061	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7062	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7063	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7064	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7065	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7066	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7067	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7068	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7069	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7070	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7071	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7072	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7073	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7074	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7075	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7076	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7077	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7078	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7079	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7080	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7081	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7082	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7083	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7084	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7085	FLOAT	Current Value[1 - Analog Input 1]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7086	FLOAT	Current Value[2 - Analog Input 2]		RD_ONLY	
7087	FLOAT	Last Analy_ISO CV Inf Dry - Pri		RD_ONLY	
7088	FLOAT	Last Analy_ISO CV Inf Sat - Pri		RD_ONLY	
7089	FLOAT	Last Analy_ISO Wobbe Index Inf - Pri		RD_ONLY	
7090	FLOAT	Last Analy_ISO Gas Den kg/m3 - Pri		RD_ONLY	
7091	FLOAT	Last FCalib_Total Calibration Runs		RD_ONLY	
7092	FLOAT	Last FCalib_Total Average Runs		RD_ONLY	
7093	FLOAT	Auto Calibration Start Time		RD_ONLY	hhmm
7094	FLOAT	GC Control_Stream Sequence Select		RD_WR	
7095	FLOAT	Last Analy_Response Factor[1 - Component 1]		RD_ONLY	
7096	FLOAT	Last Analy_Response Factor[2 - Component 2]		RD_ONLY	
7097	FLOAT	Last Analy_Response Factor[3 - Component 3]		RD_ONLY	
7098	FLOAT	Last Analy_Response Factor[4 - Component 4]		RD_ONLY	
7099	FLOAT	Last Analy_Response Factor[5 - Component 5]		RD_ONLY	
7100	FLOAT	Last Analy_Response Factor[6 - Component 6]		RD_ONLY	
7101	FLOAT	Last Analy_Response Factor[7 - Component 7]		RD_ONLY	
7102	FLOAT	Last Analy_Response Factor[8 - Component 8]		RD_ONLY	
7103	FLOAT	Last Analy_Response Factor[9 - Component 9]		RD_ONLY	
7104	FLOAT	Last Analy_Response Factor[10 - Component 10]		RD_ONLY	
7105	FLOAT	Last Analy_Response Factor[11 - Component 11]		RD_ONLY	
7106	FLOAT	Last Analy_Response Factor[12 - Component 12]		RD_ONLY	
7107	FLOAT	Last Analy_Response Factor[13 - Component 13]		RD_ONLY	
7108	FLOAT	Last Analy_Response Factor[14 - Component 14]		RD_ONLY	
7109	FLOAT	Last Analy_Response Factor[15 - Component 15]		RD_ONLY	
7110	FLOAT	Last Analy_Response Factor[16 - Component 16]		RD_ONLY	
7111	FLOAT	Last FCalib_ISO CV Sup Dry - Pri		RD_ONLY	
7112	FLOAT	Last FCalib_ISO CV Sup Sat - Pri		RD_ONLY	
7113	FLOAT	Last FCalib_ISO CV Inf Dry - Pri		RD_ONLY	
7114	FLOAT	Last FCalib_ISO CV Inf Sat - Pri		RD_ONLY	
7115	FLOAT	Last FCalib_ISO Z Factor - Pri		RD_ONLY	
7116	FLOAT	Last FCalib_ISO Real Rel Den Gas - Pri		RD_ONLY	
7117	FLOAT	Last FCalib_ISO Gas Den kg/m3 - Pri		RD_ONLY	
7118	FLOAT	Last FCalib_ISO Wobbe Index Sup - Pri		RD_ONLY	
7119	FLOAT	Last FCalib_ISO Wobbe Index Inf - Pri		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7120	FLOAT	Last FCalib_ISO Avg Molar Mass		RD_ONLY	
7121	FLOAT	Last FCalib_Total Unnormalized Conc		RD_ONLY	
7122	FLOAT	Last Calib_Stream Number		RD_ONLY	
7123	FLOAT	Last Analy_GS(M)R Incomp Combustion Factor		RD_ONLY	
7124	FLOAT	Last Analy_GS(M)R Soot Index		RD_ONLY	
7125	FLOAT	Last Analy_Ratio of Latent Heat Cap		RD_ONLY	
7126	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7127	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7128	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7129	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7130	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7131	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7132	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7133	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7134	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7135	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7136	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7137	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7138	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7139	FLOAT	Avg[14 - Average 14]		RD_ONLY	
7140	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7141	FLOAT	Avg[16 - Average 16]		RD_ONLY	
7142	FLOAT	Avg[17 - Average 17]		RD_ONLY	
7143	FLOAT	Avg[18 - Average 18]		RD_ONLY	
7144	FLOAT	Avg[19 - Average 19]		RD_ONLY	
7145	FLOAT	Avg[20 - Average 20]		RD_ONLY	
7146	FLOAT	Avg[21 - Average 21]		RD_ONLY	
7147	FLOAT	Avg[22 - Average 22]		RD_ONLY	
7148	FLOAT	Avg[23 - Average 23]		RD_ONLY	
7149	FLOAT	Avg[24 - Average 24]		RD_ONLY	
7150	FLOAT	Avg[25 - Average 25]		RD_ONLY	
7151	FLOAT	Avg[26 - Average 26]		RD_ONLY	
7152	FLOAT	Avg[27 - Average 27]		RD_ONLY	
7153	FLOAT	Avg[28 - Average 28]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7154	FLOAT	Avg[29 - Average 29]		RD_ONLY	
7155	FLOAT	Avg[30 - Average 30]		RD_ONLY	
7156	FLOAT	Avg[31 - Average 31]		RD_ONLY	
7157	FLOAT	Avg[32 - Average 32]		RD_ONLY	
7158	FLOAT	Avg[33 - Average 33]		RD_ONLY	
7159	FLOAT	Avg[34 - Average 34]		RD_ONLY	
7160	FLOAT	Avg[35 - Average 35]		RD_ONLY	
7161	FLOAT	Avg[36 - Average 36]		RD_ONLY	
7162	FLOAT	Max[1 - Average 1]		RD_ONLY	
7163	FLOAT	Max[2 - Average 2]		RD_ONLY	
7164	FLOAT	Max[3 - Average 3]		RD_ONLY	
7165	FLOAT	Max[4 - Average 4]		RD_ONLY	
7166	FLOAT	Max[5 - Average 5]		RD_ONLY	
7167	FLOAT	Max[6 - Average 6]		RD_ONLY	
7168	FLOAT	Max[7 - Average 7]		RD_ONLY	
7169	FLOAT	Max[8 - Average 8]		RD_ONLY	
7170	FLOAT	Max[9 - Average 9]		RD_ONLY	
7171	FLOAT	Max[10 - Average 10]		RD_ONLY	
7172	FLOAT	Max[11 - Average 11]		RD_ONLY	
7173	FLOAT	Max[12 - Average 12]		RD_ONLY	
7174	FLOAT	Max[13 - Average 13]		RD_ONLY	
7175	FLOAT	Max[14 - Average 14]		RD_ONLY	
7176	FLOAT	Max[15 - Average 15]		RD_ONLY	
7177	FLOAT	Max[16 - Average 16]		RD_ONLY	
7178	FLOAT	Max[17 - Average 17]		RD_ONLY	
7179	FLOAT	Max[18 - Average 18]		RD_ONLY	
7180	FLOAT	Max[19 - Average 19]		RD_ONLY	
7181	FLOAT	Max[20 - Average 20]		RD_ONLY	
7182	FLOAT	Max[21 - Average 21]		RD_ONLY	
7183	FLOAT	Max[22 - Average 22]		RD_ONLY	
7184	FLOAT	Max[23 - Average 23]		RD_ONLY	
7185	FLOAT	Max[24 - Average 24]		RD_ONLY	
7186	FLOAT	Max[25 - Average 25]		RD_ONLY	
7187	FLOAT	Max[26 - Average 26]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7188	FLOAT	Max[27 - Average 27]		RD_ONLY	
7189	FLOAT	Max[28 - Average 28]		RD_ONLY	
7190	FLOAT	Max[29 - Average 29]		RD_ONLY	
7191	FLOAT	Max[30 - Average 30]		RD_ONLY	
7192	FLOAT	Max[31 - Average 31]		RD_ONLY	
7193	FLOAT	Max[32 - Average 32]		RD_ONLY	
7194	FLOAT	Max[33 - Average 33]		RD_ONLY	
7195	FLOAT	Max[34 - Average 34]		RD_ONLY	
7196	FLOAT	Max[35 - Average 35]		RD_ONLY	
7197	FLOAT	Max[36 - Average 36]		RD_ONLY	
7198	FLOAT	Min[1 - Average 1]		RD_ONLY	
7199	FLOAT	Min[2 - Average 2]		RD_ONLY	
7200	FLOAT	Min[3 - Average 3]		RD_ONLY	
7201	FLOAT	Min[4 - Average 4]		RD_ONLY	
7202	FLOAT	Min[5 - Average 5]		RD_ONLY	
7203	FLOAT	Min[6 - Average 6]		RD_ONLY	
7204	FLOAT	Min[7 - Average 7]		RD_ONLY	
7205	FLOAT	Min[8 - Average 8]		RD_ONLY	
7206	FLOAT	Min[9 - Average 9]		RD_ONLY	
7207	FLOAT	Min[10 - Average 10]		RD_ONLY	
7208	FLOAT	Min[11 - Average 11]		RD_ONLY	
7209	FLOAT	Min[12 - Average 12]		RD_ONLY	
7210	FLOAT	Min[13 - Average 13]		RD_ONLY	
7211	FLOAT	Min[14 - Average 14]		RD_ONLY	
7212	FLOAT	Min[15 - Average 15]		RD_ONLY	
7213	FLOAT	Min[16 - Average 16]		RD_ONLY	
7214	FLOAT	Min[17 - Average 17]		RD_ONLY	
7215	FLOAT	Min[18 - Average 18]		RD_ONLY	
7216	FLOAT	Min[19 - Average 19]		RD_ONLY	
7217	FLOAT	Min[20 - Average 20]		RD_ONLY	
7218	FLOAT	Min[21 - Average 21]		RD_ONLY	
7219	FLOAT	Min[22 - Average 22]		RD_ONLY	
7220	FLOAT	Min[23 - Average 23]		RD_ONLY	
7221	FLOAT	Min[24 - Average 24]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7222	FLOAT	Min[25 - Average 25]		RD_ONLY	
7223	FLOAT	Min[26 - Average 26]		RD_ONLY	
7224	FLOAT	Min[27 - Average 27]		RD_ONLY	
7225	FLOAT	Min[28 - Average 28]		RD_ONLY	
7226	FLOAT	Min[29 - Average 29]		RD_ONLY	
7227	FLOAT	Min[30 - Average 30]		RD_ONLY	
7228	FLOAT	Min[31 - Average 31]		RD_ONLY	
7229	FLOAT	Min[32 - Average 32]		RD_ONLY	
7230	FLOAT	Min[33 - Average 33]		RD_ONLY	
7231	FLOAT	Min[34 - Average 34]		RD_ONLY	
7232	FLOAT	Min[35 - Average 35]		RD_ONLY	
7233	FLOAT	Min[36 - Average 36]		RD_ONLY	
7234	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7235	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7236	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7237	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7238	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7239	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7240	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7241	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7242	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7243	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7244	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7245	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7246	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7247	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7248	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7249	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
7250	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
7251	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
7252	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
7253	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
7254	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
7255	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7256	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
7257	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
7258	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
7259	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	
7260	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
7261	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
7262	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
7263	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
7264	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
7265	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
7266	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	
7267	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
7268	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
7269	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
7270	FLOAT	Archive_Max[1 - Average 1]	1	RD_ONLY	
7271	FLOAT	Archive_Max[2 - Average 2]	1	RD_ONLY	
7272	FLOAT	Archive_Max[3 - Average 3]	1	RD_ONLY	
7273	FLOAT	Archive_Max[4 - Average 4]	1	RD_ONLY	
7274	FLOAT	Archive_Max[5 - Average 5]	1	RD_ONLY	
7275	FLOAT	Archive_Max[6 - Average 6]	1	RD_ONLY	
7276	FLOAT	Archive_Max[7 - Average 7]	1	RD_ONLY	
7277	FLOAT	Archive_Max[8 - Average 8]	1	RD_ONLY	
7278	FLOAT	Archive_Max[9 - Average 9]	1	RD_ONLY	
7279	FLOAT	Archive_Max[10 - Average 10]	1	RD_ONLY	
7280	FLOAT	Archive_Max[11 - Average 11]	1	RD_ONLY	
7281	FLOAT	Archive_Max[12 - Average 12]	1	RD_ONLY	
7282	FLOAT	Archive_Max[13 - Average 13]	1	RD_ONLY	
7283	FLOAT	Archive_Max[14 - Average 14]	1	RD_ONLY	
7284	FLOAT	Archive_Max[15 - Average 15]	1	RD_ONLY	
7285	FLOAT	Archive_Max[16 - Average 16]	1	RD_ONLY	
7286	FLOAT	Archive_Max[17 - Average 17]	1	RD_ONLY	
7287	FLOAT	Archive_Max[18 - Average 18]	1	RD_ONLY	
7288	FLOAT	Archive_Max[19 - Average 19]	1	RD_ONLY	
7289	FLOAT	Archive_Max[20 - Average 20]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7290	FLOAT	Archive_Max[21 - Average 21]	1	RD_ONLY	
7291	FLOAT	Archive_Max[22 - Average 22]	1	RD_ONLY	
7292	FLOAT	Archive_Max[23 - Average 23]	1	RD_ONLY	
7293	FLOAT	Archive_Max[24 - Average 24]	1	RD_ONLY	
7294	FLOAT	Archive_Max[25 - Average 25]	1	RD_ONLY	
7295	FLOAT	Archive_Max[26 - Average 26]	1	RD_ONLY	
7296	FLOAT	Archive_Max[27 - Average 27]	1	RD_ONLY	
7297	FLOAT	Archive_Max[28 - Average 28]	1	RD_ONLY	
7298	FLOAT	Archive_Max[29 - Average 29]	1	RD_ONLY	
7299	FLOAT	Archive_Max[30 - Average 30]	1	RD_ONLY	
7300	FLOAT	Archive_Max[31 - Average 31]	1	RD_ONLY	
7301	FLOAT	Archive_Max[32 - Average 32]	1	RD_ONLY	
7302	FLOAT	Archive_Max[33 - Average 33]	1	RD_ONLY	
7303	FLOAT	Archive_Max[34 - Average 34]	1	RD_ONLY	
7304	FLOAT	Archive_Max[35 - Average 35]	1	RD_ONLY	
7305	FLOAT	Archive_Max[36 - Average 36]	1	RD_ONLY	
7306	FLOAT	Archive_Min[1 - Average 1]	1	RD_ONLY	
7307	FLOAT	Archive_Min[2 - Average 2]	1	RD_ONLY	
7308	FLOAT	Archive_Min[3 - Average 3]	1	RD_ONLY	
7309	FLOAT	Archive_Min[4 - Average 4]	1	RD_ONLY	
7310	FLOAT	Archive_Min[5 - Average 5]	1	RD_ONLY	
7311	FLOAT	Archive_Min[6 - Average 6]	1	RD_ONLY	
7312	FLOAT	Archive_Min[7 - Average 7]	1	RD_ONLY	
7313	FLOAT	Archive_Min[8 - Average 8]	1	RD_ONLY	
7314	FLOAT	Archive_Min[9 - Average 9]	1	RD_ONLY	
7315	FLOAT	Archive_Min[10 - Average 10]	1	RD_ONLY	
7316	FLOAT	Archive_Min[11 - Average 11]	1	RD_ONLY	
7317	FLOAT	Archive_Min[12 - Average 12]	1	RD_ONLY	
7318	FLOAT	Archive_Min[13 - Average 13]	1	RD_ONLY	
7319	FLOAT	Archive_Min[14 - Average 14]	1	RD_ONLY	
7320	FLOAT	Archive_Min[15 - Average 15]	1	RD_ONLY	
7321	FLOAT	Archive_Min[16 - Average 16]	1	RD_ONLY	
7322	FLOAT	Archive_Min[17 - Average 17]	1	RD_ONLY	
7323	FLOAT	Archive_Min[18 - Average 18]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7324	FLOAT	Archive_Min[19 - Average 19]	1	RD_ONLY	
7325	FLOAT	Archive_Min[20 - Average 20]	1	RD_ONLY	
7326	FLOAT	Archive_Min[21 - Average 21]	1	RD_ONLY	
7327	FLOAT	Archive_Min[22 - Average 22]	1	RD_ONLY	
7328	FLOAT	Archive_Min[23 - Average 23]	1	RD_ONLY	
7329	FLOAT	Archive_Min[24 - Average 24]	1	RD_ONLY	
7330	FLOAT	Archive_Min[25 - Average 25]	1	RD_ONLY	
7331	FLOAT	Archive_Min[26 - Average 26]	1	RD_ONLY	
7332	FLOAT	Archive_Min[27 - Average 27]	1	RD_ONLY	
7333	FLOAT	Archive_Min[28 - Average 28]	1	RD_ONLY	
7334	FLOAT	Archive_Min[29 - Average 29]	1	RD_ONLY	
7335	FLOAT	Archive_Min[30 - Average 30]	1	RD_ONLY	
7336	FLOAT	Archive_Min[31 - Average 31]	1	RD_ONLY	
7337	FLOAT	Archive_Min[32 - Average 32]	1	RD_ONLY	
7338	FLOAT	Archive_Min[33 - Average 33]	1	RD_ONLY	
7339	FLOAT	Archive_Min[34 - Average 34]	1	RD_ONLY	
7340	FLOAT	Archive_Min[35 - Average 35]	1	RD_ONLY	
7341	FLOAT	Archive_Min[36 - Average 36]	1	RD_ONLY	
7342	FLOAT	Archive_Avg[1 - Average 1]	2	RD_ONLY	
7343	FLOAT	Archive_Avg[2 - Average 2]	2	RD_ONLY	
7344	FLOAT	Archive_Avg[3 - Average 3]	2	RD_ONLY	
7345	FLOAT	Archive_Avg[4 - Average 4]	2	RD_ONLY	
7346	FLOAT	Archive_Avg[5 - Average 5]	2	RD_ONLY	
7347	FLOAT	Archive_Avg[6 - Average 6]	2	RD_ONLY	
7348	FLOAT	Archive_Avg[7 - Average 7]	2	RD_ONLY	
7349	FLOAT	Archive_Avg[8 - Average 8]	2	RD_ONLY	
7350	FLOAT	Archive_Avg[9 - Average 9]	2	RD_ONLY	
7351	FLOAT	Archive_Avg[10 - Average 10]	2	RD_ONLY	
7352	FLOAT	Archive_Avg[11 - Average 11]	2	RD_ONLY	
7353	FLOAT	Archive_Avg[12 - Average 12]	2	RD_ONLY	
7354	FLOAT	Archive_Avg[13 - Average 13]	2	RD_ONLY	
7355	FLOAT	Archive_Avg[14 - Average 14]	2	RD_ONLY	
7356	FLOAT	Archive_Avg[15 - Average 15]	2	RD_ONLY	
7357	FLOAT	Archive_Avg[16 - Average 16]	2	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7358	FLOAT	Archive_Avg[17 - Average 17]	2	RD_ONLY	
7359	FLOAT	Archive_Avg[18 - Average 18]	2	RD_ONLY	
7360	FLOAT	Archive_Avg[19 - Average 19]	2	RD_ONLY	
7361	FLOAT	Archive_Avg[20 - Average 20]	2	RD_ONLY	
7362	FLOAT	Archive_Avg[21 - Average 21]	2	RD_ONLY	
7363	FLOAT	Archive_Avg[22 - Average 22]	2	RD_ONLY	
7364	FLOAT	Archive_Avg[23 - Average 23]	2	RD_ONLY	
7365	FLOAT	Archive_Avg[24 - Average 24]	2	RD_ONLY	
7366	FLOAT	Archive_Avg[25 - Average 25]	2	RD_ONLY	
7367	FLOAT	Archive_Avg[26 - Average 26]	2	RD_ONLY	
7368	FLOAT	Archive_Avg[27 - Average 27]	2	RD_ONLY	
7369	FLOAT	Archive_Avg[28 - Average 28]	2	RD_ONLY	
7370	FLOAT	Archive_Avg[29 - Average 29]	2	RD_ONLY	
7371	FLOAT	Archive_Avg[30 - Average 30]	2	RD_ONLY	
7372	FLOAT	Archive_Avg[31 - Average 31]	2	RD_ONLY	
7373	FLOAT	Archive_Avg[32 - Average 32]	2	RD_ONLY	
7374	FLOAT	Archive_Avg[33 - Average 33]	2	RD_ONLY	
7375	FLOAT	Archive_Avg[34 - Average 34]	2	RD_ONLY	
7376	FLOAT	Archive_Avg[35 - Average 35]	2	RD_ONLY	
7377	FLOAT	Archive_Avg[36 - Average 36]	2	RD_ONLY	
7378	FLOAT	Archive_Max[1 - Average 1]	2	RD_ONLY	
7379	FLOAT	Archive_Max[2 - Average 2]	2	RD_ONLY	
7380	FLOAT	Archive_Max[3 - Average 3]	2	RD_ONLY	
7381	FLOAT	Archive_Max[4 - Average 4]	2	RD_ONLY	
7382	FLOAT	Archive_Max[5 - Average 5]	2	RD_ONLY	
7383	FLOAT	Archive_Max[6 - Average 6]	2	RD_ONLY	
7384	FLOAT	Archive_Max[7 - Average 7]	2	RD_ONLY	
7385	FLOAT	Archive_Max[8 - Average 8]	2	RD_ONLY	
7386	FLOAT	Archive_Max[9 - Average 9]	2	RD_ONLY	
7387	FLOAT	Archive_Max[10 - Average 10]	2	RD_ONLY	
7388	FLOAT	Archive_Max[11 - Average 11]	2	RD_ONLY	
7389	FLOAT	Archive_Max[12 - Average 12]	2	RD_ONLY	
7390	FLOAT	Archive_Max[13 - Average 13]	2	RD_ONLY	
7391	FLOAT	Archive_Max[14 - Average 14]	2	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7392	FLOAT	Archive_Max[15 - Average 15]	2	RD_ONLY	
7393	FLOAT	Archive_Max[16 - Average 16]	2	RD_ONLY	
7394	FLOAT	Archive_Max[17 - Average 17]	2	RD_ONLY	
7395	FLOAT	Archive_Max[18 - Average 18]	2	RD_ONLY	
7396	FLOAT	Archive_Max[19 - Average 19]	2	RD_ONLY	
7397	FLOAT	Archive_Max[20 - Average 20]	2	RD_ONLY	
7398	FLOAT	Archive_Max[21 - Average 21]	2	RD_ONLY	
7399	FLOAT	Archive_Max[22 - Average 22]	2	RD_ONLY	
7400	FLOAT	Archive_Max[23 - Average 23]	2	RD_ONLY	
7401	FLOAT	Archive_Max[24 - Average 24]	2	RD_ONLY	
7402	FLOAT	Archive_Max[25 - Average 25]	2	RD_ONLY	
7403	FLOAT	Archive_Max[26 - Average 26]	2	RD_ONLY	
7404	FLOAT	Archive_Max[27 - Average 27]	2	RD_ONLY	
7405	FLOAT	Archive_Max[28 - Average 28]	2	RD_ONLY	
7406	FLOAT	Archive_Max[29 - Average 29]	2	RD_ONLY	
7407	FLOAT	Archive_Max[30 - Average 30]	2	RD_ONLY	
7408	FLOAT	Archive_Max[31 - Average 31]	2	RD_ONLY	
7409	FLOAT	Archive_Max[32 - Average 32]	2	RD_ONLY	
7410	FLOAT	Archive_Max[33 - Average 33]	2	RD_ONLY	
7411	FLOAT	Archive_Max[34 - Average 34]	2	RD_ONLY	
7412	FLOAT	Archive_Max[35 - Average 35]	2	RD_ONLY	
7413	FLOAT	Archive_Max[36 - Average 36]	2	RD_ONLY	
7414	FLOAT	Archive_Min[1 - Average 1]	2	RD_ONLY	
7415	FLOAT	Archive_Min[2 - Average 2]	2	RD_ONLY	
7416	FLOAT	Archive_Min[3 - Average 3]	2	RD_ONLY	
7417	FLOAT	Archive_Min[4 - Average 4]	2	RD_ONLY	
7418	FLOAT	Archive_Min[5 - Average 5]	2	RD_ONLY	
7419	FLOAT	Archive_Min[6 - Average 6]	2	RD_ONLY	
7420	FLOAT	Archive_Min[7 - Average 7]	2	RD_ONLY	
7421	FLOAT	Archive_Min[8 - Average 8]	2	RD_ONLY	
7422	FLOAT	Archive_Min[9 - Average 9]	2	RD_ONLY	
7423	FLOAT	Archive_Min[10 - Average 10]	2	RD_ONLY	
7424	FLOAT	Archive_Min[11 - Average 11]	2	RD_ONLY	
7425	FLOAT	Archive_Min[12 - Average 12]	2	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7426	FLOAT	Archive_Min[13 - Average 13]	2	RD_ONLY	
7427	FLOAT	Archive_Min[14 - Average 14]	2	RD_ONLY	
7428	FLOAT	Archive_Min[15 - Average 15]	2	RD_ONLY	
7429	FLOAT	Archive_Min[16 - Average 16]	2	RD_ONLY	
7430	FLOAT	Archive_Min[17 - Average 17]	2	RD_ONLY	
7431	FLOAT	Archive_Min[18 - Average 18]	2	RD_ONLY	
7432	FLOAT	Archive_Min[19 - Average 19]	2	RD_ONLY	
7433	FLOAT	Archive_Min[20 - Average 20]	2	RD_ONLY	
7434	FLOAT	Archive_Min[21 - Average 21]	2	RD_ONLY	
7435	FLOAT	Archive_Min[22 - Average 22]	2	RD_ONLY	
7436	FLOAT	Archive_Min[23 - Average 23]	2	RD_ONLY	
7437	FLOAT	Archive_Min[24 - Average 24]	2	RD_ONLY	
7438	FLOAT	Archive_Min[25 - Average 25]	2	RD_ONLY	
7439	FLOAT	Archive_Min[26 - Average 26]	2	RD_ONLY	
7440	FLOAT	Archive_Min[27 - Average 27]	2	RD_ONLY	
7441	FLOAT	Archive_Min[28 - Average 28]	2	RD_ONLY	
7442	FLOAT	Archive_Min[29 - Average 29]	2	RD_ONLY	
7443	FLOAT	Archive_Min[30 - Average 30]	2	RD_ONLY	
7444	FLOAT	Archive_Min[31 - Average 31]	2	RD_ONLY	
7445	FLOAT	Archive_Min[32 - Average 32]	2	RD_ONLY	
7446	FLOAT	Archive_Min[33 - Average 33]	2	RD_ONLY	
7447	FLOAT	Archive_Min[34 - Average 34]	2	RD_ONLY	
7448	FLOAT	Archive_Min[35 - Average 35]	2	RD_ONLY	
7449	FLOAT	Archive_Min[36 - Average 36]	2	RD_ONLY	
7450	FLOAT	Archive_Avg[1 - Average 1]	3	RD_ONLY	
7451	FLOAT	Archive_Avg[2 - Average 2]	3	RD_ONLY	
7452	FLOAT	Archive_Avg[3 - Average 3]	3	RD_ONLY	
7453	FLOAT	Archive_Avg[4 - Average 4]	3	RD_ONLY	
7454	FLOAT	Archive_Avg[5 - Average 5]	3	RD_ONLY	
7455	FLOAT	Archive_Avg[6 - Average 6]	3	RD_ONLY	
7456	FLOAT	Archive_Avg[7 - Average 7]	3	RD_ONLY	
7457	FLOAT	Archive_Avg[8 - Average 8]	3	RD_ONLY	
7458	FLOAT	Archive_Avg[9 - Average 9]	3	RD_ONLY	
7459	FLOAT	Archive_Avg[10 - Average 10]	3	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7460	FLOAT	Archive_Avg[11 - Average 11]	3	RD_ONLY	
7461	FLOAT	Archive_Avg[12 - Average 12]	3	RD_ONLY	
7462	FLOAT	Archive_Avg[13 - Average 13]	3	RD_ONLY	
7463	FLOAT	Archive_Avg[14 - Average 14]	3	RD_ONLY	
7464	FLOAT	Archive_Avg[15 - Average 15]	3	RD_ONLY	
7465	FLOAT	Archive_Avg[16 - Average 16]	3	RD_ONLY	
7466	FLOAT	Archive_Avg[17 - Average 17]	3	RD_ONLY	
7467	FLOAT	Archive_Avg[18 - Average 18]	3	RD_ONLY	
7468	FLOAT	Archive_Avg[19 - Average 19]	3	RD_ONLY	
7469	FLOAT	Archive_Avg[20 - Average 20]	3	RD_ONLY	
7470	FLOAT	Archive_Avg[21 - Average 21]	3	RD_ONLY	
7471	FLOAT	Archive_Avg[22 - Average 22]	3	RD_ONLY	
7472	FLOAT	Archive_Avg[23 - Average 23]	3	RD_ONLY	
7473	FLOAT	Archive_Avg[24 - Average 24]	3	RD_ONLY	
7474	FLOAT	Archive_Avg[25 - Average 25]	3	RD_ONLY	
7475	FLOAT	Archive_Avg[26 - Average 26]	3	RD_ONLY	
7476	FLOAT	Archive_Avg[27 - Average 27]	3	RD_ONLY	
7477	FLOAT	Archive_Avg[28 - Average 28]	3	RD_ONLY	
7478	FLOAT	Archive_Avg[29 - Average 29]	3	RD_ONLY	
7479	FLOAT	Archive_Avg[30 - Average 30]	3	RD_ONLY	
7480	FLOAT	Archive_Avg[31 - Average 31]	3	RD_ONLY	
7481	FLOAT	Archive_Avg[32 - Average 32]	3	RD_ONLY	
7482	FLOAT	Archive_Avg[33 - Average 33]	3	RD_ONLY	
7483	FLOAT	Archive_Avg[34 - Average 34]	3	RD_ONLY	
7484	FLOAT	Archive_Avg[35 - Average 35]	3	RD_ONLY	
7485	FLOAT	Archive_Avg[36 - Average 36]	3	RD_ONLY	
7486	FLOAT	Archive_Max[1 - Average 1]	3	RD_ONLY	
7487	FLOAT	Archive_Max[2 - Average 2]	3	RD_ONLY	
7488	FLOAT	Archive_Max[3 - Average 3]	3	RD_ONLY	
7489	FLOAT	Archive_Max[4 - Average 4]	3	RD_ONLY	
7490	FLOAT	Archive_Max[5 - Average 5]	3	RD_ONLY	
7491	FLOAT	Archive_Max[6 - Average 6]	3	RD_ONLY	
7492	FLOAT	Archive_Max[7 - Average 7]	3	RD_ONLY	
7493	FLOAT	Archive_Max[8 - Average 8]	3	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7494	FLOAT	Archive_Max[9 - Average 9]	3	RD_ONLY	
7495	FLOAT	Archive_Max[10 - Average 10]	3	RD_ONLY	
7496	FLOAT	Archive_Max[11 - Average 11]	3	RD_ONLY	
7497	FLOAT	Archive_Max[12 - Average 12]	3	RD_ONLY	
7498	FLOAT	Archive_Max[13 - Average 13]	3	RD_ONLY	
7499	FLOAT	Archive_Max[14 - Average 14]	3	RD_ONLY	
7500	FLOAT	Archive_Max[15 - Average 15]	3	RD_ONLY	
7501	FLOAT	Archive_Max[16 - Average 16]	3	RD_ONLY	
7502	FLOAT	Archive_Max[17 - Average 17]	3	RD_ONLY	
7503	FLOAT	Archive_Max[18 - Average 18]	3	RD_ONLY	
7504	FLOAT	Archive_Max[19 - Average 19]	3	RD_ONLY	
7505	FLOAT	Archive_Max[20 - Average 20]	3	RD_ONLY	
7506	FLOAT	Archive_Max[21 - Average 21]	3	RD_ONLY	
7507	FLOAT	Archive_Max[22 - Average 22]	3	RD_ONLY	
7508	FLOAT	Archive_Max[23 - Average 23]	3	RD_ONLY	
7509	FLOAT	Archive_Max[24 - Average 24]	3	RD_ONLY	
7510	FLOAT	Archive_Max[25 - Average 25]	3	RD_ONLY	
7511	FLOAT	Archive_Max[26 - Average 26]	3	RD_ONLY	
7512	FLOAT	Archive_Max[27 - Average 27]	3	RD_ONLY	
7513	FLOAT	Archive_Max[28 - Average 28]	3	RD_ONLY	
7514	FLOAT	Archive_Max[29 - Average 29]	3	RD_ONLY	
7515	FLOAT	Archive_Max[30 - Average 30]	3	RD_ONLY	
7516	FLOAT	Archive_Max[31 - Average 31]	3	RD_ONLY	
7517	FLOAT	Archive_Max[32 - Average 32]	3	RD_ONLY	
7518	FLOAT	Archive_Max[33 - Average 33]	3	RD_ONLY	
7519	FLOAT	Archive_Max[34 - Average 34]	3	RD_ONLY	
7520	FLOAT	Archive_Max[35 - Average 35]	3	RD_ONLY	
7521	FLOAT	Archive_Max[36 - Average 36]	3	RD_ONLY	
7522	FLOAT	Archive_Min[1 - Average 1]	3	RD_ONLY	
7523	FLOAT	Archive_Min[2 - Average 2]	3	RD_ONLY	
7524	FLOAT	Archive_Min[3 - Average 3]	3	RD_ONLY	
7525	FLOAT	Archive_Min[4 - Average 4]	3	RD_ONLY	
7526	FLOAT	Archive_Min[5 - Average 5]	3	RD_ONLY	
7527	FLOAT	Archive_Min[6 - Average 6]	3	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7528	FLOAT	Archive_Min[7 - Average 7]	3	RD_ONLY	
7529	FLOAT	Archive_Min[8 - Average 8]	3	RD_ONLY	
7530	FLOAT	Archive_Min[9 - Average 9]	3	RD_ONLY	
7531	FLOAT	Archive_Min[10 - Average 10]	3	RD_ONLY	
7532	FLOAT	Archive_Min[11 - Average 11]	3	RD_ONLY	
7533	FLOAT	Archive_Min[12 - Average 12]	3	RD_ONLY	
7534	FLOAT	Archive_Min[13 - Average 13]	3	RD_ONLY	
7535	FLOAT	Archive_Min[14 - Average 14]	3	RD_ONLY	
7536	FLOAT	Archive_Min[15 - Average 15]	3	RD_ONLY	
7537	FLOAT	Archive_Min[16 - Average 16]	3	RD_ONLY	
7538	FLOAT	Archive_Min[17 - Average 17]	3	RD_ONLY	
7539	FLOAT	Archive_Min[18 - Average 18]	3	RD_ONLY	
7540	FLOAT	Archive_Min[19 - Average 19]	3	RD_ONLY	
7541	FLOAT	Archive_Min[20 - Average 20]	3	RD_ONLY	
7542	FLOAT	Archive_Min[21 - Average 21]	3	RD_ONLY	
7543	FLOAT	Archive_Min[22 - Average 22]	3	RD_ONLY	
7544	FLOAT	Archive_Min[23 - Average 23]	3	RD_ONLY	
7545	FLOAT	Archive_Min[24 - Average 24]	3	RD_ONLY	
7546	FLOAT	Archive_Min[25 - Average 25]	3	RD_ONLY	
7547	FLOAT	Archive_Min[26 - Average 26]	3	RD_ONLY	
7548	FLOAT	Archive_Min[27 - Average 27]	3	RD_ONLY	
7549	FLOAT	Archive_Min[28 - Average 28]	3	RD_ONLY	
7550	FLOAT	Archive_Min[29 - Average 29]	3	RD_ONLY	
7551	FLOAT	Archive_Min[30 - Average 30]	3	RD_ONLY	
7552	FLOAT	Archive_Min[31 - Average 31]	3	RD_ONLY	
7553	FLOAT	Archive_Min[32 - Average 32]	3	RD_ONLY	
7554	FLOAT	Archive_Min[33 - Average 33]	3	RD_ONLY	
7555	FLOAT	Archive_Min[34 - Average 34]	3	RD_ONLY	
7556	FLOAT	Archive_Min[35 - Average 35]	3	RD_ONLY	
7557	FLOAT	Archive_Min[36 - Average 36]	3	RD_ONLY	
7558	FLOAT	Component Data 1_Multi-level Calib 'a'[1]		RD_ONLY	
7559	FLOAT	Component Data 1_Multi-level Calib 'a'[2]		RD_ONLY	
7560	FLOAT	Component Data 1_Multi-level Calib 'a'[3]		RD_ONLY	
7561	FLOAT	Component Data 1_Multi-level Calib 'a'[4]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7562	FLOAT	Component Data 1_Multi-level Calib 'a'[5]		RD_ONLY	
7563	FLOAT	Component Data 1_Multi-level Calib 'a'[6]		RD_ONLY	
7564	FLOAT	Component Data 1_Multi-level Calib 'a'[7]		RD_ONLY	
7565	FLOAT	Component Data 1_Multi-level Calib 'a'[8]		RD_ONLY	
7566	FLOAT	Component Data 1_Multi-level Calib 'a'[9]		RD_ONLY	
7567	FLOAT	Component Data 1_Multi-level Calib 'a'[10]		RD_ONLY	
7568	FLOAT	Component Data 1_Multi-level Calib 'a'[11]		RD_ONLY	
7569	FLOAT	Component Data 1_Multi-level Calib 'a'[12]		RD_ONLY	
7570	FLOAT	Component Data 1_Multi-level Calib 'a'[13]		RD_ONLY	
7571	FLOAT	Component Data 1_Multi-level Calib 'a'[14]		RD_ONLY	
7572	FLOAT	Component Data 1_Multi-level Calib 'a'[15]		RD_ONLY	
7573	FLOAT	Component Data 1_Multi-level Calib 'a'[16]		RD_ONLY	
7574	FLOAT	Component Data 1_Multi-level Calib 'b'[1]		RD_ONLY	
7575	FLOAT	Component Data 1_Multi-level Calib 'b'[2]		RD_ONLY	
7576	FLOAT	Component Data 1_Multi-level Calib 'b'[3]		RD_ONLY	
7577	FLOAT	Component Data 1_Multi-level Calib 'b'[4]		RD_ONLY	
7578	FLOAT	Component Data 1_Multi-level Calib 'b'[5]		RD_ONLY	
7579	FLOAT	Component Data 1_Multi-level Calib 'b'[6]		RD_ONLY	
7580	FLOAT	Component Data 1_Multi-level Calib 'b'[7]		RD_ONLY	
7581	FLOAT	Component Data 1_Multi-level Calib 'b'[8]		RD_ONLY	
7582	FLOAT	Component Data 1_Multi-level Calib 'b'[9]		RD_ONLY	
7583	FLOAT	Component Data 1_Multi-level Calib 'b'[10]		RD_ONLY	
7584	FLOAT	Component Data 1_Multi-level Calib 'b'[11]		RD_ONLY	
7585	FLOAT	Component Data 1_Multi-level Calib 'b'[12]		RD_ONLY	
7586	FLOAT	Component Data 1_Multi-level Calib 'b'[13]		RD_ONLY	
7587	FLOAT	Component Data 1_Multi-level Calib 'b'[14]		RD_ONLY	
7588	FLOAT	Component Data 1_Multi-level Calib 'b'[15]		RD_ONLY	
7589	FLOAT	Component Data 1_Multi-level Calib 'b'[16]		RD_ONLY	
7590	FLOAT	Component Data 1_Multi-level Calib 'c'[1]		RD_ONLY	
7591	FLOAT	Component Data 1_Multi-level Calib 'c'[2]		RD_ONLY	
7592	FLOAT	Component Data 1_Multi-level Calib 'c'[3]		RD_ONLY	
7593	FLOAT	Component Data 1_Multi-level Calib 'c'[4]		RD_ONLY	
7594	FLOAT	Component Data 1_Multi-level Calib 'c'[5]		RD_ONLY	
7595	FLOAT	Component Data 1_Multi-level Calib 'c'[6]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7596	FLOAT	Component Data 1_Multi-level Calib 'c'[7]		RD_ONLY	
7597	FLOAT	Component Data 1_Multi-level Calib 'c'[8]		RD_ONLY	
7598	FLOAT	Component Data 1_Multi-level Calib 'c'[9]		RD_ONLY	
7599	FLOAT	Component Data 1_Multi-level Calib 'c'[10]		RD_ONLY	
7600	FLOAT	Component Data 1_Multi-level Calib 'c'[11]		RD_ONLY	
7601	FLOAT	Component Data 1_Multi-level Calib 'c'[12]		RD_ONLY	
7602	FLOAT	Component Data 1_Multi-level Calib 'c'[13]		RD_ONLY	
7603	FLOAT	Component Data 1_Multi-level Calib 'c'[14]		RD_ONLY	
7604	FLOAT	Component Data 1_Multi-level Calib 'c'[15]		RD_ONLY	
7605	FLOAT	Component Data 1_Multi-level Calib 'c'[16]		RD_ONLY	
7606	FLOAT	Component Data 1_Multi-level Calib 'd'[1]		RD_ONLY	
7607	FLOAT	Component Data 1_Multi-level Calib 'd'[2]		RD_ONLY	
7608	FLOAT	Component Data 1_Multi-level Calib 'd'[3]		RD_ONLY	
7609	FLOAT	Component Data 1_Multi-level Calib 'd'[4]		RD_ONLY	
7610	FLOAT	Component Data 1_Multi-level Calib 'd'[5]		RD_ONLY	
7611	FLOAT	Component Data 1_Multi-level Calib 'd'[6]		RD_ONLY	
7612	FLOAT	Component Data 1_Multi-level Calib 'd'[7]		RD_ONLY	
7613	FLOAT	Component Data 1_Multi-level Calib 'd'[8]		RD_ONLY	
7614	FLOAT	Component Data 1_Multi-level Calib 'd'[9]		RD_ONLY	
7615	FLOAT	Component Data 1_Multi-level Calib 'd'[10]		RD_ONLY	
7616	FLOAT	Component Data 1_Multi-level Calib 'd'[11]		RD_ONLY	
7617	FLOAT	Component Data 1_Multi-level Calib 'd'[12]		RD_ONLY	
7618	FLOAT	Component Data 1_Multi-level Calib 'd'[13]		RD_ONLY	
7619	FLOAT	Component Data 1_Multi-level Calib 'd'[14]		RD_ONLY	
7620	FLOAT	Component Data 1_Multi-level Calib 'd'[15]		RD_ONLY	
7621	FLOAT	Component Data 1_Multi-level Calib 'd'[16]		RD_ONLY	
7622	FLOAT	Component Data 1_Rel Resp Factor[1]		RD_ONLY	
7623	FLOAT	Component Data 1_Rel Resp Factor[2]		RD_ONLY	
7624	FLOAT	Component Data 1_Rel Resp Factor[3]		RD_ONLY	
7625	FLOAT	Component Data 1_Rel Resp Factor[4]		RD_ONLY	
7626	FLOAT	Component Data 1_Rel Resp Factor[5]		RD_ONLY	
7627	FLOAT	Component Data 1_Rel Resp Factor[6]		RD_ONLY	
7628	FLOAT	Component Data 1_Rel Resp Factor[7]		RD_ONLY	
7629	FLOAT	Component Data 1_Rel Resp Factor[8]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7630	FLOAT	Component Data 1_Rel Resp Factor[9]		RD_ONLY	
7631	FLOAT	Component Data 1_Rel Resp Factor[10]		RD_ONLY	
7632	FLOAT	Component Data 1_Rel Resp Factor[11]		RD_ONLY	
7633	FLOAT	Component Data 1_Rel Resp Factor[12]		RD_ONLY	
7634	FLOAT	Component Data 1_Rel Resp Factor[13]		RD_ONLY	
7635	FLOAT	Component Data 1_Rel Resp Factor[14]		RD_ONLY	
7636	FLOAT	Component Data 1_Rel Resp Factor[15]		RD_ONLY	
7637	FLOAT	Component Data 1_Rel Resp Factor[16]		RD_ONLY	
7638	FLOAT	Component Data 2_Multi-level Calib 'a'[1]		RD_ONLY	
7639	FLOAT	Component Data 2_Multi-level Calib 'a'[2]		RD_ONLY	
7640	FLOAT	Component Data 2_Multi-level Calib 'a'[3]		RD_ONLY	
7641	FLOAT	Component Data 2_Multi-level Calib 'a'[4]		RD_ONLY	
7642	FLOAT	Component Data 2_Multi-level Calib 'a'[5]		RD_ONLY	
7643	FLOAT	Component Data 2_Multi-level Calib 'a'[6]		RD_ONLY	
7644	FLOAT	Component Data 2_Multi-level Calib 'a'[7]		RD_ONLY	
7645	FLOAT	Component Data 2_Multi-level Calib 'a'[8]		RD_ONLY	
7646	FLOAT	Component Data 2_Multi-level Calib 'a'[9]		RD_ONLY	
7647	FLOAT	Component Data 2_Multi-level Calib 'a'[10]		RD_ONLY	
7648	FLOAT	Component Data 2_Multi-level Calib 'a'[11]		RD_ONLY	
7649	FLOAT	Component Data 2_Multi-level Calib 'a'[12]		RD_ONLY	
7650	FLOAT	Component Data 2_Multi-level Calib 'a'[13]		RD_ONLY	
7651	FLOAT	Component Data 2_Multi-level Calib 'a'[14]		RD_ONLY	
7652	FLOAT	Component Data 2_Multi-level Calib 'a'[15]		RD_ONLY	
7653	FLOAT	Component Data 2_Multi-level Calib 'a'[16]		RD_ONLY	
7654	FLOAT	Component Data 2_Multi-level Calib 'b'[1]		RD_ONLY	
7655	FLOAT	Component Data 2_Multi-level Calib 'b'[2]		RD_ONLY	
7656	FLOAT	Component Data 2_Multi-level Calib 'b'[3]		RD_ONLY	
7657	FLOAT	Component Data 2_Multi-level Calib 'b'[4]		RD_ONLY	
7658	FLOAT	Component Data 2_Multi-level Calib 'b'[5]		RD_ONLY	
7659	FLOAT	Component Data 2_Multi-level Calib 'b'[6]		RD_ONLY	
7660	FLOAT	Component Data 2_Multi-level Calib 'b'[7]		RD_ONLY	
7661	FLOAT	Component Data 2_Multi-level Calib 'b'[8]		RD_ONLY	
7662	FLOAT	Component Data 2_Multi-level Calib 'b'[9]		RD_ONLY	
7663	FLOAT	Component Data 2_Multi-level Calib 'b'[10]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7664	FLOAT	Component Data 2_Multi-level Calib 'b'[11]		RD_ONLY	
7665	FLOAT	Component Data 2_Multi-level Calib 'b'[12]		RD_ONLY	
7666	FLOAT	Component Data 2_Multi-level Calib 'b'[13]		RD_ONLY	
7667	FLOAT	Component Data 2_Multi-level Calib 'b'[14]		RD_ONLY	
7668	FLOAT	Component Data 2_Multi-level Calib 'b'[15]		RD_ONLY	
7669	FLOAT	Component Data 2_Multi-level Calib 'b'[16]		RD_ONLY	
7670	FLOAT	Component Data 2_Multi-level Calib 'c'[1]		RD_ONLY	
7671	FLOAT	Component Data 2_Multi-level Calib 'c'[2]		RD_ONLY	
7672	FLOAT	Component Data 2_Multi-level Calib 'c'[3]		RD_ONLY	
7673	FLOAT	Component Data 2_Multi-level Calib 'c'[4]		RD_ONLY	
7674	FLOAT	Component Data 2_Multi-level Calib 'c'[5]		RD_ONLY	
7675	FLOAT	Component Data 2_Multi-level Calib 'c'[6]		RD_ONLY	
7676	FLOAT	Component Data 2_Multi-level Calib 'c'[7]		RD_ONLY	
7677	FLOAT	Component Data 2_Multi-level Calib 'c'[8]		RD_ONLY	
7678	FLOAT	Component Data 2_Multi-level Calib 'c'[9]		RD_ONLY	
7679	FLOAT	Component Data 2_Multi-level Calib 'c'[10]		RD_ONLY	
7680	FLOAT	Component Data 2_Multi-level Calib 'c'[11]		RD_ONLY	
7681	FLOAT	Component Data 2_Multi-level Calib 'c'[12]		RD_ONLY	
7682	FLOAT	Component Data 2_Multi-level Calib 'c'[13]		RD_ONLY	
7683	FLOAT	Component Data 2_Multi-level Calib 'c'[14]		RD_ONLY	
7684	FLOAT	Component Data 2_Multi-level Calib 'c'[15]		RD_ONLY	
7685	FLOAT	Component Data 2_Multi-level Calib 'c'[16]		RD_ONLY	
7686	FLOAT	Component Data 2_Multi-level Calib 'd'[1]		RD_ONLY	
7687	FLOAT	Component Data 2_Multi-level Calib 'd'[2]		RD_ONLY	
7688	FLOAT	Component Data 2_Multi-level Calib 'd'[3]		RD_ONLY	
7689	FLOAT	Component Data 2_Multi-level Calib 'd'[4]		RD_ONLY	
7690	FLOAT	Component Data 2_Multi-level Calib 'd'[5]		RD_ONLY	
7691	FLOAT	Component Data 2_Multi-level Calib 'd'[6]		RD_ONLY	
7692	FLOAT	Component Data 2_Multi-level Calib 'd'[7]		RD_ONLY	
7693	FLOAT	Component Data 2_Multi-level Calib 'd'[8]		RD_ONLY	
7694	FLOAT	Component Data 2_Multi-level Calib 'd'[9]		RD_ONLY	
7695	FLOAT	Component Data 2_Multi-level Calib 'd'[10]		RD_ONLY	
7696	FLOAT	Component Data 2_Multi-level Calib 'd'[11]		RD_ONLY	
7697	FLOAT	Component Data 2_Multi-level Calib 'd'[12]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7698	FLOAT	Component Data 2_Multi-level Calib 'd'[13]		RD_ONLY	
7699	FLOAT	Component Data 2_Multi-level Calib 'd'[14]		RD_ONLY	
7700	FLOAT	Component Data 2_Multi-level Calib 'd'[15]		RD_ONLY	
7701	FLOAT	Component Data 2_Multi-level Calib 'd'[16]		RD_ONLY	
7702	FLOAT	Component Data 2_Rel Resp Factor[1]		RD_ONLY	
7703	FLOAT	Component Data 2_Rel Resp Factor[2]		RD_ONLY	
7704	FLOAT	Component Data 2_Rel Resp Factor[3]		RD_ONLY	
7705	FLOAT	Component Data 2_Rel Resp Factor[4]		RD_ONLY	
7706	FLOAT	Component Data 2_Rel Resp Factor[5]		RD_ONLY	
7707	FLOAT	Component Data 2_Rel Resp Factor[6]		RD_ONLY	
7708	FLOAT	Component Data 2_Rel Resp Factor[7]		RD_ONLY	
7709	FLOAT	Component Data 2_Rel Resp Factor[8]		RD_ONLY	
7710	FLOAT	Component Data 2_Rel Resp Factor[9]		RD_ONLY	
7711	FLOAT	Component Data 2_Rel Resp Factor[10]		RD_ONLY	
7712	FLOAT	Component Data 2_Rel Resp Factor[11]		RD_ONLY	
7713	FLOAT	Component Data 2_Rel Resp Factor[12]		RD_ONLY	
7714	FLOAT	Component Data 2_Rel Resp Factor[13]		RD_ONLY	
7715	FLOAT	Component Data 2_Rel Resp Factor[14]		RD_ONLY	
7716	FLOAT	Component Data 2_Rel Resp Factor[15]		RD_ONLY	
7717	FLOAT	Component Data 2_Rel Resp Factor[16]		RD_ONLY	
7718	FLOAT	Avg[1 - Average 1]		RD_ONLY	
7719	FLOAT	Avg[2 - Average 2]		RD_ONLY	
7720	FLOAT	Avg[3 - Average 3]		RD_ONLY	
7721	FLOAT	Avg[4 - Average 4]		RD_ONLY	
7722	FLOAT	Avg[5 - Average 5]		RD_ONLY	
7723	FLOAT	Avg[6 - Average 6]		RD_ONLY	
7724	FLOAT	Avg[7 - Average 7]		RD_ONLY	
7725	FLOAT	Avg[8 - Average 8]		RD_ONLY	
7726	FLOAT	Avg[9 - Average 9]		RD_ONLY	
7727	FLOAT	Avg[10 - Average 10]		RD_ONLY	
7728	FLOAT	Avg[11 - Average 11]		RD_ONLY	
7729	FLOAT	Avg[12 - Average 12]		RD_ONLY	
7730	FLOAT	Avg[13 - Average 13]		RD_ONLY	
7731	FLOAT	Avg[14 - Average 14]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7732	FLOAT	Avg[15 - Average 15]		RD_ONLY	
7733	FLOAT	Avg[16 - Average 16]		RD_ONLY	
7734	FLOAT	Avg[17 - Average 17]		RD_ONLY	
7735	FLOAT	Avg[18 - Average 18]		RD_ONLY	
7736	FLOAT	Avg[19 - Average 19]		RD_ONLY	
7737	FLOAT	Avg[20 - Average 20]		RD_ONLY	
7738	FLOAT	Avg[21 - Average 21]		RD_ONLY	
7739	FLOAT	Avg[22 - Average 22]		RD_ONLY	
7740	FLOAT	Avg[23 - Average 23]		RD_ONLY	
7741	FLOAT	Avg[24 - Average 24]		RD_ONLY	
7742	FLOAT	Avg[25 - Average 25]		RD_ONLY	
7743	FLOAT	Avg[26 - Average 26]		RD_ONLY	
7744	FLOAT	Avg[27 - Average 27]		RD_ONLY	
7745	FLOAT	Avg[28 - Average 28]		RD_ONLY	
7746	FLOAT	Avg[29 - Average 29]		RD_ONLY	
7747	FLOAT	Avg[30 - Average 30]		RD_ONLY	
7748	FLOAT	Avg[31 - Average 31]		RD_ONLY	
7749	FLOAT	Avg[32 - Average 32]		RD_ONLY	
7750	FLOAT	Avg[33 - Average 33]		RD_ONLY	
7751	FLOAT	Avg[34 - Average 34]		RD_ONLY	
7752	FLOAT	Avg[35 - Average 35]		RD_ONLY	
7753	FLOAT	Avg[36 - Average 36]		RD_ONLY	
7754	FLOAT	Avg[37 - Average 37]		RD_ONLY	
7755	FLOAT	Avg[38 - Average 38]		RD_ONLY	
7756	FLOAT	Avg[39 - Average 39]		RD_ONLY	
7757	FLOAT	Avg[40 - Average 40]		RD_ONLY	
7758	FLOAT	Avg[41 - Average 41]		RD_ONLY	
7759	FLOAT	Avg[42 - Average 42]		RD_ONLY	
7760	FLOAT	Avg[43 - Average 43]		RD_ONLY	
7761	FLOAT	Avg[44 - Average 44]		RD_ONLY	
7762	FLOAT	Avg[45 - Average 45]		RD_ONLY	
7763	FLOAT	Avg[46 - Average 46]		RD_ONLY	
7764	FLOAT	Avg[47 - Average 47]		RD_ONLY	
7765	FLOAT	Avg[48 - Average 48]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7766	FLOAT	Avg[49 - Average 49]		RD_ONLY	
7767	FLOAT	Avg[50 - Average 50]		RD_ONLY	
7768	FLOAT	Avg[51 - Average 51]		RD_ONLY	
7769	FLOAT	Avg[52 - Average 52]		RD_ONLY	
7770	FLOAT	Avg[53 - Average 53]		RD_ONLY	
7771	FLOAT	Avg[54 - Average 54]		RD_ONLY	
7772	FLOAT	Avg[55 - Average 55]		RD_ONLY	
7773	FLOAT	Avg[56 - Average 56]		RD_ONLY	
7774	FLOAT	Avg[57 - Average 57]		RD_ONLY	
7775	FLOAT	Avg[58 - Average 58]		RD_ONLY	
7776	FLOAT	Avg[59 - Average 59]		RD_ONLY	
7777	FLOAT	Avg[60 - Average 60]		RD_ONLY	
7778	FLOAT	Avg[61 - Average 61]		RD_ONLY	
7779	FLOAT	Avg[62 - Average 62]		RD_ONLY	
7780	FLOAT	Avg[63 - Average 63]		RD_ONLY	
7781	FLOAT	Avg[64 - Average 64]		RD_ONLY	
7782	FLOAT	Avg[65 - Average 65]		RD_ONLY	
7783	FLOAT	Avg[66 - Average 66]		RD_ONLY	
7784	FLOAT	Avg[67 - Average 67]		RD_ONLY	
7785	FLOAT	Avg[68 - Average 68]		RD_ONLY	
7786	FLOAT	Avg[69 - Average 69]		RD_ONLY	
7787	FLOAT	Avg[70 - Average 70]		RD_ONLY	
7788	FLOAT	Avg[71 - Average 71]		RD_ONLY	
7789	FLOAT	Avg[72 - Average 72]		RD_ONLY	
7790	FLOAT	Avg[73 - Average 73]		RD_ONLY	
7791	FLOAT	Avg[74 - Average 74]		RD_ONLY	
7792	FLOAT	Avg[75 - Average 75]		RD_ONLY	
7793	FLOAT	Avg[76 - Average 76]		RD_ONLY	
7794	FLOAT	Avg[77 - Average 77]		RD_ONLY	
7795	FLOAT	Avg[78 - Average 78]		RD_ONLY	
7796	FLOAT	Avg[79 - Average 79]		RD_ONLY	
7797	FLOAT	Avg[80 - Average 80]		RD_ONLY	
7798	FLOAT	Avg[81 - Average 81]		RD_ONLY	
7799	FLOAT	Avg[82 - Average 82]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7800	FLOAT	Avg[83 - Average 83]		RD_ONLY	
7801	FLOAT	Avg[84 - Average 84]		RD_ONLY	
7802	FLOAT	Avg[85 - Average 85]		RD_ONLY	
7803	FLOAT	Avg[86 - Average 86]		RD_ONLY	
7804	FLOAT	Avg[87 - Average 87]		RD_ONLY	
7805	FLOAT	Avg[88 - Average 88]		RD_ONLY	
7806	FLOAT	Avg[89 - Average 89]		RD_ONLY	
7807	FLOAT	Avg[90 - Average 90]		RD_ONLY	
7808	FLOAT	Avg[91 - Average 91]		RD_ONLY	
7809	FLOAT	Avg[92 - Average 92]		RD_ONLY	
7810	FLOAT	Avg[93 - Average 93]		RD_ONLY	
7811	FLOAT	Avg[94 - Average 94]		RD_ONLY	
7812	FLOAT	Avg[95 - Average 95]		RD_ONLY	
7813	FLOAT	Avg[96 - Average 96]		RD_ONLY	
7814	FLOAT	Avg[97 - Average 97]		RD_ONLY	
7815	FLOAT	Avg[98 - Average 98]		RD_ONLY	
7816	FLOAT	Avg[99 - Average 99]		RD_ONLY	
7817	FLOAT	Avg[100 - Average 100]		RD_ONLY	
7818	FLOAT	Avg[101 - Average 101]		RD_ONLY	
7819	FLOAT	Avg[102 - Average 102]		RD_ONLY	
7820	FLOAT	Avg[103 - Average 103]		RD_ONLY	
7821	FLOAT	Avg[104 - Average 104]		RD_ONLY	
7822	FLOAT	Avg[105 - Average 105]		RD_ONLY	
7823	FLOAT	Avg[106 - Average 106]		RD_ONLY	
7824	FLOAT	Avg[107 - Average 107]		RD_ONLY	
7825	FLOAT	Avg[108 - Average 108]		RD_ONLY	
7826	FLOAT	Avg[109 - Average 109]		RD_ONLY	
7827	FLOAT	Avg[110 - Average 110]		RD_ONLY	
7828	FLOAT	Avg[111 - Average 111]		RD_ONLY	
7829	FLOAT	Avg[112 - Average 112]		RD_ONLY	
7830	FLOAT	Avg[113 - Average 113]		RD_ONLY	
7831	FLOAT	Avg[114 - Average 114]		RD_ONLY	
7832	FLOAT	Avg[115 - Average 115]		RD_ONLY	
7833	FLOAT	Avg[116 - Average 116]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7834	FLOAT	Avg[117 - Average 117]		RD_ONLY	
7835	FLOAT	Avg[118 - Average 118]		RD_ONLY	
7836	FLOAT	Avg[119 - Average 119]		RD_ONLY	
7837	FLOAT	Avg[120 - Average 120]		RD_ONLY	
7838	FLOAT	Avg[121 - Average 121]		RD_ONLY	
7839	FLOAT	Avg[122 - Average 122]		RD_ONLY	
7840	FLOAT	Avg[123 - Average 123]		RD_ONLY	
7841	FLOAT	Avg[124 - Average 124]		RD_ONLY	
7842	FLOAT	Avg[125 - Average 125]		RD_ONLY	
7843	FLOAT	Avg[126 - Average 126]		RD_ONLY	
7844	FLOAT	Avg[127 - Average 127]		RD_ONLY	
7845	FLOAT	Avg[128 - Average 128]		RD_ONLY	
7846	FLOAT	Archive_Avg[1 - Average 1]	1	RD_ONLY	
7847	FLOAT	Archive_Avg[2 - Average 2]	1	RD_ONLY	
7848	FLOAT	Archive_Avg[3 - Average 3]	1	RD_ONLY	
7849	FLOAT	Archive_Avg[4 - Average 4]	1	RD_ONLY	
7850	FLOAT	Archive_Avg[5 - Average 5]	1	RD_ONLY	
7851	FLOAT	Archive_Avg[6 - Average 6]	1	RD_ONLY	
7852	FLOAT	Archive_Avg[7 - Average 7]	1	RD_ONLY	
7853	FLOAT	Archive_Avg[8 - Average 8]	1	RD_ONLY	
7854	FLOAT	Archive_Avg[9 - Average 9]	1	RD_ONLY	
7855	FLOAT	Archive_Avg[10 - Average 10]	1	RD_ONLY	
7856	FLOAT	Archive_Avg[11 - Average 11]	1	RD_ONLY	
7857	FLOAT	Archive_Avg[12 - Average 12]	1	RD_ONLY	
7858	FLOAT	Archive_Avg[13 - Average 13]	1	RD_ONLY	
7859	FLOAT	Archive_Avg[14 - Average 14]	1	RD_ONLY	
7860	FLOAT	Archive_Avg[15 - Average 15]	1	RD_ONLY	
7861	FLOAT	Archive_Avg[16 - Average 16]	1	RD_ONLY	
7862	FLOAT	Archive_Avg[17 - Average 17]	1	RD_ONLY	
7863	FLOAT	Archive_Avg[18 - Average 18]	1	RD_ONLY	
7864	FLOAT	Archive_Avg[19 - Average 19]	1	RD_ONLY	
7865	FLOAT	Archive_Avg[20 - Average 20]	1	RD_ONLY	
7866	FLOAT	Archive_Avg[21 - Average 21]	1	RD_ONLY	
7867	FLOAT	Archive_Avg[22 - Average 22]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7868	FLOAT	Archive_Avg[23 - Average 23]	1	RD_ONLY	
7869	FLOAT	Archive_Avg[24 - Average 24]	1	RD_ONLY	
7870	FLOAT	Archive_Avg[25 - Average 25]	1	RD_ONLY	
7871	FLOAT	Archive_Avg[26 - Average 26]	1	RD_ONLY	
7872	FLOAT	Archive_Avg[27 - Average 27]	1	RD_ONLY	
7873	FLOAT	Archive_Avg[28 - Average 28]	1	RD_ONLY	
7874	FLOAT	Archive_Avg[29 - Average 29]	1	RD_ONLY	
7875	FLOAT	Archive_Avg[30 - Average 30]	1	RD_ONLY	
7876	FLOAT	Archive_Avg[31 - Average 31]	1	RD_ONLY	
7877	FLOAT	Archive_Avg[32 - Average 32]	1	RD_ONLY	
7878	FLOAT	Archive_Avg[33 - Average 33]	1	RD_ONLY	
7879	FLOAT	Archive_Avg[34 - Average 34]	1	RD_ONLY	
7880	FLOAT	Archive_Avg[35 - Average 35]	1	RD_ONLY	
7881	FLOAT	Archive_Avg[36 - Average 36]	1	RD_ONLY	
7882	FLOAT	Archive_Avg[37 - Average 37]	1	RD_ONLY	
7883	FLOAT	Archive_Avg[38 - Average 38]	1	RD_ONLY	
7884	FLOAT	Archive_Avg[39 - Average 39]	1	RD_ONLY	
7885	FLOAT	Archive_Avg[40 - Average 40]	1	RD_ONLY	
7886	FLOAT	Archive_Avg[41 - Average 41]	1	RD_ONLY	
7887	FLOAT	Archive_Avg[42 - Average 42]	1	RD_ONLY	
7888	FLOAT	Archive_Avg[43 - Average 43]	1	RD_ONLY	
7889	FLOAT	Archive_Avg[44 - Average 44]	1	RD_ONLY	
7890	FLOAT	Archive_Avg[45 - Average 45]	1	RD_ONLY	
7891	FLOAT	Archive_Avg[46 - Average 46]	1	RD_ONLY	
7892	FLOAT	Archive_Avg[47 - Average 47]	1	RD_ONLY	
7893	FLOAT	Archive_Avg[48 - Average 48]	1	RD_ONLY	
7894	FLOAT	Archive_Avg[49 - Average 49]	1	RD_ONLY	
7895	FLOAT	Archive_Avg[50 - Average 50]	1	RD_ONLY	
7896	FLOAT	Archive_Avg[51 - Average 51]	1	RD_ONLY	
7897	FLOAT	Archive_Avg[52 - Average 52]	1	RD_ONLY	
7898	FLOAT	Archive_Avg[53 - Average 53]	1	RD_ONLY	
7899	FLOAT	Archive_Avg[54 - Average 54]	1	RD_ONLY	
7900	FLOAT	Archive_Avg[55 - Average 55]	1	RD_ONLY	
7901	FLOAT	Archive_Avg[56 - Average 56]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7902	FLOAT	Archive_Avg[57 - Average 57]	1	RD_ONLY	
7903	FLOAT	Archive_Avg[58 - Average 58]	1	RD_ONLY	
7904	FLOAT	Archive_Avg[59 - Average 59]	1	RD_ONLY	
7905	FLOAT	Archive_Avg[60 - Average 60]	1	RD_ONLY	
7906	FLOAT	Archive_Avg[61 - Average 61]	1	RD_ONLY	
7907	FLOAT	Archive_Avg[62 - Average 62]	1	RD_ONLY	
7908	FLOAT	Archive_Avg[63 - Average 63]	1	RD_ONLY	
7909	FLOAT	Archive_Avg[64 - Average 64]	1	RD_ONLY	
7910	FLOAT	Archive_Avg[65 - Average 65]	1	RD_ONLY	
7911	FLOAT	Archive_Avg[66 - Average 66]	1	RD_ONLY	
7912	FLOAT	Archive_Avg[67 - Average 67]	1	RD_ONLY	
7913	FLOAT	Archive_Avg[68 - Average 68]	1	RD_ONLY	
7914	FLOAT	Archive_Avg[69 - Average 69]	1	RD_ONLY	
7915	FLOAT	Archive_Avg[70 - Average 70]	1	RD_ONLY	
7916	FLOAT	Archive_Avg[71 - Average 71]	1	RD_ONLY	
7917	FLOAT	Archive_Avg[72 - Average 72]	1	RD_ONLY	
7918	FLOAT	Archive_Avg[73 - Average 73]	1	RD_ONLY	
7919	FLOAT	Archive_Avg[74 - Average 74]	1	RD_ONLY	
7920	FLOAT	Archive_Avg[75 - Average 75]	1	RD_ONLY	
7921	FLOAT	Archive_Avg[76 - Average 76]	1	RD_ONLY	
7922	FLOAT	Archive_Avg[77 - Average 77]	1	RD_ONLY	
7923	FLOAT	Archive_Avg[78 - Average 78]	1	RD_ONLY	
7924	FLOAT	Archive_Avg[79 - Average 79]	1	RD_ONLY	
7925	FLOAT	Archive_Avg[80 - Average 80]	1	RD_ONLY	
7926	FLOAT	Archive_Avg[81 - Average 81]	1	RD_ONLY	
7927	FLOAT	Archive_Avg[82 - Average 82]	1	RD_ONLY	
7928	FLOAT	Archive_Avg[83 - Average 83]	1	RD_ONLY	
7929	FLOAT	Archive_Avg[84 - Average 84]	1	RD_ONLY	
7930	FLOAT	Archive_Avg[85 - Average 85]	1	RD_ONLY	
7931	FLOAT	Archive_Avg[86 - Average 86]	1	RD_ONLY	
7932	FLOAT	Archive_Avg[87 - Average 87]	1	RD_ONLY	
7933	FLOAT	Archive_Avg[88 - Average 88]	1	RD_ONLY	
7934	FLOAT	Archive_Avg[89 - Average 89]	1	RD_ONLY	
7935	FLOAT	Archive_Avg[90 - Average 90]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7936	FLOAT	Archive_Avg[91 - Average 91]	1	RD_ONLY	
7937	FLOAT	Archive_Avg[92 - Average 92]	1	RD_ONLY	
7938	FLOAT	Archive_Avg[93 - Average 93]	1	RD_ONLY	
7939	FLOAT	Archive_Avg[94 - Average 94]	1	RD_ONLY	
7940	FLOAT	Archive_Avg[95 - Average 95]	1	RD_ONLY	
7941	FLOAT	Archive_Avg[96 - Average 96]	1	RD_ONLY	
7942	FLOAT	Archive_Avg[97 - Average 97]	1	RD_ONLY	
7943	FLOAT	Archive_Avg[98 - Average 98]	1	RD_ONLY	
7944	FLOAT	Archive_Avg[99 - Average 99]	1	RD_ONLY	
7945	FLOAT	Archive_Avg[100 - Average 100]	1	RD_ONLY	
7946	FLOAT	Archive_Avg[101 - Average 101]	1	RD_ONLY	
7947	FLOAT	Archive_Avg[102 - Average 102]	1	RD_ONLY	
7948	FLOAT	Archive_Avg[103 - Average 103]	1	RD_ONLY	
7949	FLOAT	Archive_Avg[104 - Average 104]	1	RD_ONLY	
7950	FLOAT	Archive_Avg[105 - Average 105]	1	RD_ONLY	
7951	FLOAT	Archive_Avg[106 - Average 106]	1	RD_ONLY	
7952	FLOAT	Archive_Avg[107 - Average 107]	1	RD_ONLY	
7953	FLOAT	Archive_Avg[108 - Average 108]	1	RD_ONLY	
7954	FLOAT	Archive_Avg[109 - Average 109]	1	RD_ONLY	
7955	FLOAT	Archive_Avg[110 - Average 110]	1	RD_ONLY	
7956	FLOAT	Archive_Avg[111 - Average 111]	1	RD_ONLY	
7957	FLOAT	Archive_Avg[112 - Average 112]	1	RD_ONLY	
7958	FLOAT	Archive_Avg[113 - Average 113]	1	RD_ONLY	
7959	FLOAT	Archive_Avg[114 - Average 114]	1	RD_ONLY	
7960	FLOAT	Archive_Avg[115 - Average 115]	1	RD_ONLY	
7961	FLOAT	Archive_Avg[116 - Average 116]	1	RD_ONLY	
7962	FLOAT	Archive_Avg[117 - Average 117]	1	RD_ONLY	
7963	FLOAT	Archive_Avg[118 - Average 118]	1	RD_ONLY	
7964	FLOAT	Archive_Avg[119 - Average 119]	1	RD_ONLY	
7965	FLOAT	Archive_Avg[120 - Average 120]	1	RD_ONLY	
7966	FLOAT	Archive_Avg[121 - Average 121]	1	RD_ONLY	
7967	FLOAT	Archive_Avg[122 - Average 122]	1	RD_ONLY	
7968	FLOAT	Archive_Avg[123 - Average 123]	1	RD_ONLY	
7969	FLOAT	Archive_Avg[124 - Average 124]	1	RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
7970	FLOAT	Archive_Avg[125 - Average 125]	1	RD_ONLY	
7971	FLOAT	Archive_Avg[126 - Average 126]	1	RD_ONLY	
7972	FLOAT	Archive_Avg[127 - Average 127]	1	RD_ONLY	
7973	FLOAT	Archive_Avg[128 - Average 128]	1	RD_ONLY	
7974	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
7975	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
7976	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
7977	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	
7978	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
7979	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
7980	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
7981	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
7982	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
7983	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	
7984	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
7985	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
7986	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
7987	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
7988	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
7989	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
7990	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
7991	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
7992	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
7993	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
7994	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
7995	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
7996	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
7997	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	
7998	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
7999	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
8000	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
8001	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
8002	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
8003	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8004	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
8005	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
8006	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
8007	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
8008	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
8009	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
8010	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
8011	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
8012	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
8013	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
8014	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
8015	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
8016	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
8017	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	
8018	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
8019	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
8020	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
8021	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
8022	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
8023	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	
8024	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
8025	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
8026	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
8027	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
8028	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
8029	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
8030	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
8031	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
8032	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
8033	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
8034	FLOAT	Last FCalib_New Resp Factor[1 - Component 1]		RD_ONLY	
8035	FLOAT	Last FCalib_New Resp Factor[2 - Component 2]		RD_ONLY	
8036	FLOAT	Last FCalib_New Resp Factor[3 - Component 3]		RD_ONLY	
8037	FLOAT	Last FCalib_New Resp Factor[4 - Component 4]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8038	FLOAT	Last FCalib_New Resp Factor[5 - Component 5]		RD_ONLY	
8039	FLOAT	Last FCalib_New Resp Factor[6 - Component 6]		RD_ONLY	
8040	FLOAT	Last FCalib_New Resp Factor[7 - Component 7]		RD_ONLY	
8041	FLOAT	Last FCalib_New Resp Factor[8 - Component 8]		RD_ONLY	
8042	FLOAT	Last FCalib_New Resp Factor[9 - Component 9]		RD_ONLY	
8043	FLOAT	Last FCalib_New Resp Factor[10 - Component 10]		RD_ONLY	
8044	FLOAT	Last FCalib_New Resp Factor[11 - Component 11]		RD_ONLY	
8045	FLOAT	Last FCalib_New Resp Factor[12 - Component 12]		RD_ONLY	
8046	FLOAT	Last FCalib_New Resp Factor[13 - Component 13]		RD_ONLY	
8047	FLOAT	Last FCalib_New Resp Factor[14 - Component 14]		RD_ONLY	
8048	FLOAT	Last FCalib_New Resp Factor[15 - Component 15]		RD_ONLY	
8049	FLOAT	Last FCalib_New Resp Factor[16 - Component 16]		RD_ONLY	
8050	FLOAT	Last FCalib_New Resp Factor[17 - Component 17]		RD_ONLY	
8051	FLOAT	Last FCalib_New Resp Factor[18 - Component 18]		RD_ONLY	
8052	FLOAT	Last FCalib_New Resp Factor[19 - Component 19]		RD_ONLY	
8053	FLOAT	Last FCalib_New Resp Factor[20 - Component 20]		RD_ONLY	
8054	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8055	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8056	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8057	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8058	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8059	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8060	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8061	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8062	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8063	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8064	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8065	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	
8066	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8067	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8068	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8069	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8070	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8071	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8072	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8073	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8074	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8075	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8076	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8077	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8078	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8079	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8080	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8081	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8082	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8083	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8084	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8085	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	
8086	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8087	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8088	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8089	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8090	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8091	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	
8092	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8093	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8094	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8095	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8096	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8097	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8098	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8099	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8100	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8101	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8102	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8103	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8104	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8105	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8106	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8107	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8108	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8109	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8110	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8111	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	
8112	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8113	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8114	FLOAT	Last FCalib_New Ret Time[1 - Component 1]		RD_ONLY	
8115	FLOAT	Last FCalib_New Ret Time[2 - Component 2]		RD_ONLY	
8116	FLOAT	Last FCalib_New Ret Time[3 - Component 3]		RD_ONLY	
8117	FLOAT	Last FCalib_New Ret Time[4 - Component 4]		RD_ONLY	
8118	FLOAT	Last FCalib_New Ret Time[5 - Component 5]		RD_ONLY	
8119	FLOAT	Last FCalib_New Ret Time[6 - Component 6]		RD_ONLY	
8120	FLOAT	Last FCalib_New Ret Time[7 - Component 7]		RD_ONLY	
8121	FLOAT	Last FCalib_New Ret Time[8 - Component 8]		RD_ONLY	
8122	FLOAT	Last FCalib_New Ret Time[9 - Component 9]		RD_ONLY	
8123	FLOAT	Last FCalib_New Ret Time[10 - Component 10]		RD_ONLY	
8124	FLOAT	Last FCalib_New Ret Time[11 - Component 11]		RD_ONLY	
8125	FLOAT	Last FCalib_New Ret Time[12 - Component 12]		RD_ONLY	
8126	FLOAT	Last FCalib_New Ret Time[13 - Component 13]		RD_ONLY	
8127	FLOAT	Last FCalib_New Ret Time[14 - Component 14]		RD_ONLY	
8128	FLOAT	Last FCalib_New Ret Time[15 - Component 15]		RD_ONLY	
8129	FLOAT	Last FCalib_New Ret Time[16 - Component 16]		RD_ONLY	
8130	FLOAT	Last FCalib_New Ret Time[17 - Component 17]		RD_ONLY	
8131	FLOAT	Last FCalib_New Ret Time[18 - Component 18]		RD_ONLY	
8132	FLOAT	Last FCalib_New Ret Time[19 - Component 19]		RD_ONLY	
8133	FLOAT	Last FCalib_New Ret Time[20 - Component 20]		RD_ONLY	
8134	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8135	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8136	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8137	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8138	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8139	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8140	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8141	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8142	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8143	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8144	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8145	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8146	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8147	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	
8148	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8149	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8150	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8151	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8152	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8153	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	
8154	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8155	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8156	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8157	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8158	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8159	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	
8160	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8161	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8162	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8163	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8164	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8165	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8166	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8167	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	
8168	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8169	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8170	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8171	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8172	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8173	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8174	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8175	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8176	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8177	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8178	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8179	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	
8180	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8181	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8182	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8183	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8184	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8185	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8186	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8187	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	
8188	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8189	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8190	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8191	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8192	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8193	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	
8194	FLOAT	Last FCalib_Old Resp Factor[1 - Component 1]		RD_ONLY	
8195	FLOAT	Last FCalib_Old Resp Factor[2 - Component 2]		RD_ONLY	
8196	FLOAT	Last FCalib_Old Resp Factor[3 - Component 3]		RD_ONLY	
8197	FLOAT	Last FCalib_Old Resp Factor[4 - Component 4]		RD_ONLY	
8198	FLOAT	Last FCalib_Old Resp Factor[5 - Component 5]		RD_ONLY	
8199	FLOAT	Last FCalib_Old Resp Factor[6 - Component 6]		RD_ONLY	
8200	FLOAT	Last FCalib_Old Resp Factor[7 - Component 7]		RD_ONLY	
8201	FLOAT	Last FCalib_Old Resp Factor[8 - Component 8]		RD_ONLY	
8202	FLOAT	Last FCalib_Old Resp Factor[9 - Component 9]		RD_ONLY	
8203	FLOAT	Last FCalib_Old Resp Factor[10 - Component 10]		RD_ONLY	
8204	FLOAT	Last FCalib_Old Resp Factor[11 - Component 11]		RD_ONLY	
8205	FLOAT	Last FCalib_Old Resp Factor[12 - Component 12]		RD_ONLY	
8206	FLOAT	Last FCalib_Old Resp Factor[13 - Component 13]		RD_ONLY	
8207	FLOAT	Last FCalib_Old Resp Factor[14 - Component 14]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8208	FLOAT	Last FCalib_Old Resp Factor[15 - Component 15]		RD_ONLY	
8209	FLOAT	Last FCalib_Old Resp Factor[16 - Component 16]		RD_ONLY	
8210	FLOAT	Last FCalib_Old Resp Factor[17 - Component 17]		RD_ONLY	
8211	FLOAT	Last FCalib_Old Resp Factor[18 - Component 18]		RD_ONLY	
8212	FLOAT	Last FCalib_Old Resp Factor[19 - Component 19]		RD_ONLY	
8213	FLOAT	Last FCalib_Old Resp Factor[20 - Component 20]		RD_ONLY	
8214	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8215	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	
8216	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8217	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8218	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8219	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8220	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8221	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	
8222	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8223	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8224	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8225	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8226	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8227	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8228	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8229	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8230	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8231	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8232	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8233	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8234	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8235	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	
8236	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8237	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8238	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8239	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8240	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8241	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8242	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8243	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8244	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8245	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8246	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8247	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8248	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8249	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8250	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8251	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8252	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8253	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8254	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8255	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	
8256	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8257	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8258	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8259	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8260	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8261	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	
8262	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8263	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8264	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8265	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8266	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8267	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8268	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8269	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8270	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8271	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8272	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8273	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8274	FLOAT	Last FCalib_Old Ret Time[1 - Component 1]		RD_ONLY	
8275	FLOAT	Last FCalib_Old Ret Time[2 - Component 2]		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
8276	FLOAT	Last FCalib_Old Ret Time[3 - Component 3]		RD_ONLY	
8277	FLOAT	Last FCalib_Old Ret Time[4 - Component 4]		RD_ONLY	
8278	FLOAT	Last FCalib_Old Ret Time[5 - Component 5]		RD_ONLY	
8279	FLOAT	Last FCalib_Old Ret Time[6 - Component 6]		RD_ONLY	
8280	FLOAT	Last FCalib_Old Ret Time[7 - Component 7]		RD_ONLY	
8281	FLOAT	Last FCalib_Old Ret Time[8 - Component 8]		RD_ONLY	
8282	FLOAT	Last FCalib_Old Ret Time[9 - Component 9]		RD_ONLY	
8283	FLOAT	Last FCalib_Old Ret Time[10 - Component 10]		RD_ONLY	
8284	FLOAT	Last FCalib_Old Ret Time[11 - Component 11]		RD_ONLY	
8285	FLOAT	Last FCalib_Old Ret Time[12 - Component 12]		RD_ONLY	
8286	FLOAT	Last FCalib_Old Ret Time[13 - Component 13]		RD_ONLY	
8287	FLOAT	Last FCalib_Old Ret Time[14 - Component 14]		RD_ONLY	
8288	FLOAT	Last FCalib_Old Ret Time[15 - Component 15]		RD_ONLY	
8289	FLOAT	Last FCalib_Old Ret Time[16 - Component 16]		RD_ONLY	
8290	FLOAT	Last FCalib_Old Ret Time[17 - Component 17]		RD_ONLY	
8291	FLOAT	Last FCalib_Old Ret Time[18 - Component 18]		RD_ONLY	
8292	FLOAT	Last FCalib_Old Ret Time[19 - Component 19]		RD_ONLY	
8293	FLOAT	Last FCalib_Old Ret Time[20 - Component 20]		RD_ONLY	
8963	FLOAT	Clear All Alarms		RD_WR	
8964	FLOAT	Acknowledge All Alarms		RD_WR	
9006	INT	Current Time(time_t)		RD_WR	MM
9007	INT	Current Time(time_t)		RD_WR	DD
9008	INT	Current Time(time_t)		RD_WR	YYYY
9009	INT	Current Time(time_t)		RD_WR	hh
9010	INT	Current Time(time_t)		RD_WR	mm
9011	INT	Current Time(time_t)		RD_WR	ss
9012	INT	Unused		RD_ONLY	
9013	INT	Modbus Id[1 - Port 0]		RD_ONLY	
9014	INT	Site Id		RD_WR	
9022	INT	Analysis Time		RD_ONLY	
9023	INT	Unused		RD_ONLY	
9024	INT	Cycle Time		RD_ONLY	
9025	INT	Unused		RD_ONLY	
9026	INT	Run Time		RD_ONLY	

Register #	Data type	Variable	Record #	Access	Format
9027	INT	Unused		RD_ONLY	
9028	INT	Current Stream		RD_ONLY	
9029	INT	Unused		RD_ONLY	
9030	INT	GC Control_Analyser Control (Write Reg 9030)		RD_WR	
9031	INT	Unused		RD_ONLY	
9032	INT	GC Calibrating		RD_ONLY	
9033	INT	Unused		RD_ONLY	
9034	INT	Active Alarm Flag		RD_ONLY	
9035	INT	UnAck Alarm Flag		RD_ONLY	
9036	INT	Hourly Average Reset time		RD_ONLY	YY
9037	INT	Hourly Average Reset time		RD_ONLY	MM
9038	INT	Hourly Average Reset time		RD_ONLY	DD
9039	INT	Hourly Average Reset time		RD_ONLY	hh
9040	INT	Hourly Average Reset time		RD_ONLY	mm
9041	INT	Daily Average Reset time		RD_ONLY	YY
9042	INT	Daily Average Reset time		RD_ONLY	MM
9043	INT	Daily Average Reset time		RD_ONLY	DD
9044	INT	Daily Average Reset time		RD_ONLY	hh
9045	INT	Daily Average Reset time		RD_ONLY	mm
9046	INT	Weekly Average Reset time		RD_ONLY	YY
9047	INT	Weekly Average Reset time		RD_ONLY	MM
9048	INT	Weekly Average Reset time		RD_ONLY	DD
9049	INT	Weekly Average Reset time		RD_ONLY	hh
9050	INT	Weekly Average Reset time		RD_ONLY	mm
9051	INT	Monthly Average Reset time		RD_ONLY	YY
9052	INT	Monthly Average Reset time		RD_ONLY	MM
9053	INT	Monthly Average Reset time		RD_ONLY	DD
9054	INT	Monthly Average Reset time		RD_ONLY	hh
9055	INT	Monthly Average Reset time		RD_ONLY	mm
9056	INT	Variable Average Reset time		RD_ONLY	YY
9057	INT	Variable Average Reset time		RD_ONLY	MM
9058	INT	Variable Average Reset time		RD_ONLY	DD
9059	INT	Variable Average Reset time		RD_ONLY	hh
9060	INT	Variable Average Reset time		RD_ONLY	mm

3099...3102 (Valid data flags): This flag is set to **1** when new valid data is put into the Modbus registers and set to **0** if an alarm is active. The 4 copies of this flag operate in the same way; they are intended for use by up to 4 independent Modbus master devices attached to the 4 serial ports. This is a read-write register, so the Modbus Master can clear the flag once the new results are read.

3103...3182 (Calibration update flags): Set to **1** when response factors are updated during a calibration.

5001 (Last Analy_Cycle Time (1/30th sec)): Cycle time for last analysis in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

5002 (Last Cal_Cycle Time (1/30th sec)): Cycle time for last calibration in 1/30th seconds. For example, if cycle time is 300 seconds, this register reads **9000**.

7001...70016 (Last Analy Mole %): These registers hold the mole % results for the last analysis run. The order of components in these registers can be determined by reading Register 3001...3016 which contains the component codes.

7017...7032 (Last Analy Weight %): These registers hold the weight % results for the last analysis run. The order of components in these registers can be determined by reading Register 3001...3016 which contains the component codes.

7033...7039 : Last analysis stream results.

7040...7044: User calculation results 1...5.

7046...7054: Last analysis stream results.

7070...7084: Most recent archive averages for Averages 1...15.

7085...7086: Current analog input values for Analog Input 1 and 2.

7087...7090: Last analysis stream results.

7091: Number of total calibration runs.

7092: Number of averaged calibration runs.

7093: Auto calibration start time.

7094: (Stream Sequence Select): Read-write register. When read, returns currently selected stream sequence. To change stream sequence, write sequence number.

Value	Stream sequence
1	Default stream sequence
2	Aux stream sequence 1
3	Aux stream sequence 2

7095...7110 (Last Analysis Response Factors): Response factor for Components 1...16 used on last run.

7111...7121: Results from last calibration.

7122: Calibration stream number.

7123...7125: Last analysis GS(M)R results.

7126...7161: Current running averages for Averages 1...36.

7162...7197: Maximum sample value during current averaging period for Averages 1...36.

7198...7233: Minimum sample value during current averaging period for averages 1...36.

7234...7269: Most recent archived averages for Averages 1 through 36.

7270...7305: Maximum sample value in the second most recent archived average for Averages 1...36.

7306...7341: Minimum sample value in the second most recent archived average for Averages 1...36.

7342...7377: Second most recent archived averages for Averages 1...36.

7378...7413: Maximum sample value in the second most recent archived average for Averages 1...36.

7414...7449: Minimum sample value in the second most recent archived average for averages 1...36.

7450...7485: Third most recent archived averages for Averages 1...36.

7586...7621: Maximum sample value in the third most recent archived averages for Averages 1...36.

7521...7557: Minimum sample value in the third most recent archived averages for Averages 1...36.

7558...7573: Multi-level calibration coefficient *a* components 1...16.

7572...7589: Multi-level calibration coefficient *b* components 1...16.

7590...7605: Multi-level calibration coefficient *c* components 1...16.

7606...7621: Multi-level calibration coefficient *d* components 1...16.

7622...7637: Indirect calibration - relative response factors for components 1...16.

7638...7717: Repeat of 7558...7637 above for component table 2.

7718...7845: Current running averages for Averages 1...128.

7486..7973: Most recent archived averages for Averages 1...128.

7974...8053: Current response factors.

8054...8133: Current retention times.

8214...8293: Retention times from previous calibration.

8963 (Clear All Alarms): Write 1 to this register to clear all active alarms.

8964 (Acknowledge All Alarms): Write 1 to this register to acknowledge all alarms.

9006...9011: GC system date/time read-write registers.

9013 (Modbus ID [Port 0]): Modbus ID for Serial Port 0.

9014 (Site ID): GC site ID read-write register.

9022 (Analysis Time): Analysis time.

9024 (Cycle Time): Cycle time.

9026 (Run Time): Run time.

9028 (Current Stream): Stream number.

9030 (Analyzer Control): Section B.6.

9032 (GC Calibrating): Tells you if the GC is calibrating. A value of 1 means the GC is calibrating, 0 otherwise.

9034 (Active Alarm Flag): Tells you if the GC has any active alarms. A value of 1 indicates that there are active alarms, 0 otherwise.

9035 (UnAck Alarm Flag): Tells you if the GC has any unaknowledged alarms. A value of 1 indicates that there are unacknowledged alarms, 0 otherwise.

9036...9040 (Hourly Average Reset Time): Date/time when hourly average results were archived.

9041...9045 (Daily Average Reset Time): Date/time when daily average results were archived.

9046...9047 (Weekly Average Reset Time): Date/time when weekly average results were archived.

9051...9055 (Monthly Average Reset Time): Date/time when monthly averaged results were archived.

9056...9060 (Variable Average Reset Time): Date/time when variable average results were archived.

B.6 Remote control registers

Modbus register	Description
GC Control_Auto Sequence	Start chromatograph auto sequencing. Normally **0.0**; write non-zero value to initiate sequencing. **1.0** - start with purge **2.0** - start without purge
GC Control_Halt	Halt chromatograph sequencing - Normally **0.0**; write **1.0** to perform halt.
GC Control_Single Stream	Start single stream run - Normally **0.0**. *Continuous Single Stream* mode: Write the stream number (in floating point) to start with a purge and the negative of the stream number to start without a purge. *Single Analysis Non-continuous Single Stream* mode: Write (128.0 + the stream number) (in floating point) to start with a purge, and the negative of (128.0 + the stream number) to start without a purge.
GC Control_Calibration	Start calibration sequence - Normally **0.0**. For *Normal Calibration*: Write the stream number of the calibration stream in floating point to start calibration sequence with a purge, or write the negative of the stream number to start calibration sequence without a purge. *For Forced Calibration*: Write (128.0 + stream number) of the cal stream in floating point to start calibration sequence with a purge or writes the negative of (128 + stream number) of the cal stream to start a calibration sequence without a purge.

<table>
<tr><th>Modbus register</th><th>Description</th></tr>
<tr><td>GC Control_Validation</td><td>Start validation sequence - Normally 0.0. For Validation: Write the stream number of the Validation stream in floating point to start validation sequence with a purge, or write the negative of the stream number to start validation sequence without a purge.</td></tr>
<tr><td>GC Control -> Validation Acknowledge</td><td>GC copies Start Validation command to this register; PLC can reset after confirming that command was successfully issued.</td></tr>
<tr><td>GC Control_Stream Sequence Select</td><td>Read-write register. When read, returns currently selected stream sequence. To change stream sequence, write sequence number.
<table>
<tr><th>Value</th><th>Stream sequence</th></tr>
<tr><td>1</td><td>Default stream sequence</td></tr>
<tr><td>2</td><td>Aux stream sequence 1</td></tr>
<tr><td>3</td><td>Aux stream sequence 2</td></tr>
</table></td></tr>
<tr><td>Stream Sequence - Default Stream Sequence</td><td>Reads the sequence of streams. For example, if current Sequence is 1, 2, then this register reads a value of 12. To change the sequence of streams: For example, to change the Sequence to 2,3, write 23 to this register.</td></tr>
<tr><td>GC Status > GC Running</td><td>GC is running.
0 - GC is idle
1 - GC is running (Auto Analysis, Single Stream, Calibration, Validation)</td></tr>
<tr><td>GC Status > Current Analysis Mode</td><td>Indicates mode of operation:
0 - GC Idle
1 - Auto Sequence
2 - Single Stream
3 - Manual Calibration
4 - Manual Validation</td></tr>
</table>

B.7 Read-write remote control register (9030)

9030 is a read-write register that can be used for controlling GC operation and for reading current operating mode.

The mode values read from register 9030 are:

0	Idle
1	In automatic sequencing mode
2	Running in single stream mode
3	Calibrating
4	Warm starting, running confidence tests
5	Validating (added in Firmware Version 2.1.0 and higher)

The commands that can be written to register 9030 are:

0	Halt at the end of the current analysis
1	Start automatic sequencing mode
2	Start a normal calibration, on first calibration stream
3	Run single analysis on stream 1, then halt
4	Run continually on stream 1
5	Run a single analysis on stream 2, then halt
6	Run continually on stream 2
7	Run a single analysis on stream 3, then halt
8	Run continuously on stream 3
9	Run a single analysis on stream 4, then halt
10	Run continually on stream 4
11	Run a single analysis on stream 5, then halt
12	Run continually on stream 5
13	Run a single analysis on stream 6, then halt
14	Run continually on stream 6
15	Run a single analysis on stream 7, then halt
16	Run continuously on stream 7
17	Run a single analysis on stream 8, then halt
18	Run continuously on stream 8
19	Run validation on first validation stream (added in Firmware Version 2.1.0 and higher)
...	
41	Run normal calibration on stream 1 (added in Firmware Version 2.1.0 and higher)
42	Run normal calibration on stream 2 (added in Firmware Version 2.1.0 and higher)
...	

60 Run normal calibration on stream 20 (added in Firmware Version 2.1.0 and higher)

...

81 Run validation on stream 1 (added in Firmware Version 2.1.0 and higher)

82 Run validation on stream 2 (added in Firmware Version 2.1.0 and higher)

...

100 Run validation on stream 20 (added in Firmware Version 2.1.0 and higher)

Commands **1-19**, **41-60**, and **81-100** above are with 60 seconds purge. Adding 20 to any command means *no purge* if relevant. These writes are done using Modbus functions **6** or **16**. Except for commands **0** and **2**, the GC must be idle. If a command fails because the GC was not idle or because the code is invalid or the stream is not used, a Modbus exception *illegal data value* will be returned. All these commands are allowed without requiring a password or the security switch to be unlocked. These commands are available to both User Modbus ports and SIM_2251 Modbus ports.

B.8 Writable Modbus registers

The following list documents all the Modbus registers in the GC that can be written when the GC is under legal metrology control with the security switch locked. Please note that not all the registers in this table are available in the SIM_2251 mapping.

Modbus register	Remarks
GC Status -> Current Month	Set GC clock. All 5 registers can be written in a single request, or individual registers can be written. The new date/time is validated before the GC system clock is changed.
GC Status -> Current Day	
GC Status -> Current Year	
GC Status -> Current Hour	
GC Status -> Current Minute	
GC Status -> New Data Flag	Flags for synchronizing Master and Slave. The Slave (GC) updates its result registers and then sets the flag to **1**. The Master (PLC/Flow Computer) reads the data and resets the flag to **0**.
GC Status -> Hourly Avg Updated	
GC Status -> Weekly Avg Updated	
GC Status -> Daily Avg Updated	
GC Status -> Monthly Avg Updated	
GC Status -> Last Run Data Valid 1	
GC Status -> Last Run Data Valid 2	
GC Status -> Last Run Data Valid 3	
GC Status -> Last Run Data Valid 4	

Modbus register	Remarks
GC Status -> Last Run Data Valid 5	
GC Status -> Last Run Data Valid 6	
GC Status -> Last Run Data Valid 7	
GC Status -> Last Run Data Valid 8	
GC Status -> Last Run Data Valid 9	
GC Status -> Last Run Data Valid 10	
Stream 1 -> New Data Available	
Stream 2 -> New Data Available	
Stream 3 -> New Data Available	
Stream 4 -> New Data Available	
Stream 5 -> New Data Available	
Stream 6 -> New Data Available	
Stream 7 -> New Data Available	
Stream 8 -> New Data Available	
Stream 9 -> New Data Available	
Stream 10 -> New Data Available	
Stream 11 -> New Data Available	
Stream 12 -> New Data Available	
Stream 13 -> New Data Available	
Stream 14 -> New Data Available	
Stream 15 -> New Data Available	
Stream 16 -> New Data Available	
Stream 17 -> New Data Available	
Stream 18 -> New Data Available	
Stream 19 -> New Data Available	
Stream 20 -> New Data Available	
Discrete Output 1 -> Switch	Master can write the following values to this register - **0** - Sets the discrete output to *Off*. **1** - Sets the discrete output to *On*. **2** - Sets the discrete output to *Automatic* (DO controller by GC's timed events).
Discrete Output 2 -> Switch	
Discrete Output 3 -> Switch	
Discrete Output 4 -> Switch	
Discrete Output 5 -> Switch	

Modbus register	Remarks
Dewpoint Configuration 1 -> Pressure 1	Pressure at which hydrocarbon dewpoint results are computed. Used only for dual-detector C9+ hydrocarbon dewpoint GCs. These registers are not used in C6+ custody transfer applications.
Dewpoint Configuration 1 -> Pressure 2	
Dewpoint Configuration 1 -> Pressure 3	
Dewpoint Configuration 1 -> Pressure 4	
Dewpoint Configuration 2 -> Pressure 1	
Dewpoint Configuration 2 -> Pressure 2	
Dewpoint Configuration 2 -> Pressure 3	
Dewpoint Configuration 2 -> Pressure 4	
Dewpoint Configuration 3 -> Pressure 1	
Dewpoint Configuration 3 -> Pressure 2	
Dewpoint Configuration 3 -> Pressure 3	
Dewpoint Configuration 3 -> Pressure 4	
Dewpoint Configuration 4 -> Pressure 1	
Dewpoint Configuration 4 -> Pressure 2	
Dewpoint Configuration 4 -> Pressure 3	
Dewpoint Configuration 4 -> Pressure 4	
GC Control_Auto Sequence	Start chromatograph auto sequencing. Normally **0.0**; write non-zero value to initiate sequencing. **1.0** - Start with purge. **2.0** - Start without purge.
GC Control_Halt	Halt chromatograph sequencing - Normally **0.0**; write *1.0* to perform halt.
GC Control_Single Stream	Start single stream run. Normally **0.0**. *Continuous Single Stream* mode: Write the stream number (in floating point) to start with a purge, and the negative of the stream number to start without a purge. *Single Analysis Non-continuous Single Stream* mode: Write (128.0 + the stream number) (in floating point) to start with a purge and the negative of (128.0 + the stream number) to start without a purge.

<table>
<tr><th>Modbus register</th><th>Remarks</th></tr>
<tr><td>GC Control_Calibration</td><td>Start calibration sequence.
Normally 0.0.
For normal calibration:
Write the stream number of the calibration stream in floating point to start calibration sequence with a purge or write the negative of the stream number to start calibration sequence without a purge.</td></tr>
<tr><td>GC Control_Validation</td><td>Start validation sequence.
Normally 0.0.
For validation:
Write the stream number of the validation stream in floating point to start validation sequence with a purge or write the negative of the stream number to start validation sequence without a purge.</td></tr>
<tr><td>GC Control_Stream Sequence Select</td><td>Read-write register. When read, returns currently selected stream sequence. To change stream sequence, write the sequence number.
Value stream sequence
<table>
<tr><th>Value</th><th>Stream sequence</th></tr>
<tr><td>1</td><td>Default stream sequence</td></tr>
<tr><td>2</td><td>Aux stream sequence 1</td></tr>
<tr><td>3</td><td>Aux stream sequence 2</td></tr>
</table></td></tr>
<tr><td>GC Control_Analyser Control (Write Reg 9030)</td><td>GC remote control register. Please refer to Read-write remote control register (9030).
for details.</td></tr>
<tr><td>Acknowledge All Alarms</td><td>Normally 0.0. Write 1 to acknowledge all alarms.</td></tr>
<tr><td>Component Data 1_Calib Conc[Component 1..15]</td><td>Update calibration concentration from PLC before starting calibration.</td></tr>
<tr><td>Component Data 1_Resp Fact %[Component 1..15]</td><td>Update response factors from PLC.</td></tr>
<tr><td>Stream Sequence - Default Stream Sequence</td><td>Reads the sequence of streams. For example, if the current Sequence is 1, 2, then this register reads a value of 12.
To change the sequence of streams:
For example, to change the Sequence to 2,3, write 23 to this register.</td></tr>
<tr><td>GC Control_Auto Valve Timing</td><td>Start auto valve timing. Normally 0.0. Write
• Calibration stream number: to start AVT from current settings.
• Calibration stream number + 20 - to start AVT from default settings.</td></tr>
</table>

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