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# Gas Chromatograph Interface Program (for the ROC800-Series Remote Operations Controllers) User Manual

**Remote Automation Solutions**

EMERSON. Process Management

## Revision Tracking Sheet

## March 2009

This manual may be revised periodically to incorporate new or updated information. The revision date of each page appears at the bottom of the page opposite the page number. A change in revision date to any page also changes the date of the manual that appears on the front cover. Listed below is the revision date of each page (if applicable):

| Page | Revision |
|---|---|
| All pages | Mar-09 |
| All pages | Jul-08 |
| All pages | May-08 |
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# Contents

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# Chapter 1 – Introduction

This chapter describes the structure of this manual and presents an overview of the Gas Chromatograph Interface Program for the ROC800-Series (ROC800) Remote Operations Controllers.

In This Chapter



## 1.1 Scope and Organization

This document serves as the user manual for the Gas Chromatograph Interface program, which is intended for use in a ROC800. This manual describes how to download, install, and configure the Gas Chromatograph Interface user program (referred to as the "GC Interface program" or "the program" throughout the rest of this manual). You access and configure this program using ROCLINK™ 800 Configuration Software loaded on an IBM-compatible personal computer running Windows® 2000 (with Service Pack 2), XP, or Vista.

The sections in this manual provide information in a sequence appropriate for first-time users. Once you become familiar with the procedures and the software, the manual becomes a reference tool.

This manual has the following major sections:

- *Chapter 1 – Introduction*
- *Chapter 2 – Installation*
- *Chapter 3 – Configuration*
- *Chapter 4 – Reference*

This manual assumes that you are familiar with the ROC800 and its configuration. For more information, refer to the following manuals:

- *ROC809 Remote Operations Controller Instruction Manual* (Form A6116)
- *ROC827 Remote Operations Controller Instruction Manual* (Form A6175)
- *ROCLINK 800 Configuration Software User Manual* (Form A6121).

## 1.2 Product Overview

The GC Interface program enables the ROC800 to communicate directly with one gas chromatograph (GC) on an EIA-232 (RS-232) or up to two GCs on an EIA-485 (RS-485) communications port. Gas Chromatographs supported include the Daniel (Danalyzer) and Rosemount Analytical Models 500, 570, 590, 700, 770 and 1000/1000A. GC controllers supported include the Daniel and Rosemount Analytical Models 2251, 2255, 2350, 2350A and 2360. The program communicates directly with the GC using Modbus protocol (in which the ROC800 has Master status). The ROC800 polls data from the GC, validates that data, and updates the appropriate station parameters using that data.

The program can poll up to eight GC streams on one GC or up to a total of ten streams on two GCs. The total number of streams the program can process may be limited by the number of stream licenses available in the ROC800. This value is listed in the App Code field on the License Key Administrator screen (**Utilities** > **License Key Administrator**) in ROCLINK™ 800. Refer to *Section 2.1.1* for further information on the ROC800 license keys.

In order to update station data in the ROC800, you must assign the streams to a station in the ROC800's database. This allows the ROC800 to log the gas component data, heating value, and specific gravity and use these values in volume, mass, and energy calculations.

### 1.2.1 Communications Wiring

The GC must be connected to the communications port on the ROC800 using 12 AWG (or smaller) wire. *Figure 1* shows the wiring for an EIA-232 (RS-232) to a Daniel 2350A GC

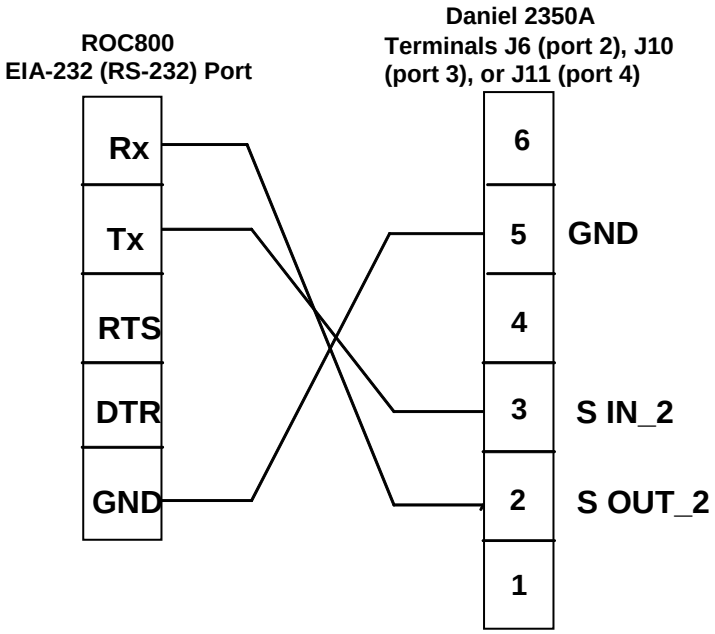


*Figure 1. Communications Wiring*

### 1.2.2 Autoconfigure

The GC Program provides an autoconfigure option on the GC Interface screen (see *Figure 13*). This option enables the program to automatically configure the communication ports and Modbus parameters necessary to poll the GC(s). For this option to work, however, you **must first** specify a communication port in the Comm Port # frame on the GC Interface screen, specify the maximum number of streams and Modbus address for each GC in use, and modify the Modbus register table location, if desired. Then, when you select Autoconfigure, the program sets the selected communication port parameters to the following values:

| | |
|---|---|
| Baud Rate | 9600 |
| Data Bits | 7 |
| Stop Bits | 1 |
| Parity | Even |
| Key-On Delay | 200 mSec |
| Key-Off Delay | 200 mSec |
| Port Owner | Modbus Master |

The program sets the Modbus configuration parameters for the selected comm port to the following values:

| | |
|---|---|
| Transmission Mode | ASCII |
| Byte Order | MSB First |
| Event Log Enable | Disabled |
| Master Starting Request Number | 1 |
| Master Number of Requests | 8 |
| Master Continuous Polling Enable | Disabled |

The program automatically configures the Modbus Master Table using values in the Comm Port # and Modbus Address fields on the GC Interface screen to poll for the following registers in the GC:

| | |
|---|---|
| 3001–3016 | Component IDs, Table 1 |
| 3017–3032 | Component IDs, Table 2 |
| 3034 | Current Stream |
| 3035 | Mask of Streams associated with Table 1 |
| 3045 | Cycle Start Time – minutes |
| 3046 | GC Alarm 1 |
| 3047 | GC Alarm 2 |
| 3059 | Calibration/Analysis Flag |
| 7001–7016 | Gas Composition Values Mole % Comp 1–16 |
| 7033 | BTU (day) |
| 7034 | BTU (saturated) |
| 7035 | Specific Gravity |
| 7036 | Compressibility |
| 7037 | Wobbe Index |
| 7038 | Total Unnormalized Mole % |
| 7039 | Total GPM CF |
| 7040–7044 | User Defined Calc Values |
| 7070–7084 | User Defined Average |
| 9034 | Active Alarm Status |
| 9035 | Unacknowledged Alarm Status |

The Autoconfigure option configures Modbus Master Tables for each GC with a valid address. The first GC's master table uses the first logical point for the communications port and the second GC (if present) uses the second logical point for its communications port. The actual poll sequence set for each GC is:

| |
|---|
| 3045–3047 |
| 3001–3032 |
| 3034–3035 |
| 3059 |
| 7001–7016 |
| 7033–7044 |
| 7070–7084 |
| 9034–9035 |
| 3045 |

The Modbus Register to TLP Mapping assigns TLPs to registers. The program maps TLPs to the register table you specify in the Modbus Register Table Location field on the GC Interface screen. The parameters necessary for this program automatically map to the appropriate registers.

Finally, when the autoconfigure process completes, the program disables the autoconfigure parameter.

**Note**: After the autoconfigure process completes, you may modify the Modbus Master Table and/or the Modbus Register Table, but register 3045 **must** be the **first and last** register polled. The first poll must be stored in a register mapped to GC Stream parameter Sample Min Start (66,0,17) and the last poll must be stored in a register mapped to GC Stream parameter Sample Min End (66,0,16).

### 1.2.3 Validating GC Data

When the polls are complete, the program validates the data to ensure the polling was successful and data is correct. This validation occurs before the program copies the GC stream data to the station. Checks include:

- The Communication Status (Point 121, Parameter 6, 12, 18, etc.) must return valid responses (value of 8) for all registers polled. The program does not copy gas analysis data to the station if errors are present.
- If Bypass Alarm 1 (Point 65, Parameter 11) is disabled, the Alarm Flag 1 (Point 66, Parameter 18, bits 14 & 15) from the GC is checked for errors. The program does not copy gas analysis data to the station if errors are present.
- If Bypass Alarm 2 (Point 65, Parameter 12) is disabled, the Alarm Flag 2 (Point 66, Parameter 19, bits 0, 1, 2 & 3) from the GC is checked for errors. The program does not copy gas analysis data to the station if errors are present.

- The Calibration Flag (Point 66, Parameter 20) is checked to ensure it is in the Analysis State. The program does not copy gas analysis data to the station if the Calibration Flag is not in the Analysis State.
- The Starting Sample Minute (Point 66, Parameter 17) must be different than the previous or the program does not copy gas analysis data to the station.
- The Starting Sample Minute (Point 66, Parameter 17) and Ending Sample Minute (Point 66, Parameter 16) in the poll must match or the program does not copy gas analysis data to the station.
- The current Stream Number (Point 66, Parameter 2) must be assigned to a station and have a license key.
- The Total Un-Normalized Mole % (Point 66, Parameter 9) must be within plus or minus Total Mole % Deviation (Point 65, Parameter 14) of 100%. The program does not copy gas analysis data to the station if the value is outside of this limit.
- The Mole Sum (Point 66, Parameter 21) must be within plus or minus Total Mole % Deviation (Point 65, Parameter 14) of 100%. The program does not copy gas analysis data to the station if the value is outside of this limit.
- The Heating Value [Point 66, Parameter 4 (wet) or 5 (dry)] must be between the Heating Value Low Limit (Point 65, Parameter 9) and Heating Value High Limit (Point 65, Parameter 10) set on the GC Config screen. The program does not copy gas analysis data to the station if the value is outside of these limits.

  **Note**: Unless you enable the HV Limits on the GC Stream Data screen, the program uses the Heating Value limits on the GC Config screen as the global limits for all streams in the GC.

- If you enable HV Limits (Point 66, Parameter 90) on the GC Stream Data screen, the program checks that the Stream Heating Value is between the BTU Low Limit (Point 66, Parameter 91) and BTU High Limit (Point 66 Parameter 92) values. If this value is outside of these limits, the program does not copy gas analysis data to the station.

  **Note**: The HV Limits on the GC Stream Data screen are set on a per-stream basis. If you enable HV Limits, the values entered in the BTU Low Limit and BTU High Limit fields overrides the Heating Value limits set on the GC Config screen for the selected stream **only**.

- The Specific Gravity (Point 66, Parameter 6) must be between 0.07 and 1.52. The program does not copy gas analysis data to the station if this value is outside of the limits.

**Note**: The program copies each GC stream component to its corresponding component in the station, **with the exception of neo-pentane**. Neo-pentane is added to the iso-pentane component and then copied to the station. The heating value and specific gravity are also copied to the appropriate station.

## 1.3 Program Requirements

The GC Interface program is compatible with version 2.13 (or greater) of the ROC800 firmware and with version 1.82 (or greater) of the ROCLINK 800 software.

Program specifics include:

| File Name | Target Unit/ Version | User Defined Point (UDP) | Flash Used (in bytes) | SRAM Used (in bytes) | DRAM Used (in bytes) | ROCKLINK 800 Version | Display Number |
|---|---|---|---|---|---|---|---|
| GCInterface.tar | ROC800 2.13 | 65, 66 | 50661 | 2926 | 94208 | 1.82 | 8, 9, 10 |

**Note**: You must connect a PC to the ROC800's LOI port before starting the download.

For information on viewing the memory allocation of user programs, refer to the *ROCLINK 800 Configuration Software User Manual* (Form A6121).

### 1.3.1 License Keys

License keys, when matched with valid license codes, grant access to applications such as the GC Interface program.

The term "license key" refers to the physical piece of hardware that can contain up to seven different licenses (refer to *Figure 2*). Each ROC800 can have none, one, or two license keys installed. If you remove a license key after enabling an application, the firmware disables the task from running. This prevents unauthorized execution of protected applications in a ROC800.

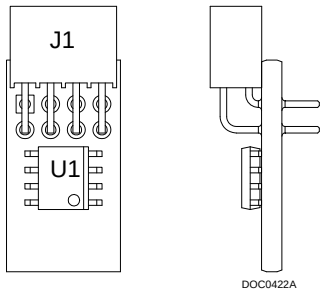


*Figure 2. License Key*

You must install the following license keys to use the GC Interface Program.

- GC Interface License Key.
- AGA_3/7/8 License Key (**not included in this program**).

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# Chapter 2 – Installation

This section provides instructions for installing the GC Interface program. Read *Section 1.3* of this manual for program requirements.

In This Chapter



## 2.1 Installing the License Key

If you order the GC Interface program for a new ROC800, your ROC800 is delivered with the license key installed. Go to *Section 2.2*. If you order the program for an existing ROC800, you must install the license key yourself.

**Caution**

**Failure to exercise proper electrostatic discharge precautions, such as wearing a grounded wrist strap may reset the processor or damage electronic components, resulting in interrupted operations.**

**When working on units located in a hazardous area (where explosive gases may be present), make sure the area is in a non-hazardous state before performing these procedures. Performing these procedures in a hazardous area could result in personal injury or property damage.**

To install a license key:

1. Remove power from the ROC800.
2. Remove the wire channel cover.
3. Unscrew the screws from the Central Processing Unit (CPU) faceplate.
4. Remove the CPU faceplate.
5. Place the license key in the appropriate terminal slot **(P4** or **P6)** in the CPU.

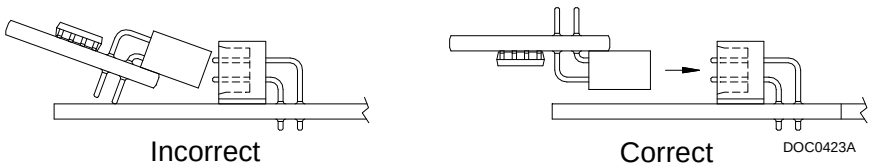


*Figure 3. License Key Installation*

**Note**: When using a single license key, install it in **slot P4**.

6. Press the license key into the terminal until it is firmly seated (refer to *Figure 3*).
7. Replace the CPU faceplate.
8. Replace the screws on the CPU faceplate.
9. Replace the wire channel cover.
10. Restore power to the ROC800.

### 2.1.1 Verifying the License Key Installation

After you install the license key, you can verify whether the ROC800 recognizes the key. From the ROCLINK 800 screen, select **Utilities** > **License Key Administrator**. The License Key Administrator screen displays:

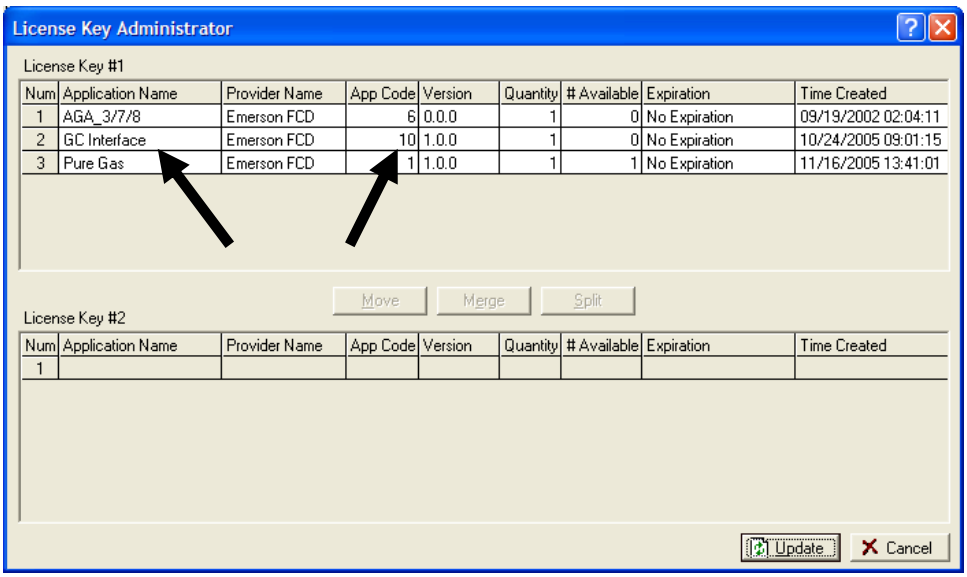


*Figure 4. License Key Administrator*

The GC Interface program appears in the Application Name column. (For further information on the License Key Administrator screen, refer to the *ROCLINK 800 Configuration Software User Manual*, Form A6121).

**Note**: The value in the App Code field on this screen indicates the total number of stream licenses available on this ROC800.

After you verify that the license key is correctly installed and recognized, proceed to *Section 2.2*.

## 2.2 Downloading the Program

This section provides instructions for installing the program into the Flash memory on the ROC800.

To download the program using ROCLINK 800 software:

1. Connect the ROC to your computer using the LOI port.
2. Start and logon to ROCLINK 800.
3. Select **Utilities** > **User Program Administrator** from the ROCLINK menu bar. The User Program Administrator screen displays (see *Figure 5*):

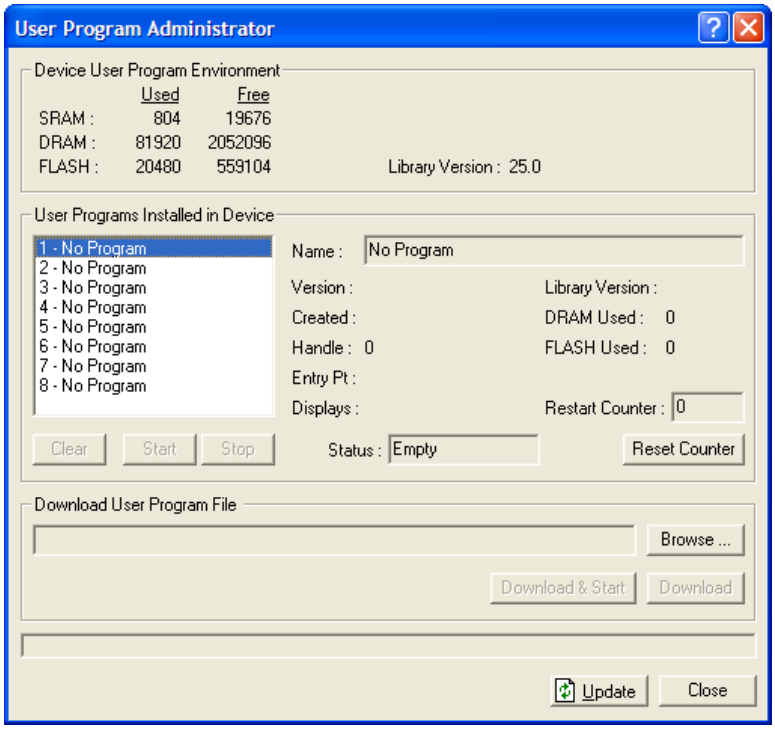


*Figure 5. User Program Administrator*

4. Select any empty program number (in this case, number 2) into which to download the program.
5. Click **Browse** in the Download User Program File frame. The Select User Program File screen displays (see *Figure 6*).
6. Select the path and user program file to download from the CD-ROM. (Program files are typically located in the Program Files folder on the CD-ROM). As *Figure 6* shows, the screen lists all valid user program files with the .TAR extension:

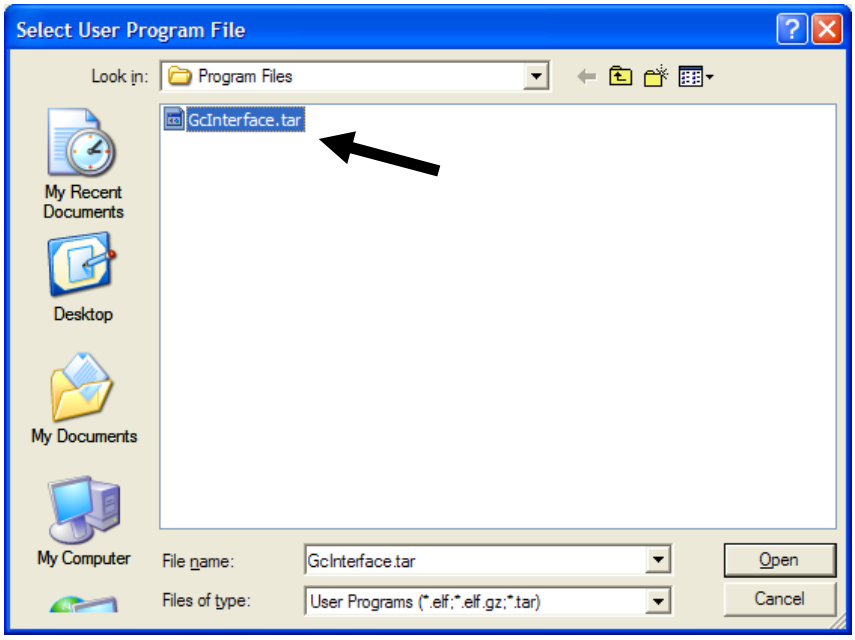


*Figure 6. Select User Program File*

7. Click **Open** to select the program file. The User Program Administrator screen displays. As shown in *Figure 7*, note that the Download User Program File frame identifies the selected program and that the **Download & Start** button is active:

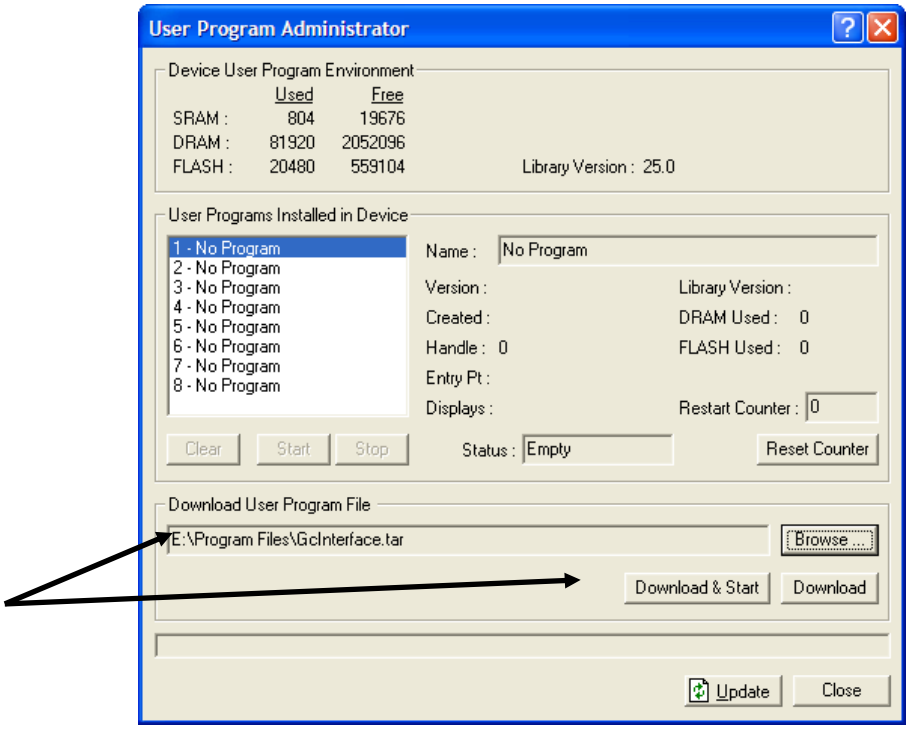


*Figure 7. User Program Administrator*

8. Click **Download & Start** to begin loading the selected programs. The following message displays:

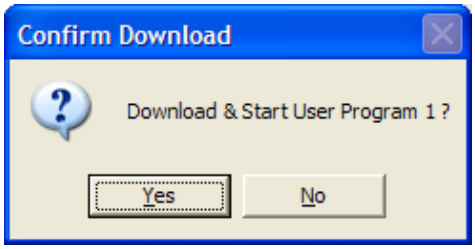


*Figure 8. Confirm Download*

**9.** Click **Yes** to begin the download. When the download completes the following message displays:

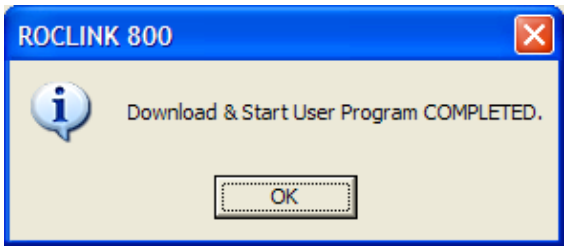


*Figure 9. ROCLINK 800 Download Confirmation*

**10.** Click **OK**. The User Program Administrator screen displays (see *Figure 10*). Note that:

- The Device User Program Environment frame reflects the use of system memory.
- The User Programs Installed in Device frame identifies the installed program(s).
- The Status field indicates that the program is running.

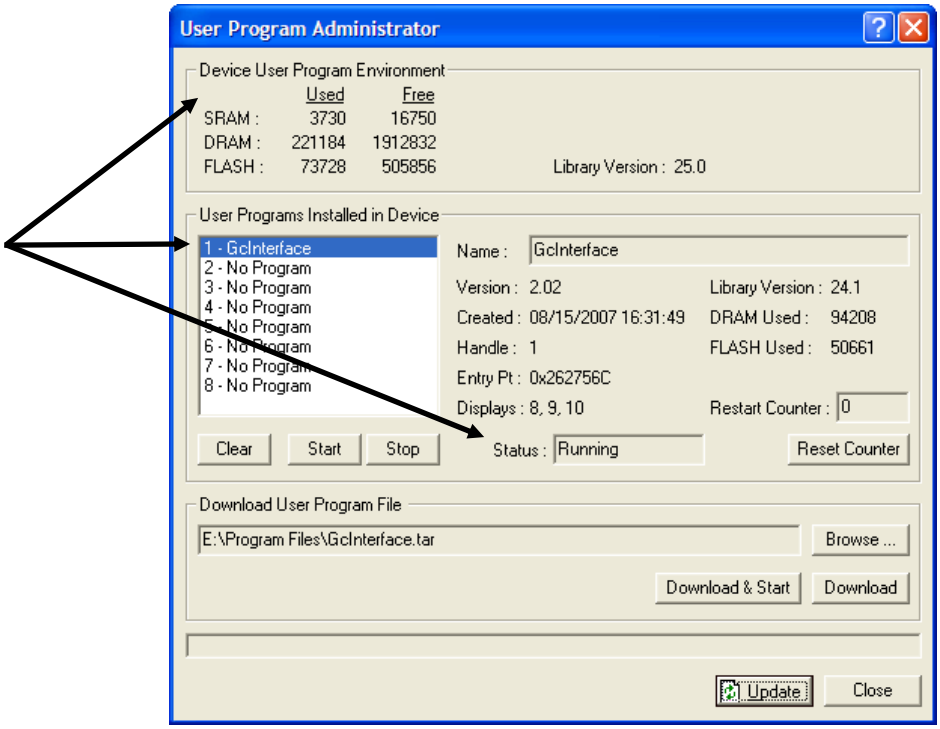


*Figure 10. User Program Administrator*

**11.** Click **Close**. The ROCLINK 800 screen displays and the download is complete.

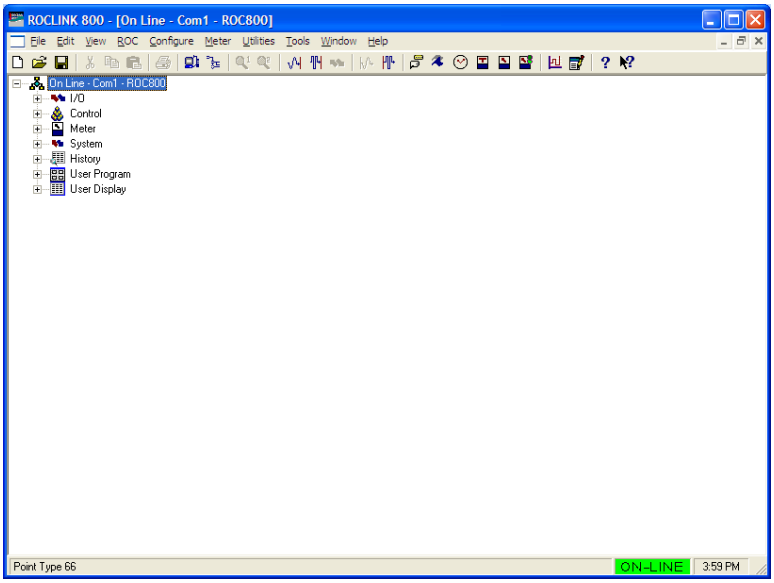


*Figure 11. ROCLINK 800*

# Chapter 3 – Configuration

After you have loaded the GC Interface program on the ROC800, you configure the program using three program-specific screens (GC Interface, GC Configuration, and GC Stream Data) and one ROCLINK 800 screen (Station Setup).

## In This Chapter



You must configure the software before you can establish communications with the GC. To configure the program (after logging onto ROCLINK 800 and successfully installing the program and license key), proceed through the program screens as shown in this section.

**Note**: Using MON 2000 software, you set the Daniel GC communications port to the SIM 2251 protocol. For all other parameter configurations, refer to the MON 2000 documentation.

You can access all the program-specific screens from the main ROCLINK 800 screen:

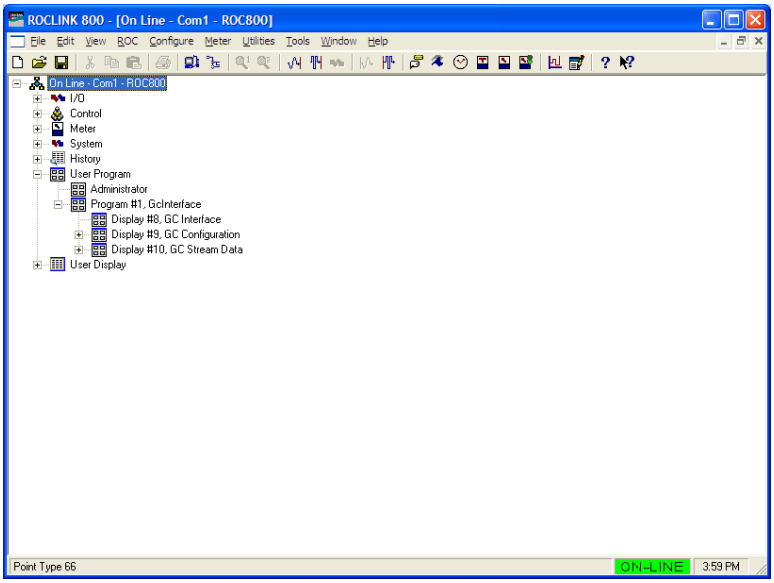


*Figure 12. ROCLINK 800*

## 3.1 GC Interface Screen

Use this screen to configure one or more GC addresses, select a Comm port, modify the Modbus Register Table location (if necessary), assign the GC streams to stations, enable GC polling, and enable automatic configuration of the Modbus parameters and communications ports. To access this screen:

1. From the Directory Tree, select **User Program** > **Program #1, GcInterface**.
2. Double-click **Display #8, GC Interface**. The GC Interface screen displays:

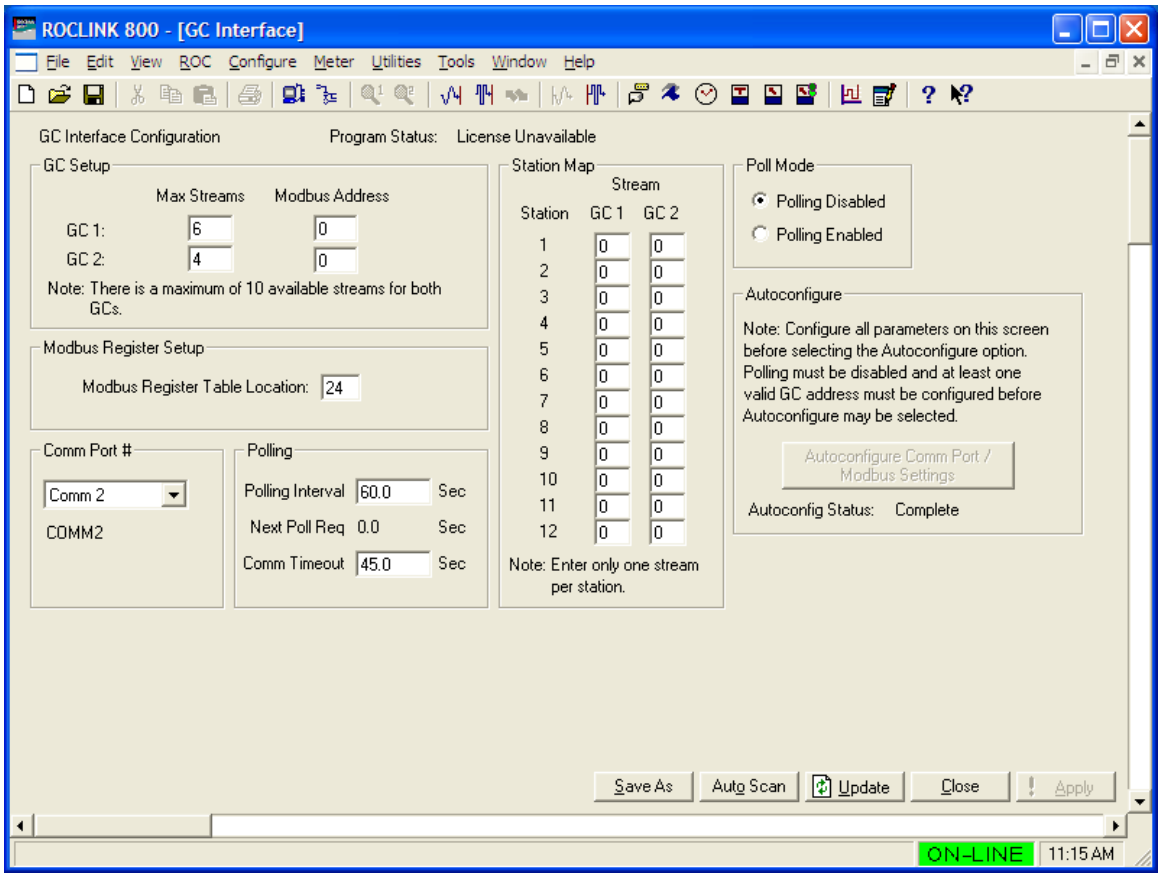


*Figure 13. GC Interface*

3. Review the values in the following fields:

| Field | Description |
|---|---|
| **Max Streams** | Sets the maximum number of streams from the gas chromatograph. Valid values are **1** through **8**, depending on your license. You cannot define more than 10 streams for both GCs.<br><br>**Note**: Your license limits the maximum number of allowable streams for one or both GCs. See *Section 2.1.1* for instructions on determining the maximum number of allowable streams. |

| Field | Description |
|---|---|
| **Modbus Address** | Sets the address the ROC800 uses to communicate with the gas chromatograph. You must set this value before the program can poll data and write it to the station. If you set this field to 0 (the default), GC polling is disabled.<br><br>**Note**: The Autoconfigure option uses this value (see *Section 1.2.2*). |
| **Modbus Register Table Location** | Identifies the location of the Modbus Register Table. Valid values are **1**–**24**. The default value is 24.<br><br>**Note**: The program uses this value for automatic configuration (see *Section 1.2.2*). |
| **Comm Port #** | Indicates which ROC800 communications port the program uses for the EIA-232 (RS-232) or EIA-485 (RS-485) connection to the GC(s). The program uses this value for automatic configuration (see *Section 1.2.2*). Click ▼ to display all valid values.<br><br>**Note**: Unlike other programs, the Comm Port owner is Modbus Master. For that reason, the Comm Port owner should not be this program. |
| **Polling Interval** | Sets the delay, in seconds, the program waits before asking the GC for the next set of results.<br><br>**Note**: The GC typically takes 3 to 6 minutes to update results. |
| **Next Poll Req** | This **display-only** field shows the number of seconds remaining until the next polling cycle. After a poll cycle completes, the program resets this field to the value stored in the Polling Interval field. |
| **Comm Timeout** | Sets the period, in seconds, the system waits for the GC to respond to a Modbus poll. |
| **Station/Stream** | Associates GC streams with ROC800 stations. Valid values are **1**–**8**. Enter **0** to disable station updating.<br><br>You **must** configure this parameter before the program can poll data and write it to the station. The program stores the gas composition data for the specified stream in the gas quality parameters of the specified station (see *Section 3.4*). |
| **Poll Mode** | Indicates whether the program attempts to poll the GC(s).<br><br>**Note**: A valid license key and at least one valid GC address must be present before polling can be enabled. |

| Field | Description |
|---|---|
| **Autoconfigure** | Indicates whether the program automatically determines the configuration values for communications ports and Modbus settings for a Daniel gas chromatograph. See *Section 1.2.2* for further information on autoconfiguration.<br><br>Polling **must** be disabled and at least one valid GC address configured before you can initiate Autoconfigure.<br><br>**Note**: If you **do not** select this option, you must configure the comm port, Modbus comm configuration, Modbus register mapping, and Modbus master table. Alternately, you can select Autoconfigure and then use the ROCLINK 800 Modbus Configuration screen (**Configure** > **MODBUS** > **Configuration**) to change the values to suit the application. |

4. Click **Apply** to save any changes you have made to this screen.
5. Click **Close** to return to the ROCLINK 800 screen. Proceed to *Section 3.2* to define GC configuration settings.

## 3.2 GC Configuration Screen

Use this screen to configure GC settings. It also displays communication status for each polling, configurable AGA update parameters, and some returned data values. To access this screen:

1. From the Directory Tree, select **User Program** > **Program #1, GcInterface** > **Display #9, GC Configuration**.
2. Double-click **#1, GC Config1**. The GC Configuration screen displays:

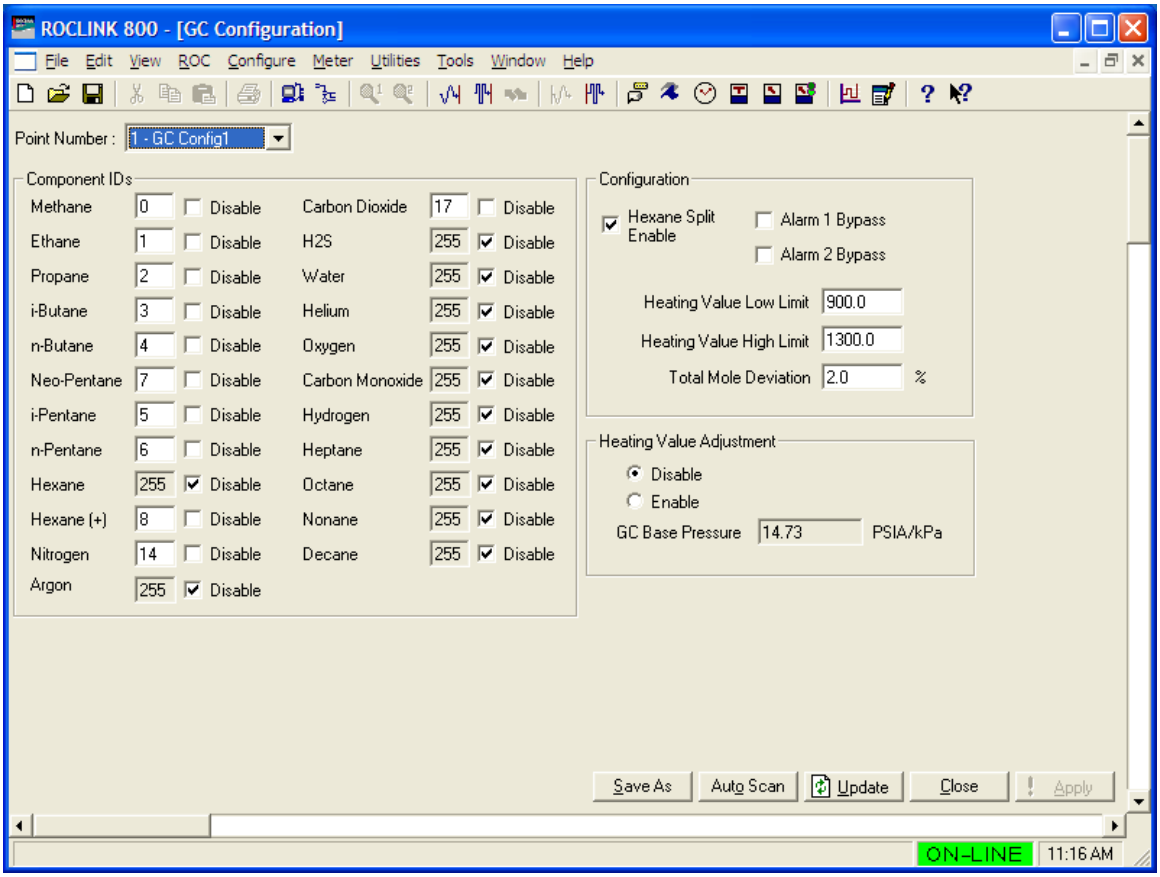


*Figure 14. GC Configuration*

3. Complete the screen fields based on your organization's requirements.

| Field | Description |
|---|---|
| **Point Number** | Identifies the GC number for this screen. The program provides one instance for each GC. Click ▼ to display all defined instances. |
| **Component IDs** | Assigns each gas component a value in component data tables 1 and 2. Select **Disable** to identify any gases the ROC800 supports but for which the gas chromatograph does not provide data. |

| Field | Description |
|---|---|
| **Hexane Split Enable** | Enables the hexane(+) composition to be split between hexane, heptane, octane, nonane, and decane. The program uses a pre-defined split if the component ID for hexane(+) is set to 8, 9, 10, or 11 (see table below). For any other valid component ID, the program uses the split specified on the Station Setup screen's Advanced tab (**Meter** > **Setup** > **Station**). |

| ID | Hexane % | Heptane % | Octane % | Nonane % | Decane % |
|---|---|---|---|---|---|
| **8** | 47.466 | 35.34 | 17.194 | 0 | 0 |
| **9** | 50 | 50 | 0 | 0 | 0 |
| **10** | 50 | 25 | 25 | 0 | 0 |
| **11** | 57.143 | 28.572 | 14.285 | 0 | 0 |

| | |
|---|---|
| **Alarm Bypass 1** and **Alarm Bypass 2** | Sets whether the program updates station values in the ROC800 if the Alarm 1 or Alarm 2 field on the GC contains an alarm condition. Select this check box to allow the program to update the station values even if the Alarm 1 or Alarm 2 field in the GC displays an alarm. |
| **Heating Value Low Limit** | Sets the minimum heating value the ROC800 accepts for a station update. The ROC800 considers any heating values the GC sends that are lower than this value to be erroneous and does not forward them to the station. |
| **Heating Value High Limit** | Sets the maximum heating value the ROC800 accepts for a station update. The ROC800 considers any heating values the GC sends that are greater than this value to be erroneous and does not forward them to the station. |
| **Total Mole Deviation** | Sets, as a percentage, either the difference plus or minus from 100% that the program allows for Total Unnormalized Mole % or the sum of the component mole percentages. The program subtracts or adds this value to 100% to determine the range. The ROC800 considers any stream gas compositions that exceed this value to be erroneous and does not forward them to the station. Valid values are **0-100%**. |
| **Heating Value Adjustment** | Sets whether the program (in case of differing base pressures between the GC and the station point) adjusts the GC's heating value before storing the value in the station parameter. If you click **Enable**, the heating value stored in the station equals the GC heating value multiplied by the ratio of the station base pressure to the GC's base pressure. |

| Field | Description |
|---|---|
| **GC Base Pressure** | Sets the base pressure, in PSIA or kPa, the GC uses to determine the heating value that is returned on a Modbus request.<br><br>**Note**: This field is active only if you enable the Heating Value Adjustment. |

4. Click **Apply** to save your changes.
5. Click **Close** to return to the ROCLINK 800 screen. Proceed to *Section 3.3* to review stream data.

## 3.3 GC Stream Data Screen

Use this screen to review stream data the ROC800 has received from the GC(s). The program provides one iteration of this screen for each active stream in each GC. You can move between stream data displays using either the Point Number drop-down box on this screen or from the list on the Directory Tree. With the exception of the Alarm Logging Mode and HV Limits, the fields on this screen are display-only. To access this screen:

1. From the Directory Tree, select **User Program** > **Program #1, GcInterface** > **Display #10, GC Stream Data.**
2. Double-click **#1, Cur Stream**. The GC Stream Data screen displays:

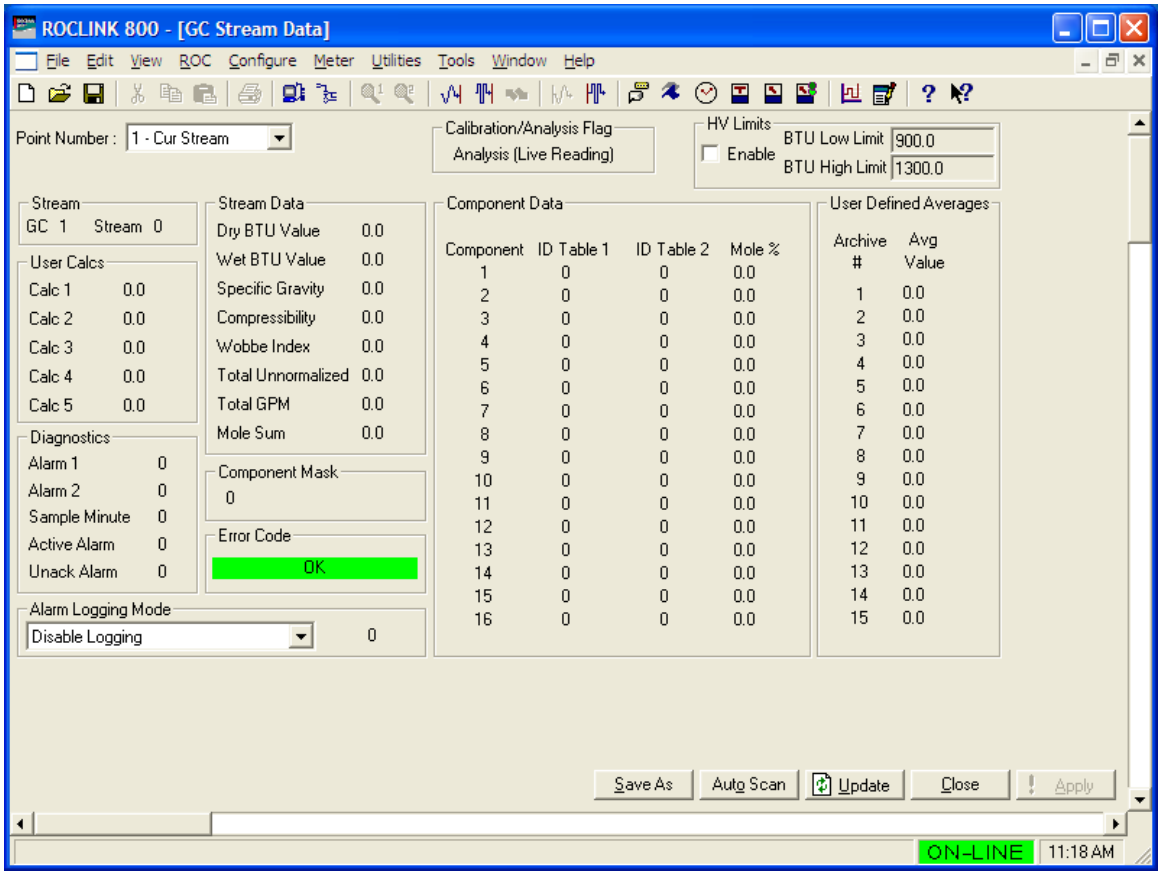


*Figure 15. GC Stream Data*

3. Review—and change as necessary—the values in the following fields:

| Field | Description |
|---|---|
| **Point Number** | Identifies the stream number for this screen. Click ▼ to display all defined streams. |
| **Calibration/Analysis Flag** | This **read-only** field indicates the chromatograph's status (self-calibration or analysis). |

| Field | Description | |
|---|---|---|
| **HV Limits** | Select the **Enable** checkbox to allow user-defined Heating Value (HV) limits to be set for the selected run. If the HV Limits are enabled, the BTU Low/High values for the selected run will override the Heating Value High/Low Limits set on the GC Configuration screen. | |
| | **BTU Low Limit** | Sets the minimum heating value for the selected run that the ROC800 accepts for a station update. The ROC800 considers any heating values the GC sends that are greater than this value to be erroneous and does not forward them to the station.<br><br>**Note:** Values entered in this field override the Heating Value Low Limits set on the GC Configuration screen **for the selected run only**. |
| | **BTU High Limit** | Sets the maximum heating value for the selected run that the ROC800 accepts for a station update. The ROC800 considers any heating values the GC sends that are greater than this value to be erroneous and does not forward them to the station.<br><br>**Note:** Values entered in this field override the Heating Value High Limits set on the GC Configuration screen **for the selected run only**. |
| **Stream** | This **read-only** field identifies the defined stream for the GC. | |
| **Stream Data** | This **read-only** field shows values for the selected stream. | |
| **Component Data** | This **read-only** field shows component values for the selected stream. | |
| **User Defined Averages** | This **read-only** field shows historical averages for the selected stream. | |
| **User Calcs** | This **read-only** field identifies any user-defined calculations for the selected stream. | |
| **Diagnostics** | This **read-only** field shows any diagnostic codes for the selected stream. | |

| Field | Description |
|---|---|
| **Component Mask** | This **read-only** field shows which of the two Component ID tables each stream uses. Bit 0 of the Component Mask represents stream 1, bit 1 represents stream 2, and so on. If the bit is set, the program uses Component ID table 1. If the bit is not set, the program uses Component ID table 2.<br><br>**Note**: This value reflects settings from the GC. |
| **Error Code** | This **read-only** field provides a color-coded error display. Red indicates an alarm condition.<br><br>**Note:** Error code changes are logged in the Event Log as UDP66. Error code entries in the Event Log are the numerical values shown in parenthesis. |
| **OK (0)** | All checks passed. |
| **Poll Seq Fail (1)** | Poll Sequence Failure – One or more master table requests were unsuccessful (not an 8). |
| **Alarm Fail (2)** | Alarm Check Failure – There are non-bypassed alarms in effect. |
| **Cal Flag Fail (3)** | Calibration Check Failure – The unit is in calibration mode. |
| **Sample Min Change (4)** | Sample Minute Changed – The sample minute changed while collecting data. |
| **Unnorm Mole % Fail (5)** | Total Un-Normalized % Failure – The total un-normalized mole percentage is not within range. |
| **Mole Sum Fail (6)** | Mole Sum Check Failure – The mole sum is not within the range. |
| **Heat Val Range Fail (7)** | BTU Range Failure – BTU is not within specified ranges. |
| **Spec Grav Range Fail (8)** | Specific Gravity Range Failure – Specific gravity is not within specified ranges. |
| **Alarm Logging Mode** | Indicates how the program logs alarms with Spontaneous Report by Exception (SRBX) notification. Click ▼ to select a mode (described below).<br><br>**Note**: The system generates one alarm, regardless of the number of different errors that may occur in the time before the alarm clears. SRBX notification occurs based on the Alarm Logging Mode. For the system to generate an alarm (such as for a Poll Sequence Failure error), you must first enable the Alarm Logging Mode parameter on the current logical stream. |

| Field | Description | |
|---|---|---|
| | **Disable Logging** | No logging occurs. |
| | **Enable Logging, No SRBX** | Logging occurs, but without generating SRBX notifications. |
| | **Enable Logging, SBRX in Set** | Logging occurs, and SRBX notifications occur on alarm set. |
| | **Enable Logging, SRBX on Clear** | Logging occurs, and SRBX notifications occur on alarm clear. |
| | **Enable Logging, SRBX on Both** | Logging occurs, and SRBX notifications occur on both alarm set and alarm clear. |

4. Click **Apply** to save your changes.
5. Click **Close** to return to the ROCLINK 800 screen. Proceed to *Section 3.4* to set up station parameters.

## 3.4 Station Setup, Gas Quality Tab

Use this screen to set gas quality and heating values. To access this screen:

1. Select **Meter** > **Setup** > **Station** from the ROCLINK 800 menu bar. The Station Setup screen displays.

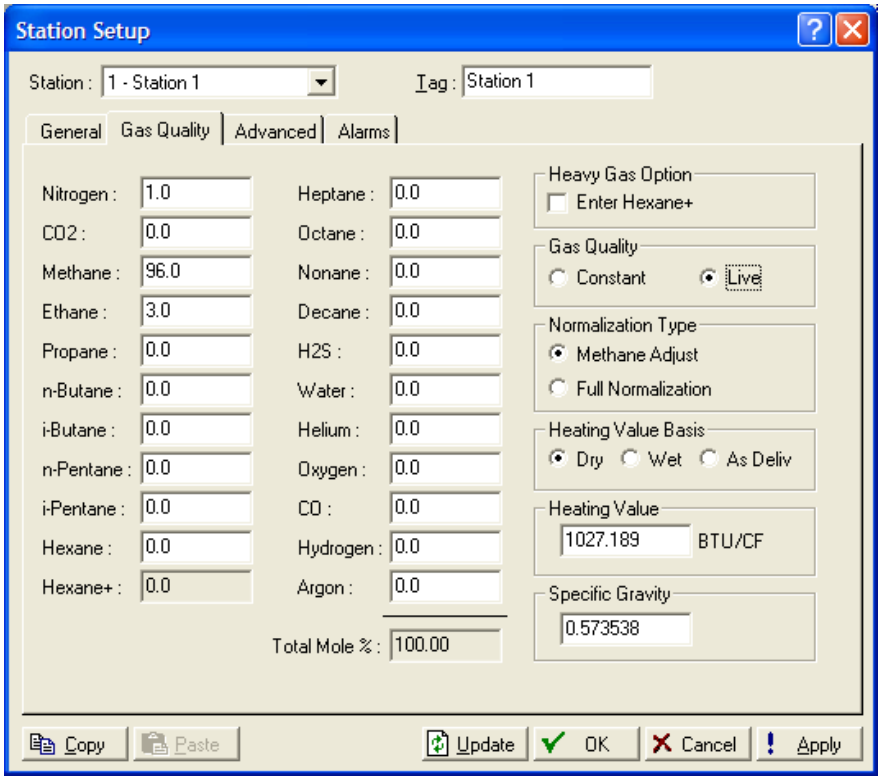


*Figure 16. Station Setup, Gas Quality tab*

2. Select the **Gas Quality** tab.
3. Review—and change as necessary—the values in the following fields:

| Field | Description |
|---|---|
| **Station** | Select the station number to which the GC stream has been assigned. |
| **Gas Quality** | Indicates source of the gas quality. The GC Interface program sets this field to **Live** when it copies data to the station. |
| **Heating Value Basis** | Determines the heating value (dry or saturated) the program copies to the station. Valid values for this program are **Dry** or **Wet**. If you select **Wet**, the program copies the saturated heating value to the station. If you select **As Deliv** or **Dry**, the program resets the value to Dry and copies the dry heating value to the station. |

| Field | Description |
|---|---|
| **Heavy Gas Option** | Permits calculations for hexane and other heavy gases.<br>**Note**: The program automatically selects this option if you checked the Hexane Split Enable option on the GC Configuration screen. |

4. Click **Apply** to save your changes. Proceed to *Section 3.5* to save the configuration.

## 3.5 Saving the Configuration

Whenever you modify or change the configuration, it is a good practice to save the final configuration to memory. To save the configuration:

1. Select **ROC** > **Flags**. The Flags screen displays:

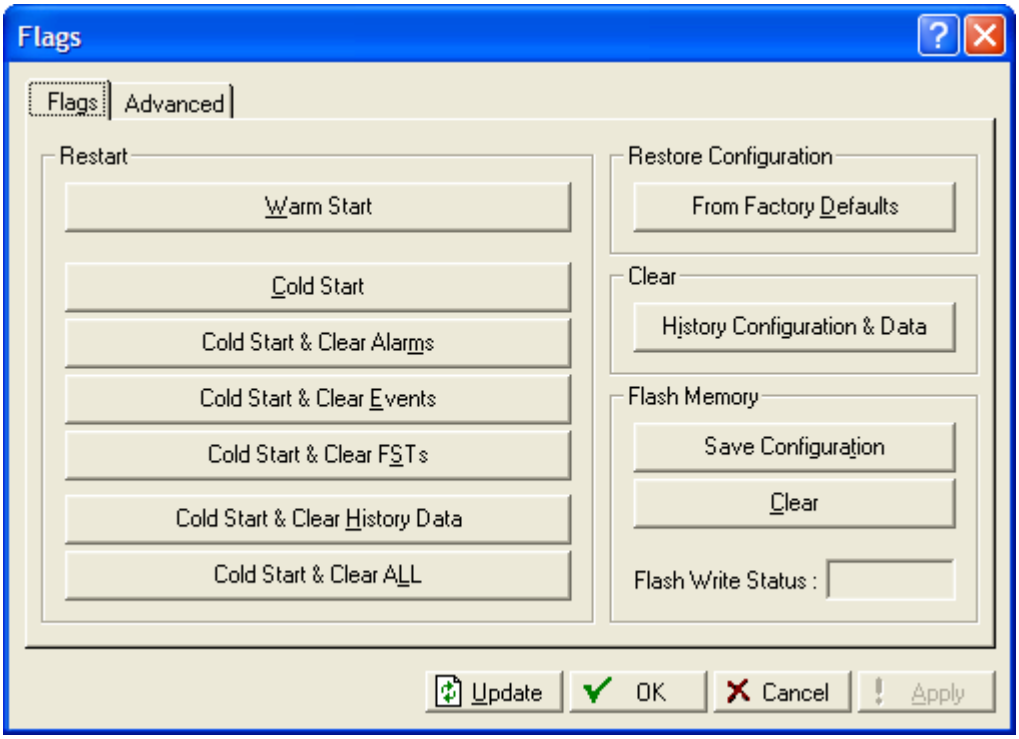


*Figure 17. Flags screen*

2. Click **Save Configuration**. A verification message displays:

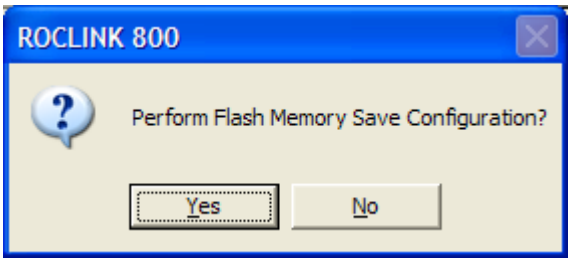


*Figure 18. Perform screen*

3. Click **Yes** to begin the save process. The Flash Write Status field on the Flags screen displays *In Progress*. When the process ends, the Flash Write Status field on the Flags screen displays *Completed*.
4. Click **Update** on the Flags screen. This completes the process of saving your new configuration.

**Note**: For archive purposes, you should also save this configuration to your PC's hard drive or a removable media (such as a diskette or a flash drive) using the **File** > S**ave Configuration** option on the ROCLINK 800 menu bar.

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# Chapter – 4 Reference

This section provides tables of information on the user-defined point types used by the GC Interface program.

## In This Chapter

## 4.1 Point Type 65: GC User Program Configuration and Status

Point type 65 contains the parameters for configuring the GC Interface program and houses the status information from the gas chromatograph. The program maintains two logical points of this point type.

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Point Tag ID | Tag | R/W | User | AC | 10 | 0x20 → 0x7E for each ASCII character | "GC Config" | 1.00 | Identification name for the GC Program. Values must be printable ASCII characters. |
| 1 | Point Version Number | Version | R/O | User | U32 | 4 | 0→0xFFFFFFFF | 1 | 1.00 | Version number of this user defined point. Version number of user defined point must match version of user program for calculation to run. |
| 2 | User Program Status | Status | R/O | Program | UINT8 | 1 | 0 → 3 | 0 | 1.00 | Indicates running status.<br>0: No Error<br>1: License Unavailable<br>2: Comm Configuration Failed<br>3: Bad Point Type Version |
| 3 | Autoconfiguration | Autoconf | R/W | Both | UINT8 | 1 | 0 → 1 | 1 | 1.00 | Sets autoconfiguration option<br>0: Autoconfiguration disabled<br>1: Autoconfiguration enabled |
| 4 | Comm Port Number | CommPort | R/W | User | UINT8 | 1 | 2→5 | 2 | 1.00 | Comm Port to be used |
| 5 | GC Address | GcAddr | R/W | User | UINT8 | 1 | 0→255 | 0 | 1.00 | The Modbus address for the GC. A zero disables polling. The GC Address parameter only configures the Modbus Master Table when autoconfiguration is enabled. |
| 6 | MODBUS Location | Locatn | R/W | User | UINT8 | 1 | 1→24 | 24 | 1.00 | This is the location to which the Modbus registers are configured (Logical + 1) |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 7 | Polling Interval | PollInt | R/W | User | FL | 4 | Any Positive Floating Point Number | 60 | 1.00 | Amount of delay in seconds before asking for next set of results. The GC typically takes 3 to 6 minutes to update the results. |
| 8 | Next Poll Request | PollNext | R/O | Program | FL | 4 | Any Positive Floating Point Number | 0 | 1.00 | Displays the number of seconds remaining until the next polling cycle. After a poll cycle is complete, this field is preset to the number stored in the Poll Interval Parameter. |
| 9 | Heating Value Low Limit | BtuLow | R/W | User | FL | 4 | Any Floating Point Number | 900.0 | 1.00 | This is the minimum heating value accepted by the ROC for a n AGA update. Heating values sent by the GC which are less than this number are considered to be erroneous and will not be forwarded to the ROC. |
| 10 | Heating Value High Limit | BtuHi | R/W | User | FL | 4 | Any Floating Point Number | 1300.0 | 1.00 | This is the maximum heating value accepted by the ROC for an AGA update. Heating values sent by the GC which are less than this number are considered to be erroneous and will not be forwarded to the ROC. |
| 11 | Bypass Alarm 1 | BypAl1 | R/W | User | UINT8 | 1 | 0→1 | 0 | 1.00 | Indicates how to interpret alarm 1 value.<br>0: Disable bypass – Don't populate the AGA gas composition information if an "Alarm 1" is present.<br>1: Enable bypass – Allow the ROC AGAs to be updated even if the "Alarm 1" field in the GC shows an alarm condition present. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 12 | Bypass Alarm 2 | BypAl2 | R/W | User | UINT8 | 1 | 0→1 | 0 | 1.00 | Indicates how to interpret alarm 2 value.<br>0: Disable bypass – Don't populate the AGA gas composition information if an "Alarm 2" is present.<br>1: Enable bypass – Allow the ROC AGAs to be updated even if the "Alarm 2" field in the GC shows an alarm condition present. |
| 13 | Max Streams | MaxStrm | R/W | User | UINT8 | 1 | 0→255 | 6 | 1.00 | Maximum number of GC stream licenses to check out for this program. |
| 14 | Total Mole % Deviation | Deviat | R/W | User | FL | 4 | 0→5.0 | 2 | 1.00 | The difference plus or minus from 100% that is allowable for both Total Unnormalized Mole % and mole sum values. Default is 98%-102%. |
| 15 | Hexane Split Enable | C6+Ena | R/W | User | UINT8 | 1 | 0→1 | 1 | 1.00 | Enables the GC's automatic C6 (+) split percentage for heavy gasses. |
| 16 | Communication Timeout | Timeout | R/W | User | FL | 4 | 0→60.0 | 45.0 | 1.00 | Time to wait in seconds for the GC to respond to all Modbus Polls. |
| 17 | Station 1 Stream | Stn1Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #1.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 | Station 2 Stream | Stn2Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #2.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 19 | Station 3 Stream | Stn3Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #3.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 20 | Station 4 Stream | Stn4Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #4.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 21 | Station 5 Stream | Stn5Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #5.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 22 | Station 6 Stream | Stn6Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #6.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 23 | Station 7 Stream | Stn7Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #7.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 24 | Station 8 Stream | Stn8Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #8.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 25 | Station 9 Stream | Stn9Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #9.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 26 | Station 10 Stream | Stn10Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #10.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 27 | Station 11 Stream | Stn11Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #11.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 28 | Station 12 Stream | Stn12Stm | R/W | User | UINT8 | 1 | 0→8 | 0 | 1.00 | Stream data to be used to update station #12.<br>0: Disable updating of station.<br>1-8: Stream number to use to update station's gas composition. |
| 29 | Methane Component ID | MethId | R/W | User | UINT8 | 1 | 0→255 | 0 | 1.00 | GC's Component ID for methane. |
| 30 | Ethane Component ID | EthId | R/W | User | UINT8 | 1 | 0→255 | 1 | 1.00 | GC's Component ID for methane. |
| 31 | Propane Component ID | PropId | R/W | User | UINT8 | 1 | 0→255 | 2 | 1.00 | GC's Component ID for propane. |
| 32 | i-Butane Component ID | IButId | R/W | User | UINT8 | 1 | 0→255 | 3 | 1.00 | GC's Component ID for i-butane. |
| 33 | n-Butane Component ID | NButId | R/W | User | UINT8 | 1 | 0→255 | 4 | 1.00 | GC's Component ID for n-butane. |
| 34 | Neo-Pentane Component ID | NeoPenId | R/W | User | UINT8 | 1 | 0→255 | 7 | 1.00 | GC's Component ID for neo-pentane. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 35 | i-Pentane Component ID | IPentId | R/W | User | UINT8 | 1 | 0→255 | 5 | 1.00 | GC's Component ID for i-pentane. |
| 36 | n-Pentane Component ID | NPentId | R/W | User | UINT8 | 1 | 0→255 | 6 | 1.00 | GC's Component ID for n-pentane. |
| 37 | Hexane Component | HexId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for hexane. |
| 38 | Hexane (+) Component ID | Hex+Id | R/W | User | UINT8 | 1 | 0→255 | 8 | 1.00 | GC's Component ID for hexane (+). |
| 39 | Nitrogen Component ID | NitroId | R/W | User | UINT8 | 1 | 0→255 | 14 | 1.00 | GC's Component ID for nitrogen. |
| 40 | Carbon Dioxide Component ID | CarDioId | R/W | User | UINT8 | 1 | 0→255 | 17 | 1.00 | GC's Component ID for carbon dioxide. |
| 41 | H2S Component ID | H2SId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for H2S. |
| 42 | Water Component ID | WaterId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for water. |
| 43 | Helium Component ID | HeliumId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for helium. |
| 44 | Oxygen Component ID | OxygenId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for oxygen. |
| 45 | Carbon Monoxide Component ID | CarMonId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for carbon monoxide. |
| 46 | Hydrogen Component ID | HydroId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for hydrogen. |
| 47 | Heptane Component ID | HeptId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for heptane. |
| 48 | Octane Component ID | OctId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for octane. |
| 49 | Nonane Component ID | NonId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for nonane. |
| 50 | Decane Component ID | DecId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for decane. |
| 51 | Argon Component ID | ArgId | R/W | User | UINT8 | 1 | 0→255 | 255 | 1.00 | GC's Component ID for argon. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 52 | Heating Value Adjust Option | HvOption | R/W | User | UINT8 | 1 | 0→1 | 0 | 2.0 | Enables adjustment of GC Heating Value (due to different base pressures in the GC and station) before storing the value in the Station point.<br>0: Disabled<br>1: Enabled |
| 53 | GC Base Pressure | GCBasePr | R/W | User | FL | 4 | 0→Valid Positive Floating Point Number | 14.73 | 2.0 | Base Pressure configured in the GC |
| 54 | Poll Mode | PollMode | R/W | User | UINT8 | 1 | 0→1 | 0 | 2.0 | Enables polling of the GC(s). A valid license key and at least one valid GC address must be present before polling can be enabled.<br>0: Disabled<br>1: Enabled |

## 4.2 Point Type 66: GC Stream Data

Point type 66 contains the parameters for configuring the GC Interface program and houses the status information from the gas chromatograph. The program maintains 11 logical points of this point type. Logical 0 is the current steam, and logicals 1 through 10 are mapped to streams on the gas chromatographs, as assigned by the maximum streams per GC (point type 65, parameter 13).

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Point Tag Id. | Tag | R/W | User | AC | 10 | 0x20 → 0x7E for each ASCII character | "Cur Stream" or "Stream #" | 1.00 | Logical zero has "Cur Stream", others have identification name for the specific stream. # is replaced with logical + 1. Values must be printable ASCII characters. |
| 1 | Point Version Number | Version | R/O | User | U32 | 4 | 0→0xFFFFFFFF | 1 | 1.00 | Version number of this user defined point. Version number of user defined point must match version of user program for calculation to run. |
| 2 | Stream Number | Stream | R/O | User | UINT16 | 2 | 1→8 | 1-8 depending on logical | 1.00 | Stream number the data in this logical refers to. Logical zero has a value 1-8 depending on the last stream read. Logicals 1-10 are set to 1-MaxStreams for GCs 1 and 2. |
| 3 | Component Table Mask | Mask | R/O | Program | UINT16 | 2 | 0→0xFFFF | 0 | 1.00 | Mask of streams associated with Component Table #1. Bit $2^n$ = 1 implies stream n is included. |
| 4 | Dry Heating Value | DHeatVal | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | Contains the last Dry Heating Value in BTU/cf or MegaJoule/$m^3$ calculated and returned from the GC. |
| 5 | Saturated Heating Value | SHeatVal | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | Contains the last Saturated Heating Value in BTU/cf or MegaJoule/$m^3$ calculated and returned from the GC. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 6 | Specific Gravity | SpecGrav | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | Contains the last specific gravity calculated and returned from the GC. |
| 7 | Compressiblitiy | Compress | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the last Compressiblity value calculated and returned from the GC. |
| 8 | Wobbe Index | WOBBE | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the last Wobbe Index value calculated and returned from the GC. |
| 9 | Total Un-Normalized Mole % | TotUnMol | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | Contains the total un-nomalized mole percent returned. |
| 10 | Total GPM | TotGpm | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the total GPM returned from the GC. |
| 11 | User Defined Calc 1 | Calc1 | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the value in the User Defined 1 Calculation returned from the GC. |
| 12 | User Defined Calc 2 | Calc2 | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the value in the User Defined 2 Calculation returned from the GC. |
| 13 | User Defined Calc 3 | Calc3 | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the value in the User Defined 3 Calculation returned from the GC. |
| 14 | User Defined Calc 4 | Calc4 | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the value in the User Defined 4 Calculation returned from the GC. |
| 15 | User Defined Calc 5 | Calc5 | R/O | Program | FL | 4 | Any IEEE floating point number | 0 | 1.00 | Contains the value in the User Defined 5 Calculation returned from the GC. |
| 16 | Sample Minute End | SamMinS | R/O | Program | UINT16 | 2 | 0→0xFFFF | 0xFFFF | 1.00 | Contains the sample minute at the end of the Modbus requests. |
| 17 | Sample Minute Start | SamMinE | R/O | Program | UINT16 | 2 | 0→60 | 0 | 1.00 | Contains the sample minute at the start of the Modbus requests. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 18 | Alarm 1 | Alarm1 | R/O | Program | UINT16 | 2 | 0→ 255 | 0 | 1.00 | Contains the value of the "Alarm 1" field of the GC. A zero represents that all alarms are clear. |
| 19 | Alarm 2 | Alarm2 | R/O | Program | UINT16 | 2 | 0→ 255 | 0 | 1.00 | Contains the value of the "Alarm 2" field of the GC. A zero represents that all alarms are clear. |
| 20 | Calibration Flag | CalFlag | R/O | Program | UINT16 | 2 | 0→ 255 | 1 | 1.00 | Contains the value of the "Calibration Flag" field of the GC.<br>0: Calculation data<br>1: Analysis data |
| 21 | Mole Sum | MoleSum | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | Contains the sum value of the mole percent read in poll block #5. |
| 22 | Error Code | ErrCode | R/O | Program | UINT8 | 1 | 0→8 | 0 | 1.00 | Contains the error checking result code. For more information, refer to *Section 3.3*.<br>0 = All checks passed.<br>1 = Poll Sequence Failure.<br>2 = Alarm Check Failure.<br>3 = Calibration Check Failure.<br>4 = Sample Minute Changed.<br>5 = Total Un-Normalized % Failure.<br>6 = Mole Sum Check Failure.<br>7 = BTU Range Failure.<br>8 = Specific Gravity Range Failure. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 23 | Alarm Logging Mode | AlmMode | R/W | User | UINT8 | 1 | | 0 | 1.00 | Enable Alarm Log Entry generation. If Error Code indicates Stream is in failure, alarm log entry is generated.<br>0: Disable Logging<br>1: Enable Logging, No SRBX<br>2: Enable Logging, SRBX on Set only<br>3: Enable Logging, SRBX on Clear only<br>4: Enable Logging, SRBX on both |
| 24 | Component Index #1 Table 1 | Comp1T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #1 read from Table 1 on the GC. |
| 25 | Component Index #2 Table 1 | Comp2T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #2 read from Table 1 on the GC. |
| 26 | Component Index #3 Table 1 | Comp3T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #3 read from Table 1 on the GC. |
| 27 | Component Index #4 Table 1 | Comp4T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #4 read from Table 1 on the GC. |
| 28 | Component Index #5 Table 1 | Comp5T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #5 read from Table 1 on the GC. |
| 29 | Component Index #6 Table 1 | Comp6T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #6 read from Table 1 on the GC. |
| 30 | Component Index #7 Table 1 | Comp7T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #7 read from Table 1 on the GC. |
| 31 | Component Index #8 Table 1 | Comp8T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #8 read from Table 1 on the GC. |
| 32 | Component Index #9 Table 1 | Comp9T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #9 read from Table 1 on the GC. |
| 33 | Component Index #10 Table 1 | Comp10T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #10 read from Table 1 on the GC. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 34 | Component Index #11 Table 1 | Comp11T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #11 read from Table 1 on the GC. |
| 35 | Component Index #12 Table 1 | Comp12T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #12 read from Table 1 on the GC. |
| 36 | Component Index #13 Table 1 | Comp13T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #13 read from Table 1 on the GC. |
| 37 | Component Index #14 Table 1 | Comp14T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #14 read from Table 1 on the GC. |
| 38 | Component Index #15 Table 1 | Comp15T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #15 read from Table 1 on the GC. |
| 39 | Component Index #16 Table 1 | Comp16T1 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #16 read from Table 1 on the GC. |
| 40 | Component Index #1 Table 2 | Comp1T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #1 read from Table 2 on the GC. |
| 41 | Component Index #2 Table 2 | Comp2T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #2 read from Table 2 on the GC. |
| 42 | Component Index #3 Table 2 | Comp3T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #3 read from Table 2 on the GC. |
| 43 | Component Index #4 Table 2 | Comp4T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #4 read from Table 2 on the GC. |
| 44 | Component Index #5 Table 2 | Comp5T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #5 read from Table 2 on the GC. |
| 45 | Component Index #6 Table 2 | Comp6T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #6 read from Table 2 on the GC. |
| 46 | Component Index #7 Table 2 | Comp7T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #7 read from Table 2 on the GC. |
| 47 | Component Index #8 Table 2 | Comp8T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #8 read from Table 2 on the GC. |
| 48 | Component Index #9 Table 2 | Comp9T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #9 read from Table 2 on the GC. |
| 49 | Component Index #10 Table 2 | Comp10T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #10 read from Table 2 on the GC. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 50 | Component Index #11 Table 2 | Comp11T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #11 read from Table 2 on the GC. |
| 51 | Component Index #12 Table 2 | Comp12T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #12 read from Table 2 on the GC. |
| 52 | Component Index #13 Table 2 | Comp13T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #13 read from Table 2 on the GC. |
| 53 | Component Index #14 Table 2 | Comp14T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #14 read from Table 2 on the GC. |
| 54 | Component Index #15 Table 2 | Comp15T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #15 read from Table 2 on the GC. |
| 55 | Component Index #16 Table 2 | Comp16T2 | R/O | Program | UINT8 | 1 | 0→255 | 0 | 1.00 | Component index #16 read from Table 2 on the GC. |
| 56 | Mole % Component #1 | Mole1 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 1. |
| 57 | Mole % Component #2 | Mole2 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 2. |
| 58 | Mole % Component #3 | Mole3 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 3. |
| 59 | Mole % Component #4 | Mole4 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 4. |
| 60 | Mole % Component #5 | Mole5 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 5. |
| 61 | Mole % Component #6 | Mole6 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 6. |
| 62 | Mole % Component #7 | Mole7 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 7. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 63 | Mole % Component #8 | Mole8 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 8. |
| 64 | Mole % Component #9 | Mole9 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 9. |
| 65 | Mole % Component #10 | Mole10 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 10. |
| 66 | Mole % Component #11 | Mole11 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 11. |
| 67 | Mole % Component #12 | Mole12 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 12. |
| 68 | Mole % Component #13 | Mole13 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 13. |
| 69 | Mole % Component #14 | Mole14 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 14. |
| 70 | Mole % Component #15 | Mole15 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 15. |
| 71 | Mole % Component #16 | Mole16 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | The mole percent of component 16. |
| 72 | User Defined Avg | UserAvg1 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 1 |
| 73 | User Defined Avg | UserAvg1 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 2 |
| 74 | User Defined Avg | UserAvg1 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 3. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 75 | User Defined Avg | UserAvg4 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 4. |
| 76 | User Defined Avg | UserAvg5 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 5. |
| 77 | User Defined Avg | UserAvg6 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 6. |
| 78 | User Defined Avg | UserAvg7 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 7. |
| 79 | User Defined Avg | UserAvg8 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 8. |
| 80 | User Defined Avg | UserAvg9 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 9. |
| 81 | User Defined Avg | UserAvg10 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 10. |
| 82 | User Defined Avg | UserAvg11 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 11. |
| 83 | User Defined Avg | UserAvg12 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 12. |
| 84 | User Defined Avg | UserAvg13 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 13. |
| 85 | User Defined Avg | UserAvg14 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 14. |
| 86 | User Defined Avg | UserAvg15 | R/O | Program | FL | 4 | Any non-negative IEEE floating point number | 0 | 1.00 | First archive of User Average, User Defined 15. |

| Parm # | Name | Abbrev. | Access | Program or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|---|
| 87 | Active Alarm Status | ActiveAl | R/O | Program | UINT8 | 1 | 0→1 | 0 | 2.0 | Active Alarm (Red Light at GC Controller) |
| 88 | Unacknowledged Alarm Status | UnackAl | R/O | Program | UINT8 | 1 | 0→1 | 0 | 2.0 | Unacknowledged Alarm (Yellow Light at GC Controller) |
| 89 | GC Number | GcNum | R/O | Program | UINT8 | 1 | 1→2 | 1 | 2.0 | GC number from which the data in this logical was obtained. Logical 0 has a value of 1 or 2, depending on the last GC read. Logicals 1-10 are set to 1-MaxStreams for GCs 1 and 2. |
| 90 | Stream HV Limits | StreamHV | R/W | User | UINT8 | 1 | 0→1 | 0 | 2.02 | Enable heating value limits to be checked for this stream.<br>0 = Disabled.<br>1 = Enabled.<br>**Note**: If enabled, the program does not copy gas analysis data to the station(s) if the heating value exceeds limits specified by parameters 91 and 92. |
| 91 | Heating Value Low Limit | HVLow | R/W | User | FL | 4 | Any non-negative IEEE floating point number | 900.0 | 2.02 | Stream Heating Value Low Limit. If the Stream Heating Value Limits parameter is enabled and the Heating Value in this stream is less than this value, then an alarm is set and the program does not copy gas analysis data to the station(s). |
| 92 | Heating Value High Limit | HVHigh | R/W | User | FL | 4 | Any non-negative IEEE floating point number | 1300.0 | 2.02 | Stream Heating Value High Limit. If the Stream Heating Value Limits parameter is enabled and the Heating Value in this stream is greater than this value, then an alarm is set and the program does not copy gas analysis data to the station(s). |

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