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Gas Chromatograph Software Interface User Manual (for FloBoss™ 107)

Energy and Transportation Solutions

EMERSON.

Contents

Chapter 1 – Introduction

⚠ Caution **When implementing control using this product, observe best industry practices as suggested by applicable and appropriate environmental, health, and safety organizations. While this product can be used as a safety component in a system, it is NOT intended or designed to be the ONLY safety mechanism in that system.**

This chapter describes the structure of this manual and presents an overview of the Gas Chromatograph Software Interface for the FloBoss™ 107.

1.1 Scope and Organization

This document serves as the user manual for the Gas Chromatograph Software Interface, which is intended for use in a FloBoss 107.

This manual describes how to download, install, and configure the Gas Chromatograph Software 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 (version 2.40 or greater) loaded on a personal computer (PC) running Windows® 7 (32 or 64-bit).

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 running in FloBoss 107, 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 FloBoss 107 and its configuration. For more information, refer to the following manuals:

- *FloBoss 107 Flow Manager Instruction Manual* (part D301232X012)
- *ROCLINK 800 Configuration Software User Manual (for FloBoss 107)* (part D301249X012)

1.2 Product Overview

The GC Interface program enables the FloBoss 107 to communicate directly with up to two gas chromatographs (GCs) on the same EIA-232 (RS-232), EIA-485 (RS-485), or Ethernet communications port. Gas Chromatographs supported include the Rosemount Analytical Models 500, 570, 590, 700, 770 and 1000/1000A. GC controllers supported

include the Rosemount Analytical Models 2251, 2255, 2350, 2350A and 2360. The program communicates directly with the GC using Modbus protocol (in which the FloBoss 107 has Master status). The FloBoss 107 polls data from the GC, validates that data, and updates the appropriate meter run 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.

Note: For Rosemount Analytical devices, set the GC communications port to the SIM 2215 protocol using the MON2000 software. For all other parameter configurations, refer to the MON 2000 documentation.

To update meter run data in the FloBoss 107, you must assign the streams to a meter run in the FloBoss 107's database. This allows the FloBoss 107 to log the gas component data, heating value, and specific gravity and use these values in volume, mass, and energy calculations.

Note: Two versions of the program are included. Installation and operation are identical between the two programs, but they use different point type locations, different display numbers, and are loaded into different program slots on the FloBoss 107. GCInterface_1.bin loads into user program location 1 and uses point types 22 and 23. GCInterface_2.bin loads into user program location 2 and uses point types 25 and 26.

The manual shows installation of GCInterface_1.bin. Load GCInterface_1.bin unless another user program is currently installed in user program location 1.

1.2.1 Communications Wiring

The GC must be connected to the communications port on the FloBoss 107 with wiring between 16 and 24 AWG. *Figure 1* shows the wiring for an EIA-232 (RS-232) to a Rosemount 2350A GC.

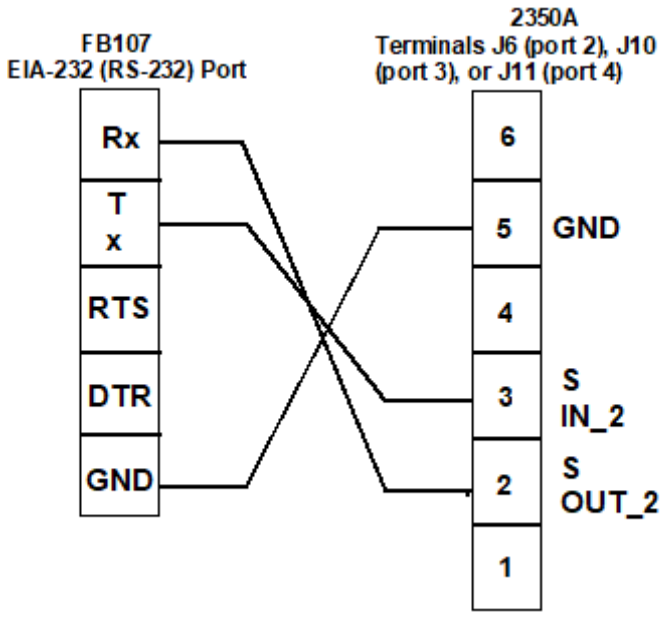

Figure 1-1. Communications Wiring

1.2.2 Auto-configure

The GC Program provides an auto-configure option on the GC Interface screen (see *Figure 3-2*). 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 # field 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.

When you select Auto-configure on the GC Interface screen, the program sets the selected communication port parameters to the following values:

Note: The following communication port parameters are configured if you are using an RS-232 or RS-485 module **only**.

Baud Rate:	9600
Data Bits:	8
Stop Bits:	1
Parity:	None
Key-On Delay:	200 mSec
Key-Off Delay:	200 mSec
Port Owner:	Modbus Master

When you select Auto-configure on the GC Interface screen, the program sets the Modbus configuration parameters for the selected communications port to the following values:

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

When you select Auto-configure on the GC Interface screen, 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

Note: Depending on the GC device, registers 9034 and 9035 may require a Modbus conversion code to be manually configured.

When you select Auto-configure on the GC Interface screen, the program sets the 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

Note: Depending on the GC device, registers 9034 and 9035 may require a Modbus conversion code to be manually configured.

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 auto-configure process completes, the program disables the auto-configure parameter.

Note: After the auto-configure 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 (23/26,0,17) and the last poll must be stored in a register mapped to GC Stream parameter Sample Min End (23/26,0,16).

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 meter run. Checks include:

- The Communication Status (Point 121, Parameter 6, 12, 18, etc.) must return valid responses (value of 8) for all registers polled. If errors are present, the meter runs are not updated.
- If you disable Bypass Alarm 1 (Point 22/25, Parameter 11), the Alarm Flag 1 (Point 23/26, Parameter 18, bits 14 & 15) from the GC is checked for errors. If errors are present, the meter runs are not updated.
- If you disable Bypass Alarm 2 (Point 22/25, Parameter 12), the Alarm Flag 2 (Point 23/26, Parameter 19, bits 0, 1, 2 & 3) from the GC is checked for errors. If errors are present, the meter runs are not updated.

- The program checks the Calibration Flag (Point 23/26, Parameter 20) to ensure it is in the Analysis State. If it is not in the Analysis State, the meter runs are not be updated.
- The Starting Sample Minute value (Point 23/26, Parameter 17) must be different than the previous value, or the meter runs are not updated.
- The Starting Sample Minute value (Point 23/26, Parameter 17) and Ending Sample Minute value (Point 23/26, Parameter 16) in the poll must match or the meter runs are not updated.
- The current Stream Number (Point 23/26, Parameter 2) must be assigned to a meter run.
- The Total Un-Normalized Mole % value (Point 23/26, Parameter 9) must be within plus or minus the Total Mole % Deviation value (Point 22/25, Parameter 14) of 100%. If this value is outside of this limit, the meter runs are not updated.
- The Mole Sum value (Point 23/26, Parameter 21) must be within plus or minus the Total Mole % Deviation value (Point 22/25, Parameter 14) of 100%. If this value is outside of this limit, the meter runs are not updated.
- If you enable HV Limits (Point 23/26, Parameter 90) on the GC Stream Data screen, ensure that the Stream Heating Value is between the Heating Value Low (Point 23/26, Parameter 91) and Heating Value High (Point 23/26, Parameter 92) values.

Note: If you do not enable the HV Limits (which is a per-stream value), the module uses the Heating Value (described below) as the default.

- The Heating Value (Point 23/26, Parameter 4 or 5, depending on Wet vs. Dry) must be between Heating Value Low (Point 22/25, Parameter 9) and Heating Value High (Point 22/25, Parameter 10). If this value is outside the limits, the meter runs are not updated.

Note: The Heating Value is the default parameter the module checks first. If you have enabled the HV Limits parameter (which is a per-stream value), that value overrides this value.

- The Specific Gravity (Point 23/26, Parameter 6) must be between 0.07 and 1.52. If this value is outside of this limit, the meter runs are not updated.

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

1.3 Program Requirements

The GC Interface program is compatible with version 1.01 (or greater) of the FloBoss 107 firmware and with version 1.86 (or greater) of the ROCLINK 800 software.

Program specifics include:

File Name	Target Unit/ Version	User Defined Points (UDP)	Flash Used (in bytes)	DRAM Used (in bytes)	ROCLINK 800 Version	Display Number
GCInterface_1.bin	FloBoss 07 1.01	22, 23 (location 1)	29025	16,384	1.86	22, 23, 24
GCInterface_2.bin	FloBoss 107 1.01	25, 26 (location 2)	29025	16,384	1.86	24, 25, 26

For information on viewing the memory allocation of user programs, refer to the *ROCLINK 800 Configuration Software User Manual (for FloBoss™ 107)* (part D301249X012).

1.3.1 License Key

Some applications require that you install a license in the CPU to run the application. This license software is specific to these applications and is the property of the individual vendor (shown in the Vendor Name field on the License Key Administrator screens).

Energy and Transportation Solutions (and other authorized vendors) distributes software licenses on security-enhanced universal serial bus (USB) drives.

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

- GC Interface License Key.

Chapter 2 – Installation

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

Note: The program and license key can be installed in any order. The manual shows the installation of the license key first.

2.1 Installing the License Key

A license key is required to use the GC Interface program. To install a USB key-based license.

⚠ 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 USB key-based license on the FloBoss 107:

1. Insert the USB license key in a USB port on your PC.
2. Select **Utilities** > **License Key Administrator** > **Transfer Between Device and Key** from the ROCLINK 800 menu bar. The Transfer Licenses Between a Device and a Key screen displays.

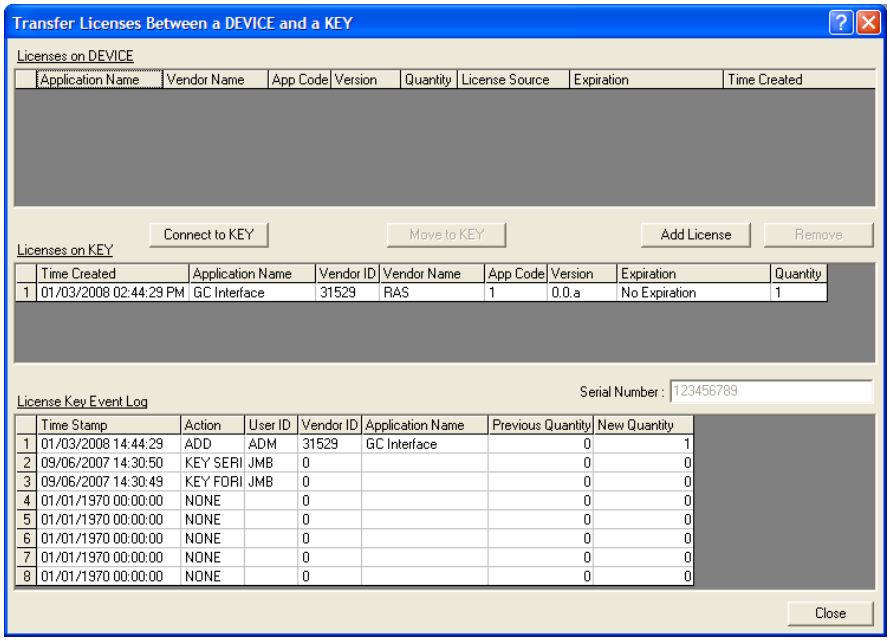

Figure 2-1. Transfer Licenses Between a Device and a Key

Note: This screen has three sections. The upper portion (Licenses on Device) shows any software licenses installed on the FloBoss 107. The middle portion (Licenses on Key) shows software licenses on the license key. The lower portion of the screen (License Key Event Log) provides a rolling log of the last eight events related to this license key.

3. Select the key-based license you want to transfer to the FloBoss 107 (**GC Interface**, as shown in *Figure 2-1*).
4. Click **Move to Device**. ROCLINK moves the license from the key to the FloBoss 107 and updates the screen.

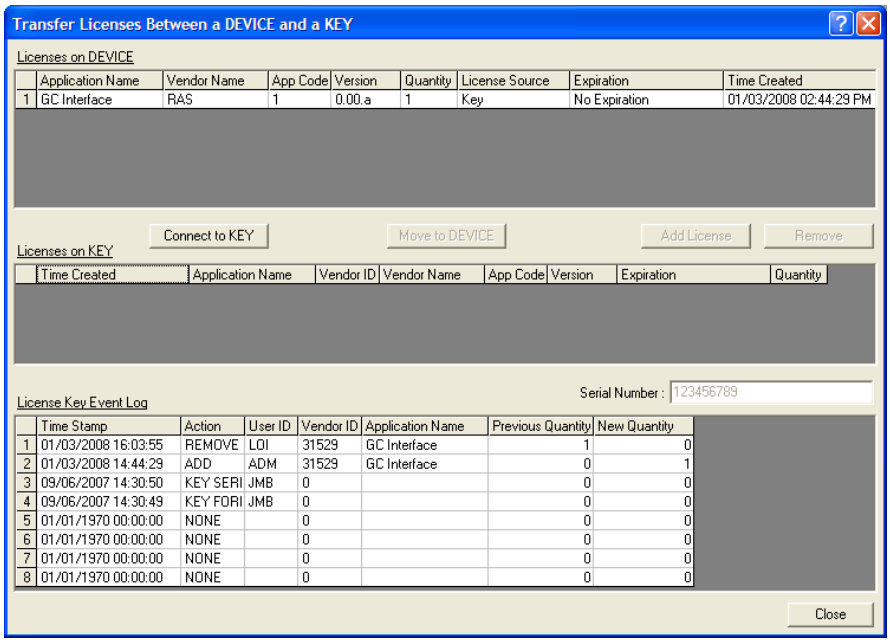

Figure 2-2. License Installed

Note: A FloBoss 107 can hold up to six different licenses, although you can install only one instance of each license on the FloBoss 107. When you click Move to Device, ROCLINK 800 moves only one instance of the license onto the FloBoss 107 and automatically decreases the license quantity on the KEY.

5. Verify the license name displays in the Licenses on Device section of the screen. Proceed to *Section 2.2* to download the user program.

2.2 Downloading the Program

This section provides instructions for installing the program into the Flash memory on the FloBoss 107.

Note: Connect a PC to the FloBoss 107's LOI port **before** starting the download.

Note: Two versions of the program are included. Installation and operation are identical between the two programs, but they use different point type locations, different display numbers, and are loaded into different program slots on the FloBoss 107. GCInterface_1.bin loads into user program location 1 and uses point types 22 and 23. GCInterface_2.bin loads into user program location 2 and uses point types 25 and 26.

The manual shows installation of GCInterface_1.bin. Load GCInterface_1.bin unless another user program is currently installed in user program location 1.

To download the user program using ROCLINK 800 software:

1. Start and logon to the ROCLINK 800.
2. Select **ROC** > **Direct Connect** to connect to the ROC800.
3. Select **Utilities** > **User Program Administrator** from the ROCLINK menu bar. The User Program Administrator screen displays (see *Figure 2-3*):

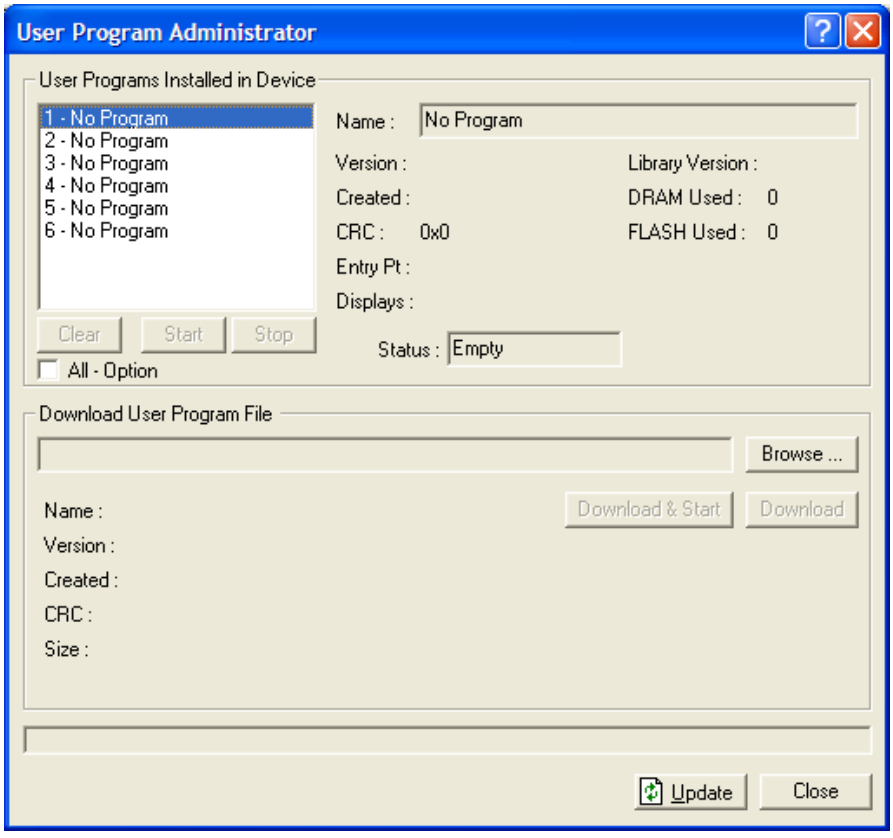

Figure 2-3. User Program Administrator

4. Click **Browse** in the Download User Program File frame. The Select User Program File screen displays (see *Figure 2-4*).
5. 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 2-4* shows, the screen lists all valid user program files with the .BIN extension:

Note: Load **only** one of the included program files. The manual shows installation of GCInterface_1.bin. Load GCInterface_1.bin unless another user program is currently installed in user program location 1.

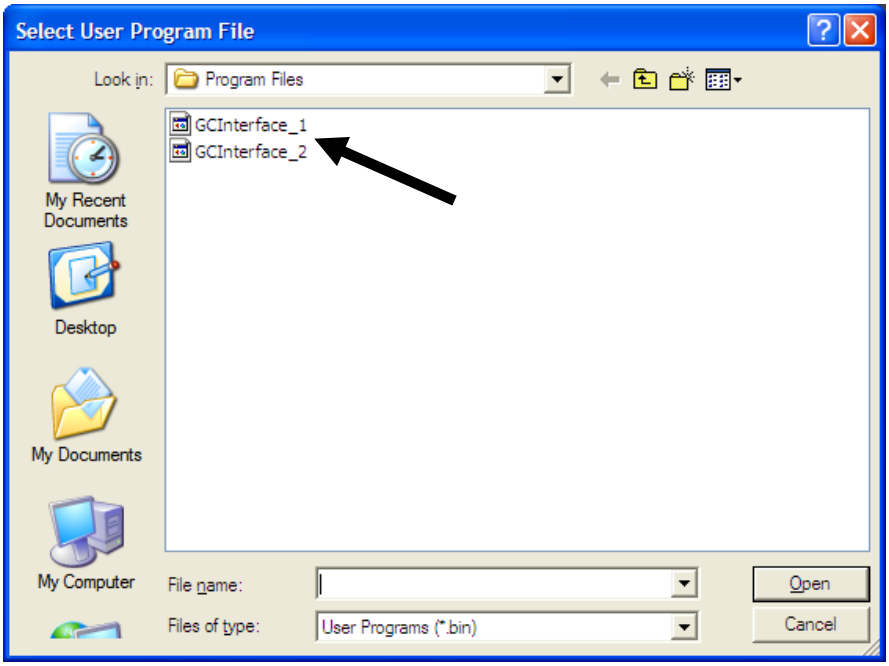

Figure 2-4. Select User Program File

6. Click **Open** to select the program file. The User Program Administrator screen displays. As shown in *Figure 2-5*, note that the Download User Program File frame identifies the selected program and that the **Download & Start** button is active:

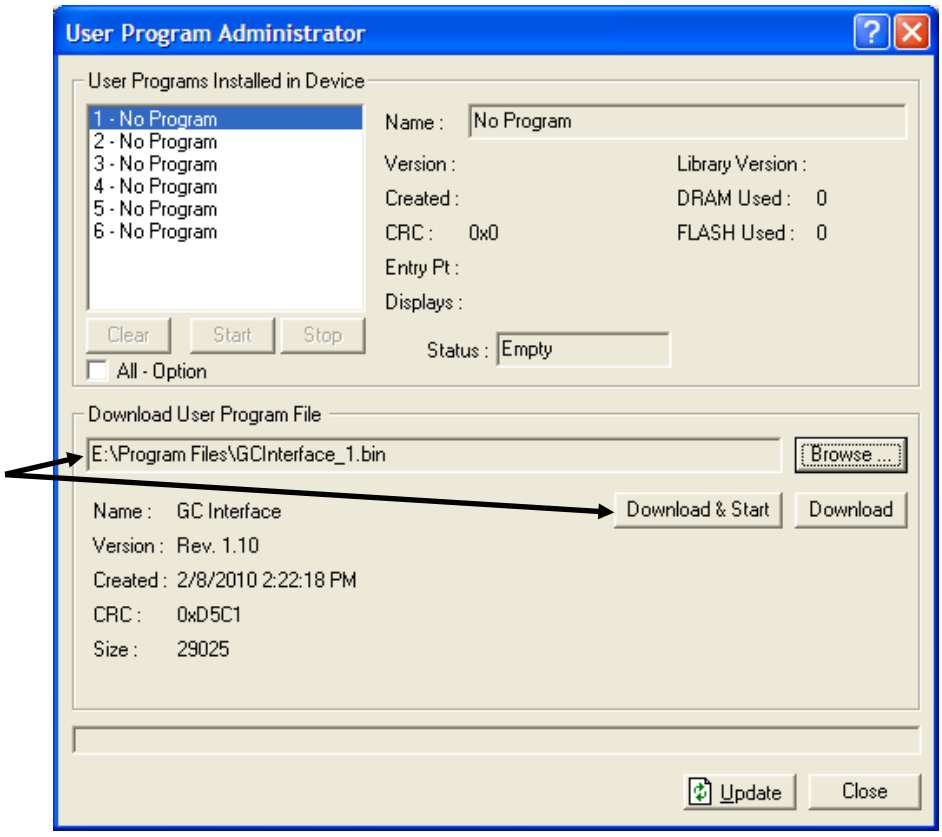

Figure 2-5. User Program Administrator

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

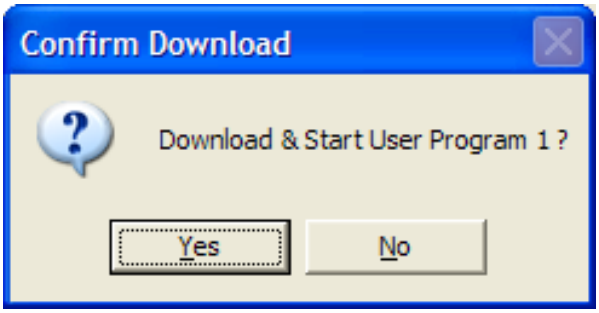

Figure 2-6. Confirm Download

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

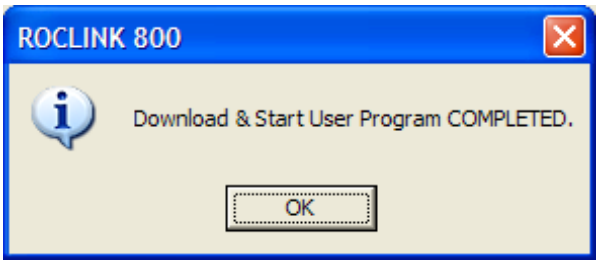

Figure 2-7. ROCLINK 800 Download Confirmation

9. Click **OK**. The User Program Administrator screen displays (see *Figure 2-8*). Note that:
   - The User Programs Installed in Device frame identifies the installed program(s).
   - The Status field indicates that the program is running.

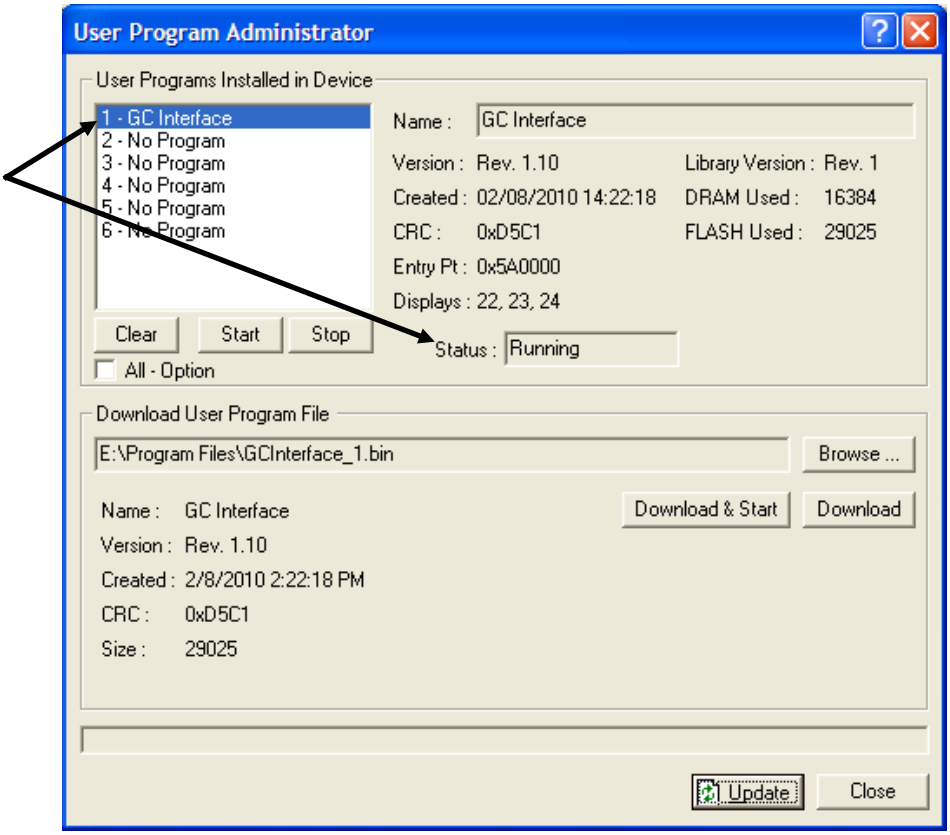

Figure 2-8. User Program Administrator

Note: If you install the program **before** you install the license key, the Status field reads "License Key Not Found."

10. Click **Close**. Proceed to *Chapter 3 – Configuration* to configure the program.

Chapter 3 – Configuration

This section provides information on how to configure the Gas Chromatograph user program.

After you have loaded the GC Interface program on the FloBoss 107, you configure the program using three program-specific screens (GC Interface, GC Configuration, and GC Stream Data) and one ROCLINK 800 screen (Meter Setup):

- Use the GC Interface 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 meter runs, enable GC polling, and enable auto-configuration.
- Use the GC Configuration screen to set GC-specific parameters, including component IDs, GC alarm options, hexane plus options, data limits, and heating value adjustment parameters.
- Use the GC Stream Data screen to verify communications between the GC and the FloBoss 107, set SRBX alarms, and configure stream-specific heating value checks.
- Use the Fluid Properties tab on the ROCLINK 800 Meter Setup screen to indicate the type of heating value read from the GC and to select the "live" gas quality option.

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: For Rosemount Analytical devices, set the GC communications port to the SIM 2215 protocol using the MON2000 software. For all other parameter configurations, refer to the MON2000 documentation.

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

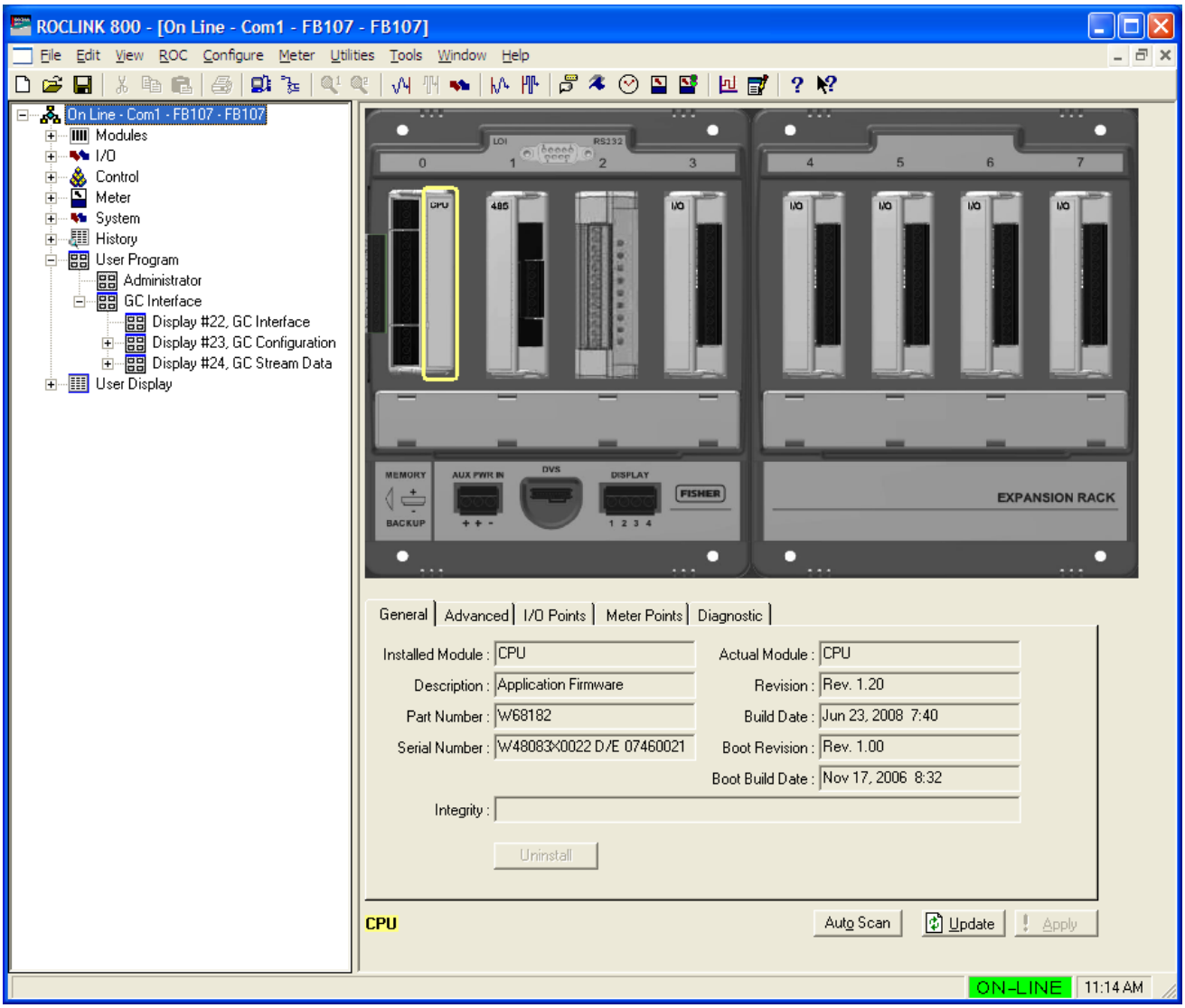

Figure 3-1. Main ROCLINK 800 screen

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 meter runs, 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** > **GC Interface**.
2. Double-click **Display #22 GC Interface**. The GC Interface screen displays:

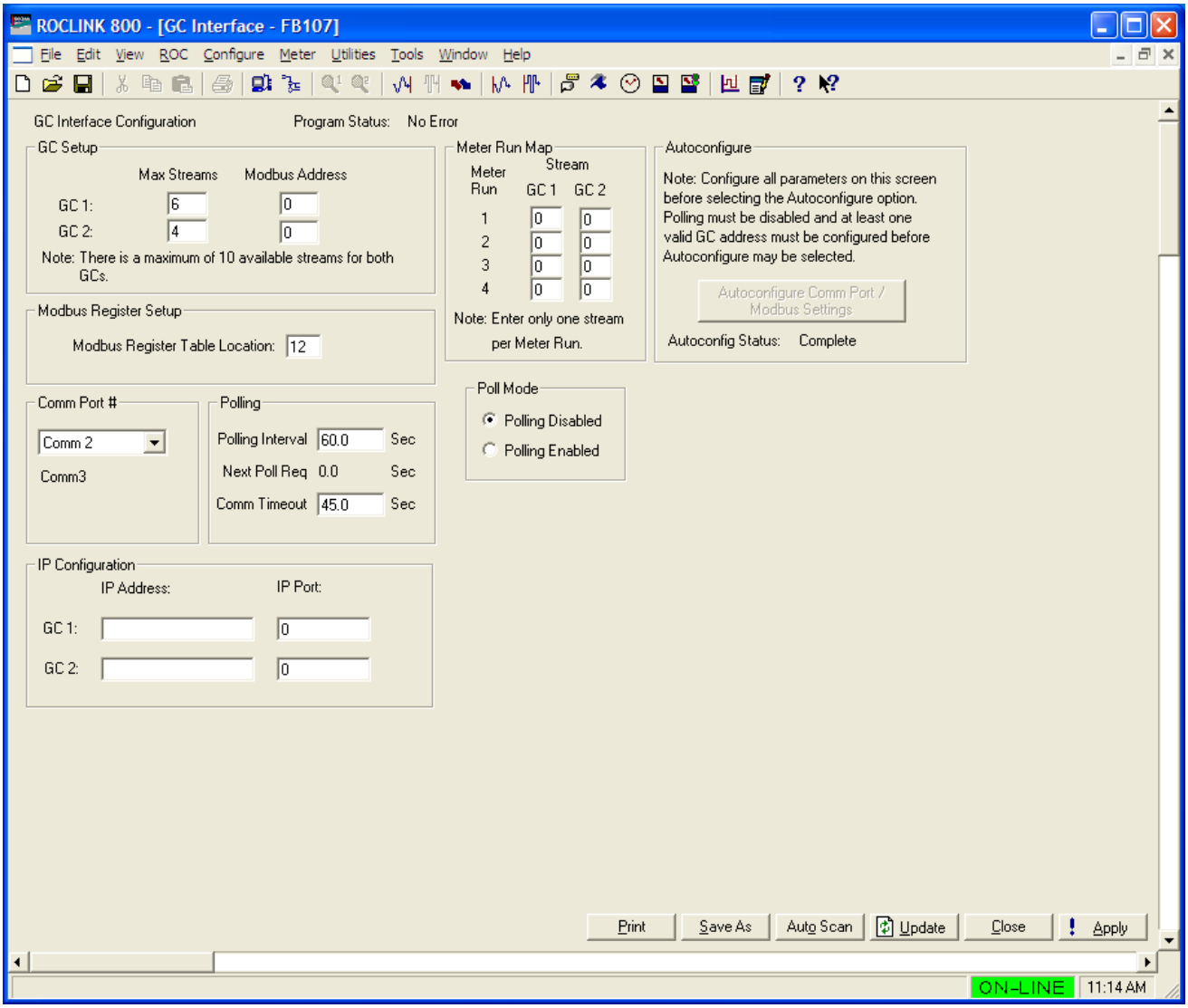

Figure 3-2. GC Interface Screen

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**–**8**. You cannot define more than 10 streams for both GCs.
Modbus Address	Sets the address the FloBoss 107 uses to communicate with the gas chromatograph. You must set this value before the program can poll data and write it to the meter run. Setting this field to 0 (the default) disables GC polling. **Note**: The Auto-configure option uses this value (see *Section 1.2.2*).

Field	Description
Modbus Register Table Location	Identifies the location of the Modbus Register Table. Valid values are **1**–**12**. The default value is 12. **Note**: The program uses this value for automatic configuration (see *Section 1.2.2*).
Comm Port #	Indicates which FloBoss 107 communications port the program uses for the connection to the GC(s). Valid values are Comm 1 (RS-485), Comm 2 (RS-232), and Comm 3 [RS-485, RS-232, or Enhanced Communication Module (Ethernet)]. Click ▼ to display all valid values. **Notes**: ▪ The program uses this value for automatic configuration (see *Section 1.2.2*). ▪ Unlike other programs, the Comm Port owner is Modbus Master for all values except for an ECM module. For that reason, the Comm Port owner should be something other than this program.
Polling Interval	Sets the delay, in seconds, the program waits before asking the GC for the next set of results. **Note**: The GC typically takes 3 to 6 minutes to update results.
Next Poll Req	This **read-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.
IP Address	Identifies the IP address of the GC to be polled. **Note**: This field **only** appears if an Enhanced Communication Module (Ethernet) is installed in Slot 1 of the FloBoss 107 and Comm 3 is selected in the Comm Port # drop-down box, or an Enhanced Communication Module module is installed in Slot 2 of the FloBoss 107 and Comm 2 is selected in the Comm Port # drop-down box.
Meter Run Map	Associates GC streams with configured FloBoss 107 meter runs. Valid values are **1**–**8**. Enter **0** to disable meter run updating. You **must** configure this parameter before the program can poll data and write it to the meter run. The program stores the gas composition data for the specified stream in the gas quality parameters of the specified meter run (see *Section 3.4*).

Field	Description
Poll Mode	Indicates whether the program attempts to poll the GC(s). **Note**: A valid license key and at least one valid GC address must be present before polling can be enabled.
Autoconfigure	Indicates whether the program automatically determines the configuration values for communications ports and Modbus settings for a gas chromatograph. Polling **must** be disabled and at least one valid GC address configured before you can initiate Autoconfigure. **Notes**: ▪ See *Section 1.2.2* for further information on auto-configuration. ▪ 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 Auto-configure 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** > **GC Interface** > **Display #23, GC Configuration**.
2. Double-click **#1, GC Config**. The GC Configuration screen displays:

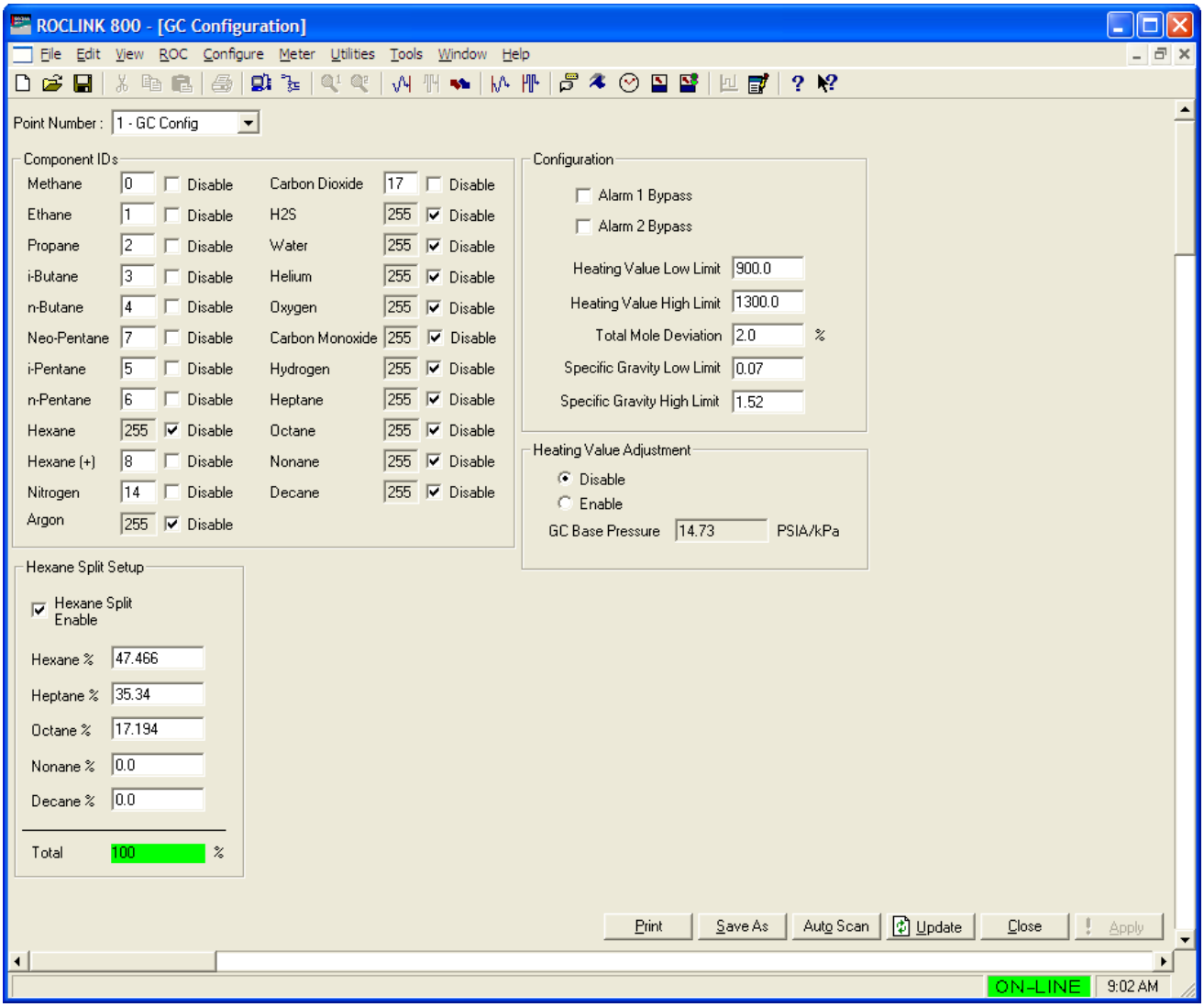

Figure 3-3. GC Configuration Screen

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 FloBoss 107 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).

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**	Select this check box to allow the program to update the meter run 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 FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any heating values sent by the GC that are lower than this value to be invalid and does not forward them to the meter run.
Heating Value High Limit	Sets the maximum heating value the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any heating values sent by the GC that are greater than this value to be invalid and does not forward them to the meter run.
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 FloBoss 107 considers any stream gas compositions that exceed this value to be invalid and does not forward them to the meter run. Valid values are **0-100%**.
Specific Gravity Low Limit	Sets the minimum specific gravity value the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any specific gravity values sent by the GC that are lower than this value to be invalid and does not forward them to the meter run.
Specific Gravity High Limit	Sets the maximum specific gravity value the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any specific gravity values sent by the GC that are greater than this value to be invalid and does not forward them to the meter run.
Heating Value Adjustment	Sets whether the program (in case of differing base pressures between the GC and the meter run point) adjusts the GC's heating value before storing the value in the meter run parameter. If you click **Enable**, the heating value stored in the meter run equals the GC heating value multiplied by the ratio of the meter run 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. **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 FloBoss 107 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 read-only. To access this screen:

1. From the Directory Tree, select **User Program** > **GC Interface** > **Display #24, GC Stream Data.**
2. Double-click **#1, Cur Stream**. The GC Stream Data screen displays:

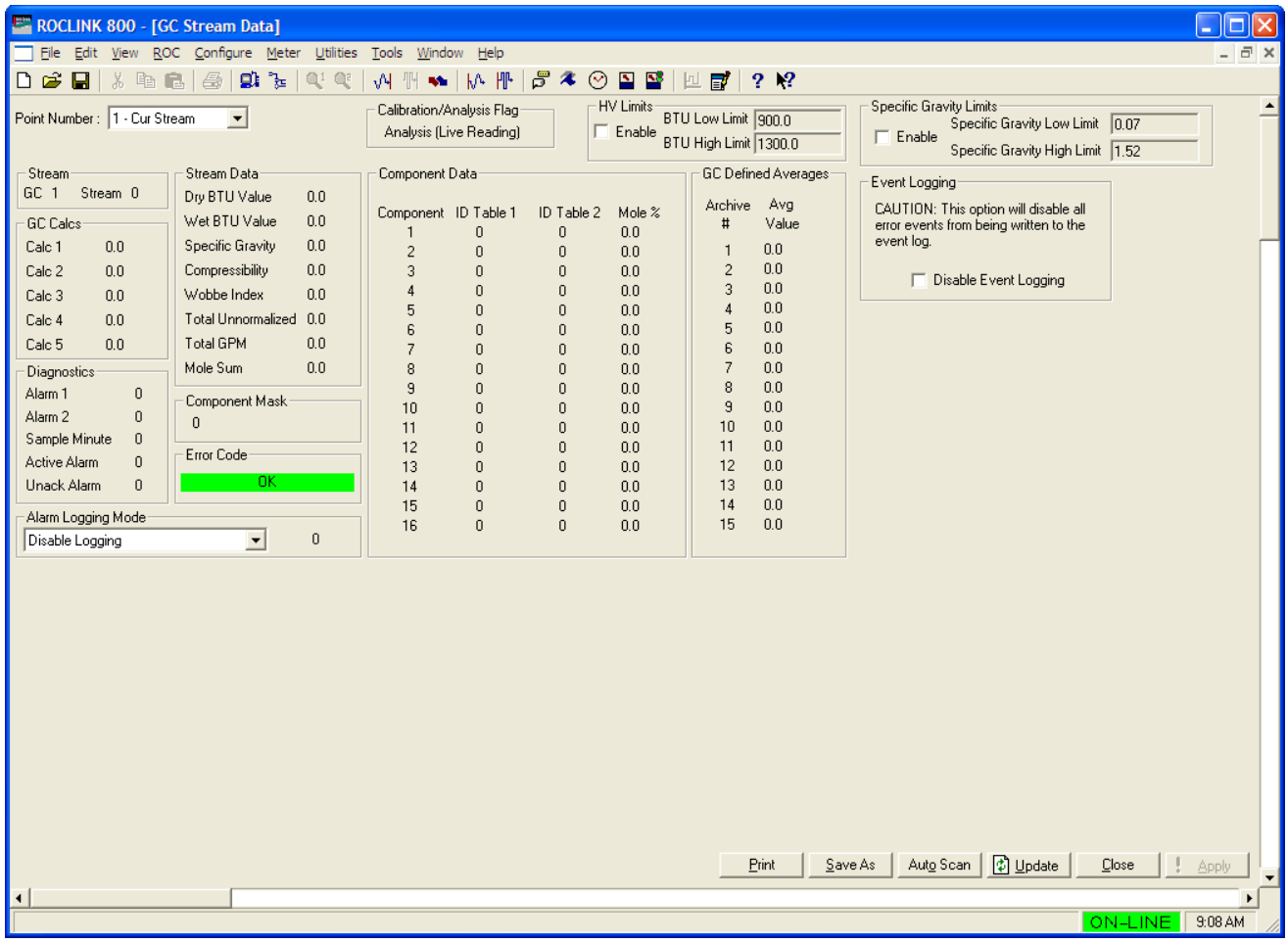

Figure 3-4. GC Stream Data Screen

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).
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 override the Heating Value High/Low Limits set on the GC Configuration screen.

Field	Description
BTU Low Limit	If HV Limits are enabled, sets the minimum heating value for the selected run that the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any heating values sent by the GC that are greater than this value to be invalid and does not forward them to the meter run. **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	If HV Limits are enabled, sets the maximum heating value for the selected run that the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any heating values sent by the GC that are greater than this value to be invalid and does not forward them to the meter run. **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 shows the selected stream for the GC.
User Calcs	This **read-only** field shows data returned by the GC, but is **not used** by the program. For more information, refer to the GC's user manual.
Diagnostics	This **read-only** field shows any diagnostic codes for the selected stream.
Stream Data	This **read-only** field shows values for the selected stream.
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. **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.

Field	Description	
Alarm Logging Mode	Sets how the program logs alarms with Spontaneous Report by Exception (SRBX) notification. Click ▼ to select a mode (described below). **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.	
	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.
Component Data	This **read-only** field shows component values for the selected stream.	
GC Defined Averages	This **read-only** field shows data returned by the GC but is **not used** by the program. For more information, refer to the GC's user manual.	
Specific Gravity Limits	Select the **Enable** option to allow user-defined specific gravity limits to be set for the selected run. If enabled, the Specific Gravity Low/High values for the selected run will override the Specific Gravity High/Low Limits set on the GC Configuration screen.	

Field	Description
Specific Gravity Low Limit	If Specific Gravity Limits are enabled, sets the minimum specific gravity value for the selected run that the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any specific gravity values sent by the GC that are greater than this value to be invalid and does not forward them to the meter run. **Note:** Values entered in this field override the Specific Gravity Low Limits set on the GC Configuration screen **for the selected run only**.
Specific Gravity High Limit	If Specific Gravity Limits are enabled, sets the maximum specific gravity value for the selected run that the FloBoss 107 accepts for a meter run update. The FloBoss 107 considers any specific gravity values sent by the GC that are greater than this value to be invalid and does not forward them to the meter run. **Note:** Values entered in this field override the Specific Gravity High Limits set on the GC Configuration screen **for the selected run only**.
Disable Event Logging	Select the **Enable** checkbox to disable error events from being written to the FloBoss 107's event log. **Note:** This option disables logging for ALL error events except parameter change events. For example, an event is not logged if the GC reports an out-of-range specific gravity value and event logging is disabled.

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 meter run parameters.

3.4 Meter Setup Screen

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

1. Select **Meter** > **Setup** from the ROCLINK 800 menu bar.
2. Select the **Fluid Properties** tab. The Fluid Properties tab displays:

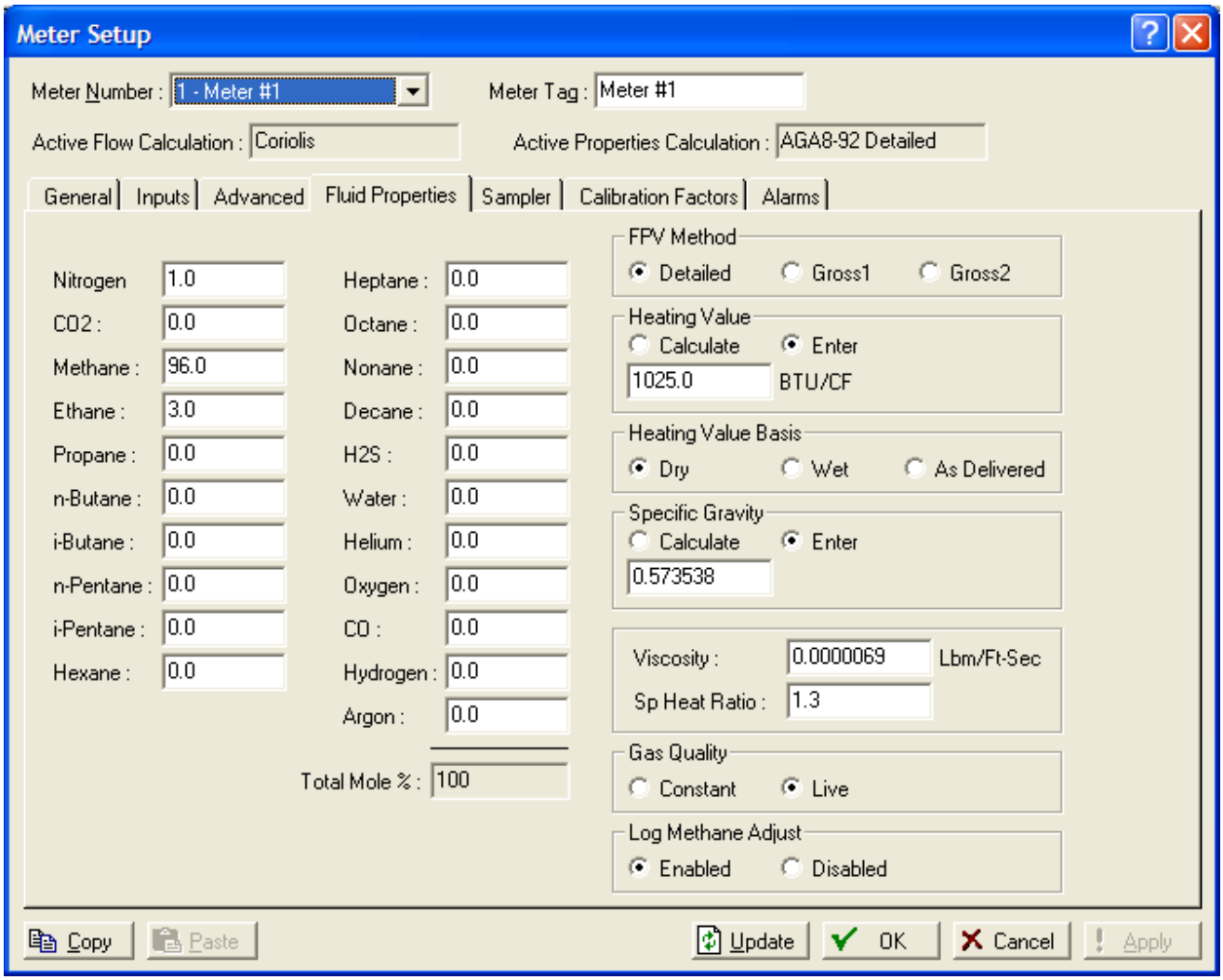

Figure 3-5. Meter Setup, Fluid Properties tab

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

Field	Description
Meter Number	Select the meter number to which the GC stream has been assigned.
Component Mole %	Indicates the mole percentage of each gas component. The program retrieves these values from the GC.
Heating Value	Indicates the heating value of a specified quantity of gas. The program sets this option to **Enter** and retrieves this value from the GC.
Heating Value Basis	Determines the heating value (dry or saturated) the program copies to the meter run. Valid values for this program are **Dry** or **Wet**. If you select **Wet**, the program copies the saturated heating value to the meter run. If you select **As Delivered** or **Dry**, the program resets the value to Dry and copies the dry heating value to the meter run.

Field	Description
Specific Gravity	Indicates the specific gravity ratio of the molar mass gas to the molar mass of air. The program sets this option to **Enter** and retrieves this value from the GC.
Gas Quality	Indicates the source of the gas quality. The GC Interface program sets this field to **Live** when it copies data to the meter run.

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:

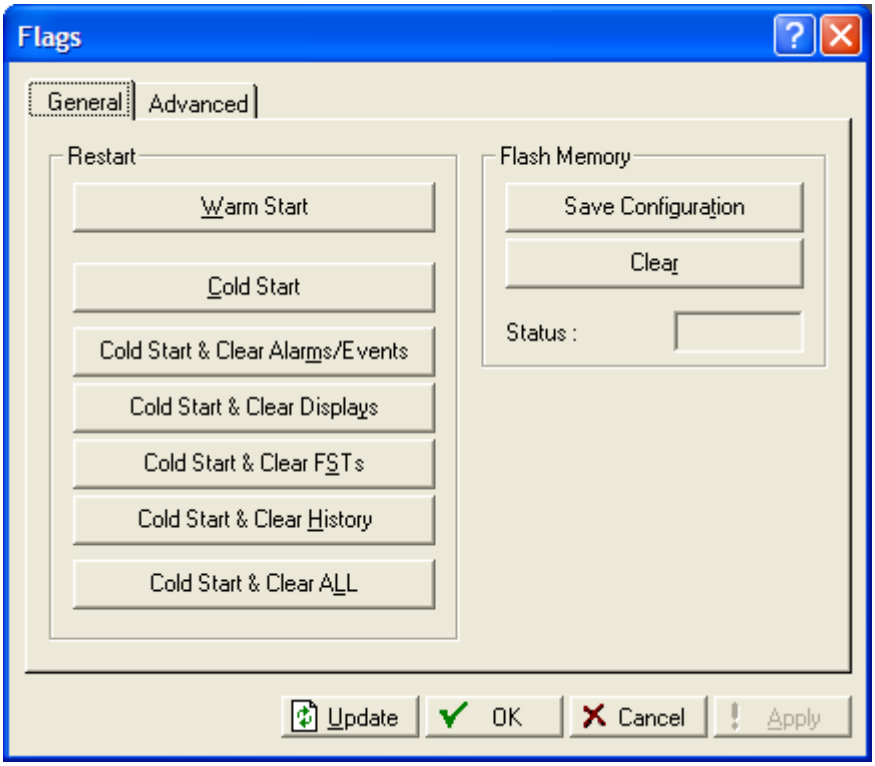

Figure 3-6. Flags

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

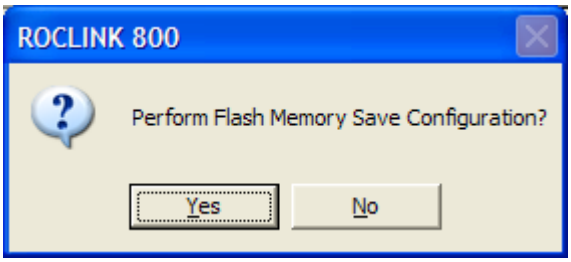

Figure 3-7. Save Verification

3. Click **Yes** to begin the save process. The Flash Write Status field on the Flags screen displays *In Progress*. The following message displays:

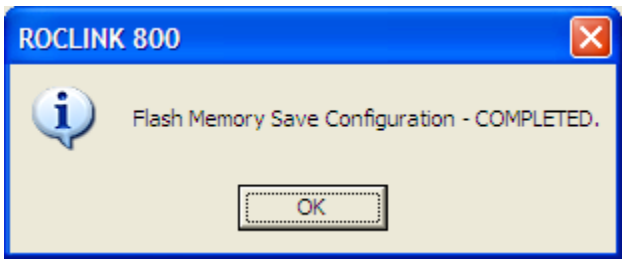

Figure 3-8. Save Confirmation

4. Click **OK**. The Flash Write Status field on the Flags screen displays *Completed*.
5. 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 flash drive) using the **File** > **Save Configuration** option on the ROCLINK 800 menu bar.

Chapter 4 – Reference

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

- Point Type 22/25 (GC User Program Configuration and Status)
- Point Type 23/26 (GC User C Program Stream Data)

4.1 Point Type 22/25: GC User Program Configuration and Status

Point type 22 and 25 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.

Point Type 22/25: GC User Program Configuration and Status

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
0	Point Tag ID	R/W	User	AC	10	0x20 → 0x7E for each ASCII character	"GC Config"	1.00	Point Type Description
1	Not used								
2	User Program Status	R/O	System	UINT8	1	0 → 3	0	1.00	User Program Status **0** = No Error **1** = License Unavailable **2** = Comm Configuration Failed
3	Autoconfiguration	R/W	Both	UINT8	1	0 → 1	1	1.00	Auto-configuration **0** = Disabled **1** = Enabled
4	Comm Port Number	R/W	User	UINT8	1	2 → 2	2	1.00	Comm Port used to communicate with the GC
5	GC Address	R/W	User	UINT8	1	0 → 255	0	1.00	GC Address (Modbus address of GC)
6	MODBUS Location	R/W	User	UINT8	1	1 → 24	24	1.00	Modbus Register Mapping Table used by GC
7	Polling Interval	R/W	User	FL	4	Any Positive Floating Point Number	60	1.00	Interval at which this program polls the GC for new data (In Seconds).
8	Next Poll Request	R/O	System	FL	4	Any Positive Floating Point Number	0	1.00	Amount of time (In Seconds) until the next time the GC will be polled for new data.
9	Heating Value Low Limit	R/W	User	FL	4	Any Floating Point Number	900.0	1.00	Heating Value Low Limit. If the Heating Value returned from the GC is less than this value, an alarm will be set.
10	Heating Value High Limit	R/W	User	FL	4	Any Floating Point Number	1300.0	1.00	Heating Value High Limit. If the Heating Value returned from the GC is greater than this value, an alarm will be set.

Point Type 22/25: GC User Program Configuration and Status

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
11	Bypass Alarm 1	R/W	User	UINT8	1	0 → 1	0	1.00	Bypass Alarm 1 from GC **0** = Alarm Allowed **1** = Alarm Bypassed
12	Bypass Alarm 2	R/W	User	UINT8	1	0 → 1	0	1.00	Bypass Alarm 2 from GC **0** = Alarm Allowed **1** = Alarm Bypassed
13	Max Streams	R/W	User	UINT8	1	0 → 255	6	1.00	Maximum number of streams available from GC
14	Total Mole % Deviation	R/W	User	FL	4	0 → 5.0	2	1.00	Total Mole % Deviation
15	Hexane Split Enable	R/W	User	UINT8	1	0 → 1	1	1.00	Enable the Hexane Split functionality of the GC Program
16	Communication Timeout	R/W	User	FL	4	0 → 60.0	45.0	1.00	Amount of time to wait for a response from a GC (In Seconds).
17	Meter Run 1 Stream	R/W	User	UINT8	1	0 → 8	0	1.00	Meter Run 1 Stream **0** = Disable Meter Run Updating **1-8** = Stream number to use to update meter run's gas composition
18	Meter Run 2 Stream	R/W	User	UINT8	1	0 → 8	0	1.00	Meter Run 2 Stream **0** = Disable Meter Run Updating **1-8** = Stream number to use to update meter run's gas composition
19	Meter Run 3 Stream	R/W	User	UINT8	1	0 → 8	0	1.00	Meter Run 3 Stream **0** = Disable Meter Run Updating **1-8** = Stream number to use to update meter run's gas composition
20	Meter Run 4 Stream	R/W	User	UINT8	1	0 → 8	0	1.00	Meter Run 4 Stream **0** = Disable Meter Run Updating **1-8** = Stream number to use to update meter run's gas composition
21	Not used								
22	Not used								
23	Not used								
24	Not used								
25	Not used								
26	Not used								
27	Not used								
28	Not used								

Point Type 22/25: GC User Program Configuration and Status

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
29	Methane Component ID	R/W	User	UINT8	1	0 → 255	0	1.00	Methane Component ID. This is the Component ID number that is associated with Methane in the GC.
30	Ethane Component ID	R/W	User	UINT8	1	0 → 255	1	1.00	Ethane Component ID. This is the Component ID number that is associated with Ethane in the GC.
31	Propane Component ID	R/W	User	UINT8	1	0 → 255	2	1.00	Propane Component ID. This is the Component ID number that is associated with Propane in the GC.
32	i-Butane Component ID	R/W	User	UINT8	1	0 → 255	3	1.00	i-Butane Component ID. This is the Component ID number that is associated with i-Butane in the GC.
33	n-Butane Component ID	R/W	User	UINT8	1	0 → 255	4	1.00	n-Butane Component ID. This is the Component ID number that is associated with n-Butane in the GC.
34	Neo-Pentane Component ID	R/W	User	UINT8	1	0 → 255	7	1.00	Neo-Pentane Component ID. This is the Component ID number that is associated with Neo-Pentane in the GC.
35	i-Pentane Component ID	R/W	User	UINT8	1	0 → 255	5	1.00	i-Pentane Component ID. This is the Component ID number that is associated with i-Pentane in the GC.
36	n-Pentane Component ID	R/W	User	UINT8	1	0 → 255	6	1.00	n-Pentane Component ID. This is the Component ID number that is associated with n-Pentane in the GC.
37	Hexane Component	R/W	User	UINT8	1	0 → 255	255	1.00	Hexane Component ID. This is the Component ID number that is associated with Hexane in the GC.
38	Hexane (+) Component ID	R/W	User	UINT8	1	0 → 255	8	1.00	Hexane (+) Component ID. This is the Component ID number that is associated with Hexane (+) in the GC.
39	Nitrogen Component ID	R/W	User	UINT8	1	0 → 255	14	1.00	Nitrogen Component ID. This is the Component ID number that is associated with Nitrogen in the GC.
40	Carbon Dioxide Component ID	R/W	User	UINT8	1	0 → 255	17	1.00	Carbon Dioxide Component ID. This is the Component ID number that is associated with Carbon Dioxide in the GC.
41	H2S Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	H2S Component ID. This is the Component ID number that is associated with H2S in the GC.

Point Type 22/25: GC User Program Configuration and Status

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
42	Water Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Water Component ID. This is the Component ID number that is associated with Water in the GC.
43	Helium Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Helium Component ID. This is the Component ID number that is associated with Helium in the GC.
44	Oxygen Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Oxygen Component ID. This is the Component ID number that is associated with Oxygen in the GC.
45	Carbon Monoxide Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Carbon Monoxide Component ID. This is the Component ID number that is associated with Carbon Monoxide in the GC.
46	Hydrogen Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Hydrogen Component ID. This is the Component ID number that is associated with Hydrogen in the GC.
47	Heptane Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Heptane Component ID. This is the Component ID number that is associated with Heptane in the GC.
48	Octane Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Octane Component ID. This is the Component ID number that is associated with Octane in the GC.
49	Nonane Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Nonane Component ID. This is the Component ID number that is associated with Nonane in the GC.
50	Decane Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Decane Component ID. This is the Component ID number that is associated with Decane in the GC.
51	Argon Component ID	R/W	User	UINT8	1	0 → 255	255	1.00	Argon Component ID. This is the Component ID number that is associated with Argon in the GC.
52	Heating Value Adjust Option	R/W	User	UINT8	1	0 → 1	0	1.00	Heating Value Adjust Option **0** = Disabled **1** = Enabled
53	GC Base Pressure	R/W	User	FL	4	0→Valid Positive Floating Point Number	14.73	1.00	Base Pressure Configured in GC
54	Poll Mode	R/W	User	UINT8	1	0 → 1	0	1.00	GC Polling Mode **0** = Disabled **1** = Enabled

Point Type 22/25: GC User Program Configuration and Status

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
55	Hexane Percentage	R/W	Both	FL	4	0→Valid Positive Floating Point Number	47.466	1.00	Hexane Split C6 (Hexane) Component Percentage. This is the percentage of the Hexane (+) value returned from the GC that will be attributed to Hexane.
56	Heptane Percentage	R/W	Both	FL	4	0→Valid Positive Floating Point Number	35.34	1.00	Hexane Split C7 (Heptane) Component Percentage. This is the percentage of the Hexane (+) value returned from the GC that will be attributed to Heptane.
57	Octane Percentage	R/W	Both	FL	4	0→Valid Positive Floating Point Number	17.194	1.00	Hexane Split C8 (Octane) Component Percentage. This is the percentage of the Hexane (+) value returned from the GC that will be attributed to Octane.
58	Nonane Percentage	R/W	Both	FL	4	0→Valid Positive Floating Point Number	0	1.00	Hexane Split C9 (Nonane) Component Percentage. This is the percentage of the Hexane (+) value returned from the GC that will be attributed to Nonane.
59	Decane Percentage	R/W	Both	FL	4	0→Valid Positive Floating Point Number	0	1.00	Hexane Split C10 (Decane) Component Percentage. This is the percentage of the Hexane (+) value returned from the GC that will be attributed to Decane.
60	Spec. Grav Low Limit	R/W	User	FL	4	0→Valid Positive Floating Point Number	0.07	1.01	Specific Gravity Low Limit. If the specific gravity value returned from the GC is less than this value, an alarm will be set.
61	Spec. Grav High Limit	R/W	User	FL	4	0→Valid Positive Floating Point Number	1.52	1.01	Specific Gravity High Limit. If the specific gravity value returned from the GC is more than this value, an alarm will be set.
62	IP Address of GC	R/W	User	AC	20	20 Characters	“ “		IP address of the GC.
63	IP Port of GC	R/W	User	UINT16	2	0-65535	0		IP port of the GC.

4.2 Point Type 23/26: GC User C Program Stream Data

Point type 23 and 26 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 logical 1 through 10 are mapped to streams on the gas chromatographs, as assigned by the maximum streams per GC (point type 22/25, parameter 13).

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
0	Point Tag Id	R/W	User	AC	10	0x20 → 0x7E for each ASCII character	"Cur Stream" or "Stream #"	1.00	Point Type Description
1	Not used								
2	Stream Number	R/O	System	UINT16	2	0 → 1	1-8 depending on logical	1.00	Stream Number
3	Component Table Mask	R/W	System	UINT16	2	0 → 0xFFFF	0	1.00	Component Table Mask. Each bit corresponds to a stream. A bit value of 1 means that the GC will return data from Table 1 will be used. A bit value of 0 means that the GC will return data from Table 2.
4	Dry Heating Value	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Dry Heating Value
5	Saturated Heating Value	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Saturated (Wet) Heating Value
6	Specific Gravity	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Specific Gravity

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
7	Compressibility	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Compressibility
8	Wobbe Index	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Wobbe Index
9	Total Un-Normalized Mole %	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Total Un-Normalized Mole %
10	Total GPM	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Total GPM
11	User Defined Calc 1	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Calc 1
12	User Defined Calc 2	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Calc 2
13	User Defined Calc 3	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Calc 3
14	User Defined Calc 4	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Calc 4

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
15	User Defined Calc 5	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Calc 5
16	Sample Minute End	R/W	System	UINT16	2	0 → 0xFFFF	0xFFFF	1.00	The minute value read from the GC at the end of the GC Interface Program's polling sequence.
17	Sample Minute Start	R/W	System	UINT16	2	0 → 60	0	1.00	The minute value read from the GC at the start of the GC Interface Program's polling sequence.
18	Alarm 1	R/W	System	UINT16	2	0 → 255	0	1.00	GC Alarm 1
19	Alarm 2	R/W	System	UINT16	2	0 → 255	0	1.00	GC Alarm 2
20	Calibration Flag	R/W	System	UINT16	2	0 → 255	1	1.00	Calibration Flag **0** = Calculation data **1** = Analysis data
21	Mole Sum	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole Sum
22	Error Code	R/W	System	UINT8	1	0 → 8	0	1.00	Error Code **0** = All Checks Pass **1** = Poll Sequence Failed **2** = Alarm Check Failed **3** = Calibration Check Failed **4** = Sample Minute Changed **5** = Total Un-normalized Mole Percentage Failed **6** = Mole Sum Check Failed **7** = Heating Value Range Check Failed **8** = Specific Gravity Range Check Failed

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
23	Alarm Logging Mode	R/W	User	UINT8	1		0	1.00	Alarm Logging Mode **0** = Disable Logging **1** = Enable Logging, No SRBX **2** = Enable Logging, SRBX on Set only **3** = Enable Logging, SRBX on Clear only **4** = Enable Logging, SRBX, on both Set and Clear
24	Component Index #1 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #1 Table 1
25	Component Index #2 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #2 Table 1
26	Component Index #3 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #3 Table 1
27	Component Index #4 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #4 Table 1
28	Component Index #5 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #5 Table 1
29	Component Index #6 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #6 Table 1
30	Component Index #7 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #7 Table 1
31	Component Index #8 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #8 Table 1
32	Component Index #9 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #9 Table 1
33	Component Index #10 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #10 Table 1
34	Component Index #11 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #11 Table 1
35	Component Index #12 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #12 Table 1
36	Component Index #13 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #13 Table 1

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
37	Component Index #14 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #14 Table 1
38	Component Index #15 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #15 Table 1
39	Component Index #16 Table 1	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #16 Table 1
40	Component Index #1 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #1 Table 2
41	Component Index #2 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #2 Table 2
42	Component Index #3 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #3 Table 2
43	Component Index #4 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #4 Table 2
44	Component Index #5 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #5 Table 2
45	Component Index #6 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #6 Table 2
46	Component Index #7 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #7 Table 2
47	Component Index #8 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #8 Table 2
48	Component Index #9 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #9 Table 2
49	Component Index #10 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #10 Table 2
50	Component Index #11 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #11 Table 2
51	Component Index #12 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #12 Table 2

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
52	Component Index #13 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #13 Table 2
53	Component Index #14 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #14 Table 2
54	Component Index #15 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #15 Table 2
55	Component Index #16 Table 2	R/W	System	UINT8	1	0 → 255	0	1.00	Component Index #16 Table 2
56	Mole % Component #1	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #1
57	Mole % Component #2	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #2
58	Mole % Component #3	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #3
59	Mole % Component #4	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #4
60	Mole % Component #5	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #5

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
61	Mole % Component #6	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #6
62	Mole % Component #7	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #7
63	Mole % Component #8	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #8
64	Mole % Component #9	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #9
65	Mole % Component #10	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #10
66	Mole % Component #11	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #11
67	Mole % Component #12	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #12
68	Mole % Component #13	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #13

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
69	Mole % Component #14	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #14
70	Mole % Component #15	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #15
71	Mole % Component #16	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	Mole % Component #16
72	User Defined Avg 1	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 1
73	User Defined Avg 2	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 2
74	User Defined Avg 3	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 3
75	User Defined Avg 4	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 4
76	User Defined Avg 5	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 5

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
77	User Defined Avg 6	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 6
78	User Defined Avg 7	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 7
79	User Defined Avg 8	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 8
80	User Defined Avg 9	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 9
81	User Defined Avg 10	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 10
82	User Defined Avg 11	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 11
83	User Defined Avg 12	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 12
84	User Defined Avg 13	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 13

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
85	User Defined Avg 14	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 14
86	User Defined Avg 15	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	User Defined Average 15
87	Active Alarm Status	R/W	System	UINT8	1	0 → 1	0	1.00	Active Alarm Status (Red light on GC Controller) **0** = Disabled **1** = Enabled
88	Unacknowledged Alarm Status	R/W	System	UINT8	1	0 → 1	0	1.00	Unacknowledged Alarm Status (Yellow Light on GC Controller) **0** = Disabled **1** = Enabled
89	GC Number	R/W	System	UINT8	1	1 → 2	0	1.00	GC Number. The data in this stream was received from this GC.
90	Stream Heating Value	R/W	System	UINT8	1	0 → 1	0	1.00	Stream Heating Value Limits **0** = Disabled **1** = Enabled
91	Heating Value Low Limit	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	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 will be set.
92	Heating Value High Limit	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.00	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 will be set.
93	Spec Grav Limit	R/W	System	UINT8	1	0 → 1	0	1.01	Specific Gravity Limit **0** = Disabled **1** = Enabled

Point Type 23/26: GC User C Program Stream Data

Param #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of Functionality and Meaning of Values
94	Spec Grav Low Limit	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.01	Specific Gravity Low Limit. If the specific gravity value returned from the GC is less than this value, an alarm will be set.
95	Spec Grav Hi Limit	R/W	System	FL	4	0→Valid Positive Floating Point Number	0	1.01	Specific Gravity High Limit. If the specific gravity value returned from the GC is more than this value, an alarm will be set.
96	Event Disable	R/W	System	UINT8	1	0 → 1	0	1.01	Error Event Disable **0** = Error Event Logging Enabled **1** = Error Event Logging Disabled

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