# ROC300 Protocol Emulation Program (for the ROC800-Series Remote Operations Controller) User Manual

**Remote Automation Solutions**

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Process Management

## Revision Tracking Sheet

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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 | Jan-09 |
| All pages | Apr-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 ROC300 Protocol Emulation program for the ROC800.

## 1.1    Scope and Organization

This document serves as the user manual for the ROC300 Protocol Emulation program which is intended for use in a ROC800-Series Remote Operations Controller ("ROC800"). This manual describes how to download, install, and configure the ROC300 Protocol Emulation program (referred to as the "ROC300 Protocol 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:

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

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

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

## 1.2    Product Overview

The ROC300 Protocol Emulation program enables a ROC800 to respond to requests from a ROC protocol host driver, used in ROC300-Series Remote Operations Controllers and FloBoss Flow Managers. The program converts ROC Plus protocol point types (used in the ROC800) to ROC Protocol point types and parameters, where applicable. The program also allows you to use specific opcodes to receive and send data from the host to the ROC800.

The ROC800 receives requests from a host on a specified communications port. The program converts both ROC Plus protocol point types and parameters to ROC Protocol point types and parameters and ROC Plus protocol Type, Logical, and Parameter (TLPs) to analogous ROC protocol TLPs. The program enables you to use specific opcodes to receive data from the host and to send data from the ROC800. You can access all 200 history points in the ROC800 using opcode 130.

Once you have loaded this program and activated it for a given communications port (see Section 3.1), the ROC Plus Protocol communications are not available on that port. ROCLINK 800 will not connect and allow you to make configuration changes to that selected port. However, one way to have ROC Plus Protocol and the ROC300 Protocol Emulation program available on a given port is to write a supervisory FST program to control which protocol is active. For example, the FST command could be time-related to change the value of point type 69/76, logical 0, parameters 1 and 3 through 6. The parameter number indicates which comm port is active: 0 disables ROC300 Protocol Emulation while 1 enables it (see Section 4.3).

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**Note:** Be careful if you change the baud rate for the comm port used for ROC Protocol communications. (You define this using the System Configuration tab on the Device Information screen, accessed by selecting **ROC** > **Information** > Device Information screen.) If the host computer changes the baud rate of the port on which this program runs, this also changes the baud rate of any other ports on the same Baud Rate Generator.

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For further information on the ROC and ROC Plus protocols, refer to

- *ROC Plus Protocol User Manual* (Form A6127)*,* part number D301180X012.
- *ROC Protocol User Manual* (Form A4199), part number D301053X012.

## 1.2.1    Opcode Mappings by I/O Module Slot

The host computer uses opcode 130 (see Section 4.1) to poll for values of all 200 history points either by RAM Area 0 to 6 (which corresponds to History Segments 0 to 6) and point numbers 0 to 29 or by RAM Area 0 only and point numbers 0 to 199. When the host computer requests I/O module TLPs, the program assigns logicals based on the module slot in which the I/O module is located:

*Table 1. Opcode Mappings Based on I/O Module Slot*

| ROC800 Module Position[1, 3] | Logical Range[2] (Maximum) |
|---|---|
| 1 | 0 to 15 |
| 2 | 16 to 31 |
| 3 | 32 to 47 |
| 4 | 48 to 63 |
| 5 (Unavailable; reserved for System AIs) | 64 to 79 |
| 6 | 80 to 95 |
| 7 | 96 to 111 |
| 8 | 112 to 127 |
| 9 | 128 to 143 |

[1] Slots 1 to 4 and slots 6 to 9 (with the exception of slot 5) are available.

[2] Logical ranges may change in future releases.

[3] *Table 1* assumes 16 points for each ROC800 module position.

## 1.2.2    Events and Alarms Mapping

Whether the host computer can process certain alarm and event information from the ROC800 depends on how you configure this program and if the point type (or parameter) corresponds to a point type (or parameter) in the ROC Protocol. The ROC Protocol supports 240 alarms and 240 events. ROC800 can store up to 450 alarms and 450 events. During configuration (see Section 3.1) you indicate whether the program retains only the last 240 alarms or events or the full 450 alarms or events.

**Note:**    The program always sends system events (such as warm starts or cold starts) to the host, since these events have the same format in both the ROC and ROC Plus protocols.

## 1.2.3    Point Type Conversions

The program converts any ROC800 point type that can be converted to a ROC protocol, as shown in the following table. As appropriate for the point type, the program converts parameter numbers as well.

*Table 2. ROC800 Point Type Conversions*

| ROC800 Point Type | Converted to ROC Protocol Point Type |
|---|---|
| 91 – System Variables | 15 |
| 95 – Communication Ports | 14 |
| 96 – FST Parameters | 16 |
| 98 – Soft Point Parameters | 17 |
| 99 – Configurable Opcode Table | 0 |
| 101 – Discrete Inputs | 1 |

| ROC800 Point Type | Converted to ROC Protocol Point Type |
|---|---|
| 102 – Discrete Outputs | 2 |
| 103 – Analog Inputs | 3 |
| 104 – Analog Outputs | 4 |
| 105 – Pulse Inputs | 5 |
| 106 – RTD | 3 |
| 107 – Thermocouple | 3 |
| 108 – Multi-Variable Sensor | 40 |
| 109 – System Analog Inputs | 3 |
| 110 – PID Control Parameters | 6 |
| 112 – Station Parameters | 7 or 41 |
| 113 – Orifice Meter Run Configuration | 7 or 41 |
| 114 – Orifice Meter Run Values | 41 or 42 |
| 115 – Turbine Meter Run Configuration | 7 |
| 116 – Turbine Meter Run Values | 41 or 42 |
| 136 – ROC Clock | 12 |

## 1.2.4 Unsupported Parameters

The program cannot support some parameters. If the host tries to access one of these unsupported parameters, the program may or may not send back an error, depending on the circumstances. The program has implemented the following rules to handle these parameters. These rules also apply when the Read-Only and Read-Write statuses don't match.

*Table 3. Unsupported Parameter Handling*

| If ROC Protocol Parameter is… | And ROC Plus Parameter is… | Then Action on Read is… | Then Action on Write is… |
|---|---|---|---|
| Read-Only | Not Supported | Return 0 or other appropriate default | Error 105 |
| Read-Only | Read-Only | Return actual value | Error 105 |
| Read-Only | Read-Write | Return actual value | Error 105 |
| Read-Write | Not Supported | Return 0 or other appropriate default | No error |
| Read-Write | Read-Only | Return actual value | Error 105 |
| Read-Write | Read-Write | Return actual value | No error |

## 1.3 Program Requirements

Two versions of the program are provided. The versions use different point types, but are identical in function. Only one program using a specific point type will run on the ROC at any given time. Load the program version which uses a point type set that does not conflict with programs currently running on the ROC.

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 |
|---|---|---|---|---|---|---|---|
| ROCProtocol_69_v124.tar | ROC800 2.10 | 69 | 60,416 | 130 | 155,648 | 1.80 | 11 |
| ROCProtocol_76_v124.tar | ROC800 2.10 | 76 | 60,416 | 130 | 155,648 | 1.80 | 11 |

**Note:** You must connect a PC to the ROC800's LOI port before starting the download. Also, display #11 must be available for this program's use.

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

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# Chapter 2 – Installation

This section provides instructions for installing the ROC300 Protocol Emulation program into the Flash memory on the ROC800. Read Section 1.3 of this manual for program requirements.

## 2.1  Downloading the Program

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

**Note:**  This manual shows the installation of **RocProtocol_76_v124.tar**. Choose the program version that uses point types which **do not** conflict with programs currently installed on the ROC.

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 1*):
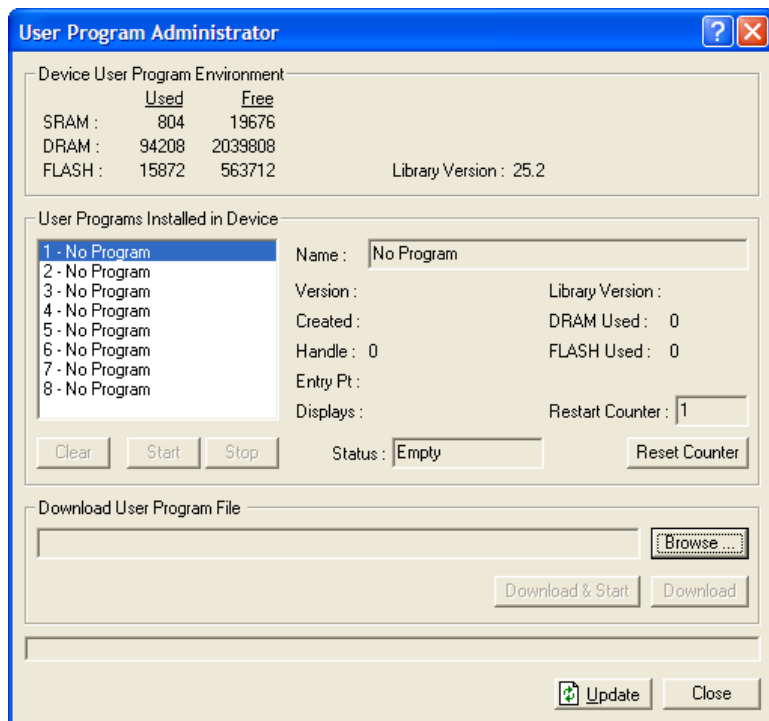


*Figure 1. User Program Administrator*

4. Select any empty program number 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 2*).

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 2* shows, the screen lists all valid user program files with the .TAR extension:
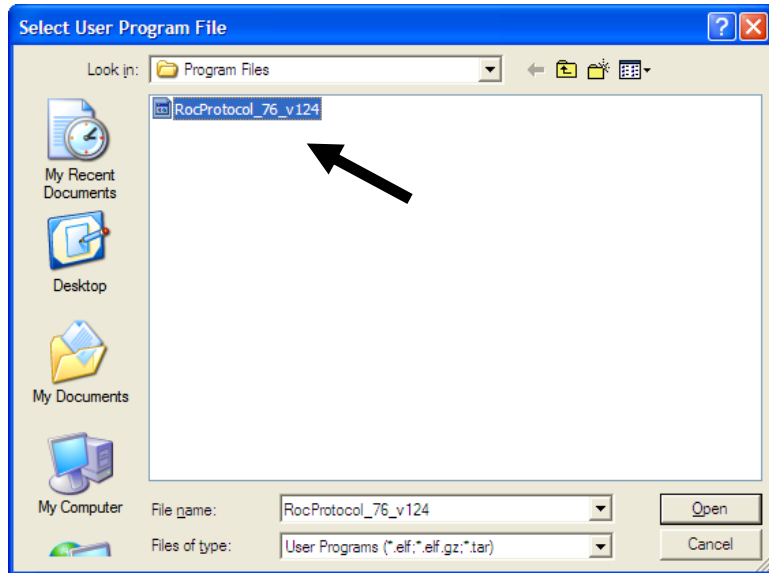


*Figure 2. Select User Program File*

7. Click **Open** to select the program file. The User Program Administrator screen displays. As shown in *Figure 3*, note that the Download User Program File frame identifies the selected program and that the **Download & Start** button is active:
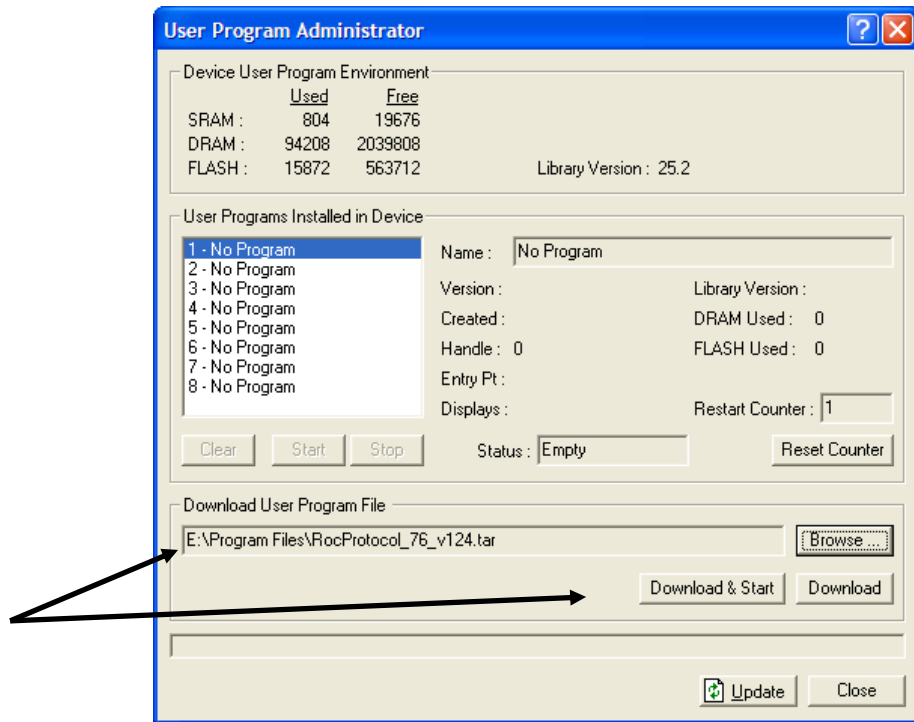
*Figure 3. User Program Administrator*

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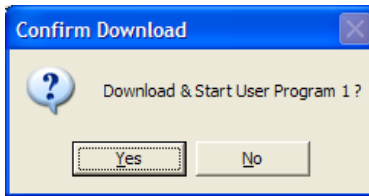


*Figure 4. Confirm Download*

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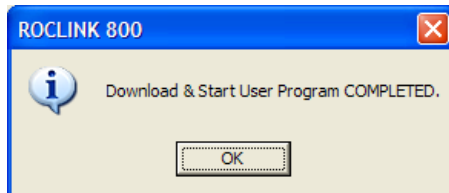


*Figure 5. ROCLINK 800 Download Confirmation*

10. Click **OK**. The User Program Administrator screen displays (see *Figure 6*). 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).
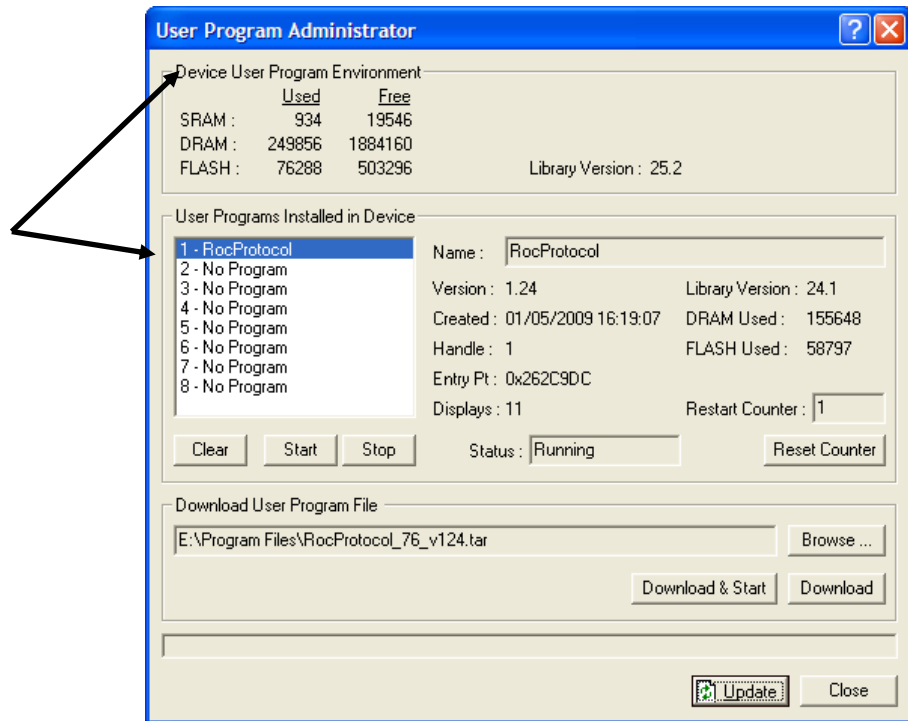
*Figure 6. User Program Administrator*

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

**12.** Proceed to *Section 3* to configure the program.

# Chapter 3 – Configuration

After you have loaded the ROC300 Protocol Emulation program on the ROC800, you configure the program using one ROCLINK 800 screen (History Segment Configuration) and a program-specific screen (ROC Protocol Converter).

- Use the program-specific ROC Protocol Converter screen to enable the conversion and set the number of events and alarms captured.
- Use ROCLINK 800's History Segment Configuration screen to configure history segments for the program.

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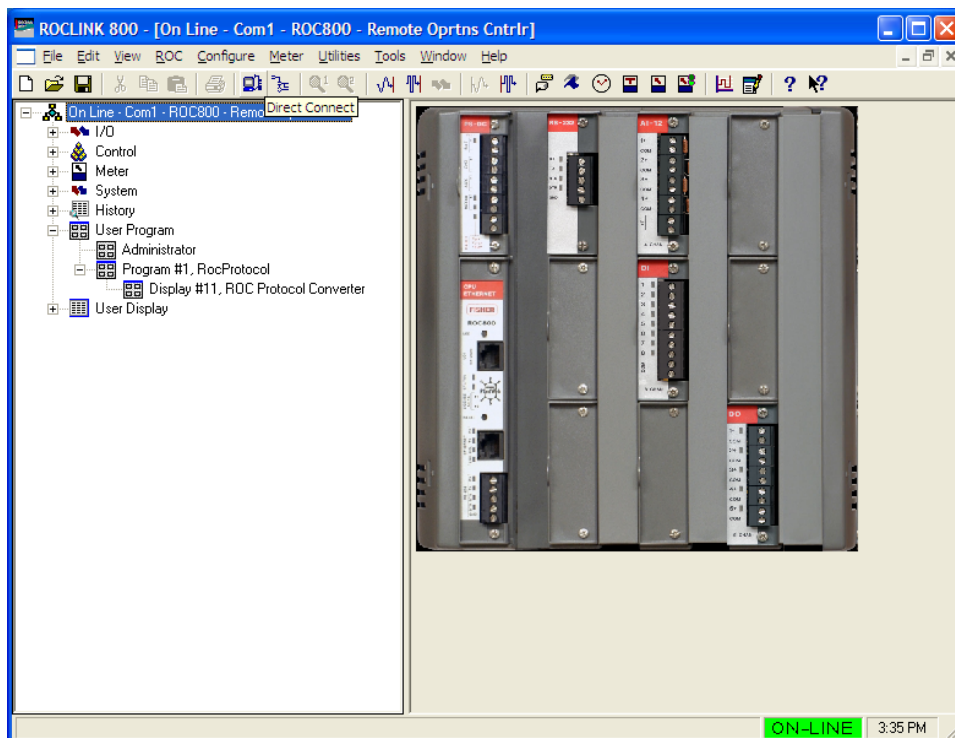


*Figure 7. ROCLINK 800*

## 3.1 ROC Protocol Converter Configuration Screen

Use this screen to enable the conversion and set the number of events and alarms.

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**Note:** Whether the host computer can process certain alarm and event information from the ROC800 depends on how you configure the program and whether the point type (or parameter) corresponds to a point type (or parameter) in the ROC protocol.

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To access this screen:

1. From the Directory Tree, select **User Program** > **Program #1, RocProtocol**.

2. Double-click **Display #11, ROC Protocol Converter.** The ROC Protocol Converter configuration screen displays:
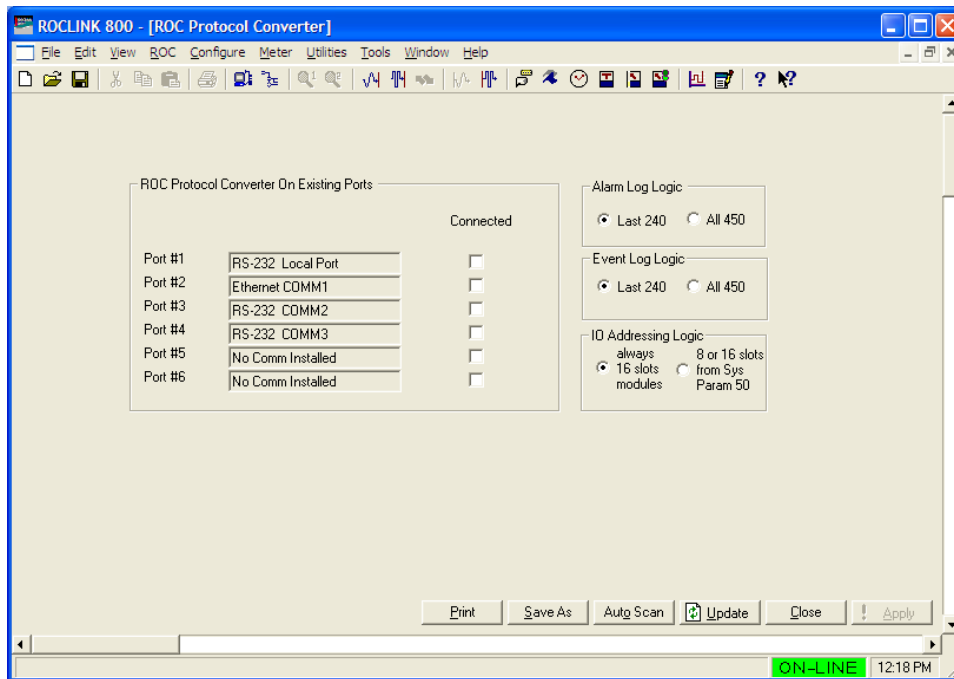


*Figure 8. ROC Protocol Converter Configuration*

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

| Field | Description |
|---|---|
| **ROC Protocol On Existing Ports** | Check one box to select a ROC800 communications port. |
| | **Note**: Port #2, Ethernet COMM1, is **not** a valid choice for this program. |
| **Alarm Log Logic** | Sets whether the ROC800 logs the most recent 240 alarms the ROC Protocol supports or the full 450 alarms the ROC Plus Protocol (and the ROC800) supports. Selecting **Last 240** logs **only** the most recent 240 alarms. |

| Field | Description |
|---|---|
|  | **Note**: If you select **All 450**, the ROC800 uses a ROC Plus Protocol TLP for any alarms without a ROC Protocol equivalent. |
| **Event Log Logic** | Sets whether the ROC800 logs the most recent 240 events the ROC Protocol supports or the full 450 events the ROC Plus Protocol (and the ROC800) supports. Selecting **Last 240** logs **only** the most recent 240 events. |
|  | **Note**: If you select **All 450**, the ROC800 uses a ROC Plus Protocol TLP for any events without a ROC Protocol equivalent. |
| **IO Addressing Logic** | Sets whether the ROC800 exclusively uses modules with 16 points or if the program needs verify the number of points used for each module. Valid values are **always 16 slots modules** or **8 or 16 slots from Sys Param 50**. |

4. Click **Apply** to save any changes you have made to this screen.

5. Click **OK** to return to the ROCLINK 800 screen. Proceed to *Section 3.2* to configure ROC800 history segments for use with this program.

## 3.2    History Segment Configuration Screen

Use this screen to configure history segments. The program can access all 200 history points in the ROC800, but you need to configure the ROC800 history segments specifically for the program. To access this screen:

1.  Select **Configure** > **History Segments** from the ROCLINK menu bar. The History Segment Configuration screen displays:
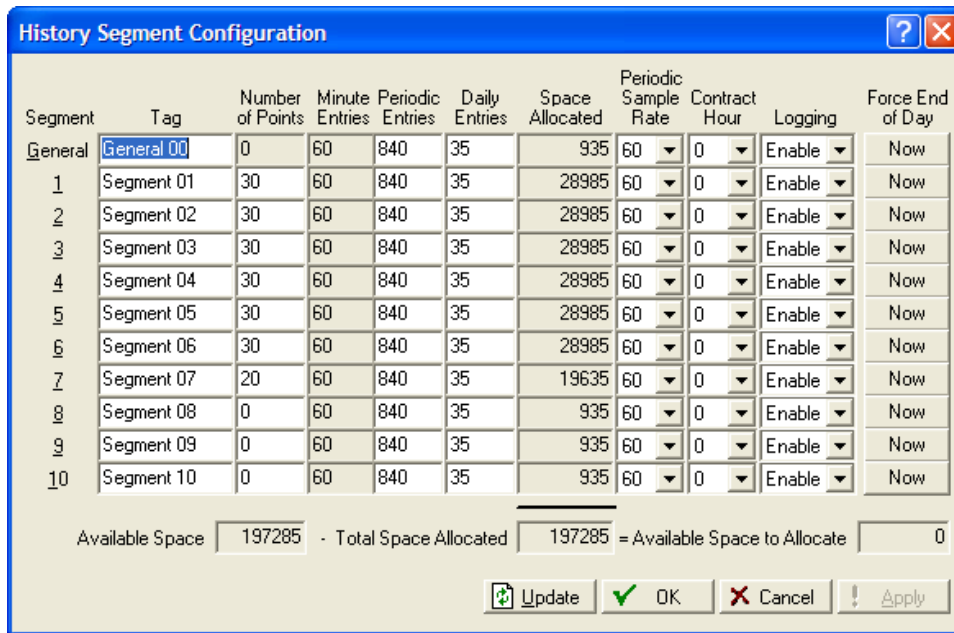


*Figure 9. ROC Protocol Converter Configuration*

2.  Allocate history points to segments 01 through 07 (allocating a maximum of 30 points to segments 01 through 06 and a maximum of 20 points to segment 07). Ensure that the following fields contain the following values:

| Field | Description |
|---|---|
| **Periodic Entries** | Enter **840** for each segment used. |
| **Periodic Sample Rate** | Enter **60** for each segment used. |
| **Daily Entries** | Enter **35** for each segment used. |

3.  Click **Apply** to save any changes you have made to this screen.

**Note:**    Refer to the *ROCLINK 800 Configuration Software User Manual* (Form A6121) for further information on configuring history segments.

4.  Click **OK** to return to the ROCLINK 800 screen. Proceed to *Section 3.3* to save the configuration.

## 3.3    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:
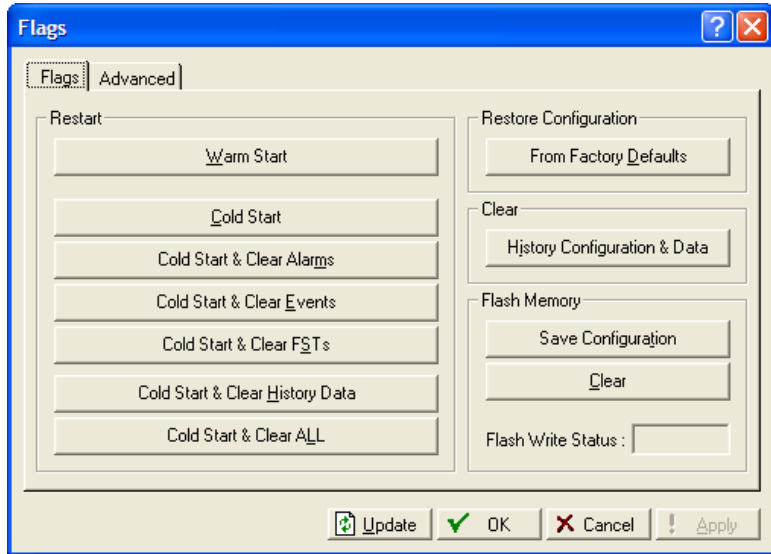


*Figure 10. Flags screen*

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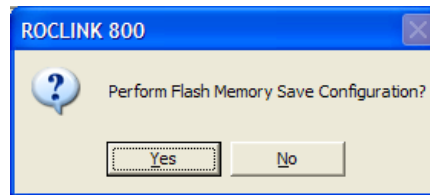


*Figure 11. Perform screen*

3.  Click **Yes** to begin the save process. The Status field on the Flags screen displays *In Progress*. When the process ends, the Status field on the Flags screen displays *Completed*.

4.  Click **Update** on the Flags screen. This completes the process of saving your new configuration.

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# Chapter 4 – Reference

This section provides tables of information on the point types and parameters the ROC300 Protocol Emulation program uses:

- Supported Opcodes.
- Point Types.
- User Defined Point Types.

## 4.1   Supported Opcodes

The ROC300 Protocol Emulation program supports the following opcodes:

*Table 4. Summary of Supported Opcodes*

| Opcode | Description |
|--------|-------------|
| 0 | Send general update such as I/O update, gas flows, and control loop status. |
| 6 | Send ROC configuration |
| 7 | Send current time and date. |
| 8 | Set new time and date. |
| 10 | Send data from configurable opcode tables. |
| 11 | Set data in configurable opcode tables. |
| 103 | Send system information such as on and off times, manual and automatic alarm status, firmware version, and current time and date. |
| 120 | Send pointers for alarm, event, and history logs. |
| 121 | Send specified number of alarms starting at specified alarm pointer. |
| 122 | Send specified number of events starting at specified event pointer. |
| 130 | Send archived hourly and daily data for specified history point starting at specified history pointer. |
| 165 | Read history point configuration.<br>**Note**:  Writing history configuration **is not** supported. |
| 167 | Send specified contiguous block of parameters. |
| 171 | Set parameters for specified point. |
| 180 | Send specified parameters. |
| 181 | Set specified parameters. |
| 255 | Error messages transmitted by ROC in response to a request with invalid parameters or format. |

## 4.2    Point Types 1 to 8, 10, 12 to 17, 19, 40 to 42

The following is a list of ROC300 point types and the corresponding mapping to the ROC800 running this program.

**Note:** This program **does not** support point types 9, 11, 18, 20 to 39, or 44 to 59.

### 4.2.1    Point Type 1: Discrete Input

**Point Type 1: Discrete Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|------------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | AC | 10 | Point Tag Identification | 101 | 0 | Full |
| 1 | R/W | UINT 8 | 1 | Filter | N/A | N/A | None – returns 3 |
| 2 | R/W | UINT 8 | 1 | Status | 101 | 3 | Full |
| 3 | R/W | BIN | 1 | Modes | 101 | 1 | Full |
| | | | | Bit 7 – Manual Mode<br>0 = Normal Scan<br>1 = Scan Disabled | | | |
| | | | | Bit 6 – RBX on Set<br>0 = Disabled on Set<br>1= RBX on Set | 101 | 11 | Full |
| | | | | Bit 5 – RBX on Clear<br>0 = Disabled<br>1 = RBX on Clear | 101 | 10 | Full |
| | | | | Bit 4 – Alarm Enable<br>0 = Disabled<br>1 = Log Alarms | 101 | 9 | Full |
| | | | | Bit 3 – TDI Enable<br>(ROC300-series and<br>FloBoss 407)<br>0 = Disabled<br>1 = TDI Active | N/A | N/A | None – returns 0 |

**Point Type 1: Discrete Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|-----------|-----------|--------|-------------|-------------------|------------------|---------|
| 3 (cont'd) | | | | Bit 2 – Filter Interval<br>0 = 250 ms (50 ms for built-in DI) – ROC300-series & FloBoss 407<br>0 = 100 ms – FloBoss 500-series, FloBoss 103, & RegFlo<br>1 = 15 seconds (3 sec for built-in DI) | N/A | N/A | None – returns 0 |
| | | | | Bit 1 – Latch Enable<br>0 = Disable<br>1 = Enable | 101 | 5 | Full |
| | | | | Bit 0 – Invert Enable<br>0 = Disabled<br>1 = Enable | 101 | 4 | Full |
| 4 | R/O | BIN | 1 | Alarm Code<br><br>Bit 7 – Manual Mode<br>Bit 6 – Not Used<br>Bit 5 – Status Change<br>Bit 4 – TDI Rate Alarm<br>Bit 3 – TDI High Alarm<br>Bit 2 – TDI High High Alarm<br>Bit 1 – TDI Low Alarm<br>Bit 0 – TDI Low Low Alarm | 101 | 12 | Partial – Bits 7 and 5 are supported; all others are set to 0 |
| 5 | R/W | UINT 32 | 4 | Accumulated Value | 101 | 6 | Full |
| 6 | R/W | UINT 32 | 4 | On Counter | 101 | 7 | Partial – ROC800 On Time in seconds (FLP) converts to 50 ms periods (UINT32) |
| 7 | R/W | UINT 32 | 4 | Off Counter | 101 | 8 | Partial – ROC800 Off Time in seconds (FLP) converts to 50 ms periods (UINT32) |
| 8 | R/W | INT 16 | 2 | 0% Pulse Width | N/A | N/A | None – returns 0 |
| 9 | R/W | INT 16 | 2 | 100% Pulse Width | N/A | N/A | None – returns 0 |
| 10 | R/W | UINT 16 | 2 | Max time between pulses / Max Count | N/A | N/A | None – returns 0 |

**Point Type 1: Discrete Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 11 | R/W | AC | 10 | Units | N/A | N/A | None – returns 0 |
| 12 | R/W | UINT 16 | 2 | Scan Period | N/A | N/A | None – returns 0 |
| 13 | R/W | FLP | 4 | Low Reading (Zero) EU | N/A | N/A | None – returns 0 |
| 14 | R/W | FLP | 4 | High Reading (Span) EU | N/A | N/A | None – returns 0 |
| 15 | R/W | FLP | 4 | Low Alarm EU | N/A | N/A | None – returns 0 |
| 16 | R/W | FLP | 4 | High Alarm EU | N/A | N/A | None – returns 0 |
| 17 | R/W | FLP | 4 | Low Low Alarm EU | N/A | N/A | None – returns 0 |
| 18 | R/W | FLP | 4 | Hi Hi Alarm EU | N/A | N/A | None – returns 0 |
| 19 | R/W | FLP | 4 | Rate Alarm EU | N/A | N/A | None – returns 0 |
| 20 | R/W | FLP | 4 | Alarm Deadband | N/A | N/A | None – returns 0 |
| 21 | R/W | FLP | 4 | EU Value | N/A | N/A | None – returns 0 |
| 22 | R/O | UINT 16 | 2 | TDI Count | N/A | N/A | None – returns 0 |

## 4.2.2    Point Type 2: Discrete Output

**Point Type 2: Discrete Output**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Point Tag Identification | 102 | 0 | Full |
| 1 | R/W | UINT 16 | 2 | Time On | 102 | 14 | Partial – ROC800 Time On in seconds (FLP) converts to 50 ms periods (UINT16) |
| 2 | R/O | UINT 8 | 1 | Not Used | N/A | N/A | None – returns 0 |
| 3 | R/W | UINT 8 | 1 | Status | 102 | 8, 21, or 24 | Full – When reading, uses param 24 (Physical). When writing, uses 8 (Auto) or 21 (Manual) depending on mode. |
| 4 | R/W | BIN | 1 | Mode<br><br>Bit 7 – Manual Mode<br>0 = Normal Scan<br>1 = Scan Disabled | 102 | 2 | Partial – Normal Scan maps to Automatic in the ROC800 and Scan Disabled maps to Disabled in the ROC800 |
| | | | | Bit 6 – Not Used<br><br>Bit 5 – Not Used | N/A | N/A | Full |
| | | | | Bit 4 – Clear on Reset<br>0 = Disabled – Retain Last Status<br>1 = Enabled | 102 | 7 | Partial – ROC800 actually uses Failsafe value rather than clear |
| | | | | Bit 3 – TDO Enabled<br>0 = Disabled<br>1 = Enabled | 102 | 13 | Full |
| | | | | Bit 2 – Do not set this bit | N/A | N/A | None |
| | | | | Bit 1 – Toggle<br>0 = Disabled<br>1 = Enabled | 102 | 12 | Full |
| | | | | Bit 0 – Momentary<br>0 = Disabled<br>1 = Enabled | 102 | 10 and 11 | Full |

**Point Type 2: Discrete Output**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 5 | R/O | BIN | 1 | Alarm Code:<br><br>Bit 7 – Manual Mode<br>Bits 6-0 – Not Used | 102 | 6 | Partial – Scanning Disabled alarm in ROC800 maps to bit 7, manual alarm in ROC800 not mapped |
| 6 | R/W | UINT 32 | 4 | Accumulated Value | 102 | 9 | Full |
| 7 | R/W | AC | 10 | Units | 102 | 1 | Full |
| 8 | R/W | UINT 16 | 2 | Cycle Time | 102 | 15 | Partial – ROC800 Cycle Time in seconds (FLP) converts to 50 ms periods (UINT16) |
| 9 | R/W | INT 16 | 2 | 0% Count | 102 | 16 | Partial – ROC800 Low Reading Time in seconds (FLP) converts to 50 ms periods (INT16) |
| 10 | R/W | INT 16 | 2 | 100% Count | 102 | 17 | Partial – ROC800 High Reading Time in seconds (FLP) converts to 50 ms periods (INT16) |
| 11 | R/W | FLP | 4 | Low Reading EU | 102 | 18 | Full |
| 12 | R/W | FLP | 4 | High Reading EU | 102 | 19 | Full |
| 13 | R/W | FLP | 4 | EU Value | 102 | 20 | Full |

## 4.2.3    Point Type 3: Analog Input

**Point Type 3: Analog Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Point Tag Identification | 103/106/107/109 | 0/0/0/0 | Full |
| 1 | R/W | AC | 10 | Units | 103/106/107/109 | 1/1/1/1 | Full |
| 2 | R/W | UINT16 | 2 | Scan Period | 103/106/107/109 | 3/3/5/3 | Partial – ROC800 Scan Period in seconds (FLP) converts to 50 ms periods (UINT16) |
| 3 | R/W | UINT16 | 2 | Filter | 103/106/107/109 | 5/5/7/5 | Full |
| 4 | R/O | INT 16 | 2 | Adjusted A/D  0% | 103/106/107/109 | 8/9/NA/8 | Partial – This parameter is R/O in the ROC800 and can only be modified through the calibration routine.<br><br>**Not** supported for ROC800 Thermocouple (Pt Type 107) |
| 5 | R/O | INT 16 | 2 | Adjusted A/D 100% | 103/106/107/109 | 12/13/NA/9 | Partial – This parameter is R/O in the ROC800 and can only be modified through the calibration routine.<br><br>**Not** supported for ROC800 Thermocouple (Pt Type 107) |
| 6 | R/W | FLP | 4 | Low Reading EU | 103/106/107/109 | 13/14/NA/10 | Full for ROC800 Point types 103, 106 and 109<br><br>**Not** supported for ROC800 Thermocouple (Pt Type 107) |
| 7 | R/W | FLP | 4 | High Reading EU | 103/106/107/109 | 17/18/NA/11 | Full for ROC800 Point types 103, 106 and 109.<br><br>**Not** supported for ROC800 Thermocouple (Pt Type 107) |
| 8 | R/W | FLP | 4 | Low Alarm EU | 103/106/107/109 | 24/25/11/15 | Full |
| 9 | R/W | FLP | 4 | High Alarm EU | 103/106/107/109 | 25/26/12/16 | Full |
| 10 | R/W | FLP | 4 | Low Low Alarm EU | 103/106/107/109 | 23/24/10/14 | Full |
| 11 | R/W | FLP | 4 | Hi Hi Alarm EU | 103/106/107/109 | 26/27/13/17 | Full |

**Point Type 3: Analog Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|-----------|-----------|--------|-------------|-------------------|------------------|---------|
| 12 | R/W | FLP | 4 | Rate Alarm EU | 103/106/107/109 | 27/28/14/18 | Full |
| 13 | R/W | FLP | 4 | Alarm Deadband | 103/106/107/109 | 28/29/15/19 | Full |
| 14 | R/W | FLP | 4 | Filtered EUs | 103/106/107/109 | 21/22/9/12 | Full |
| 15 | R/W | BIN | 1 | Mode | 103/106/107/109 | 2/2/2/2 | Full |
| | | | | Bit 7 – Manual Mode<br>0 = Normal Scan<br>1 = Manual Scan | | | |
| | | | | Bit 6 – RBX on Set<br>0 = Disabled<br>1 = Active | 103/106/107/109 | 31/32/18/22 | Full |
| | | | | Bit 5 – RBX on Clear<br>0 = Disabled<br>1 = Active | 103/106/107/109 | 30/31/17/21 | Full |
| | | | | Bit 4 – ALM Enable<br>0 = Disabled<br>1 = Log Alarm | 103/106/107/109 | 29/30/16/20 | Full |
| | | | | Bit 3 – Average Enable<br>(for ROCs & FloBoss)<br>0 = Disabled<br>1 = Average Enable | 103/106/107/109 | 6/6/8/6 | Full |
| | | | | Bit 2 – Temp Comp Enable<br>0 = Disabled<br>1 = Temp Comp Enable | N/A | N/A | None – returns 0 |
| | | | | Bit 1 – Clipping<br>0 = Disable<br>1 = Clipping Enable | 103/106/107/109 | 22/23/NA/13 | Full for ROC800 Point types 103, 106 and 109.<br><br>**Not** supported for ROC800 Thermocouple (Pt Type 107) |
| | | | | Bit 0 – Not Used | N/A | N/A | Full |

**Point Type 3: Analog Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 16 | R/O | BIN | 1 | Alarm Code | 103/106/107/109 | 32/33/19/23 | Full |
| | | | | Bit 7 – Manual Mode<br>Bit 6 – Point Fail<br>Bit 5 – Not Used<br>Bit 4 – Rate Alarm<br>Bit 3 – High High Alarm<br>Bit 2 – High Alarm<br>Bit 1 – Low Low Alarm<br>Bit 0 – Low Alarm | | | |
| 17 | R/O | UINT 16 | 2 | Raw A/D Input | 103/106/107/109 | 7/8/NA/7 | Full for ROC800 Point types 103, 106 and 109,<br><br>**Not** supported for ROC800 Thermocouple (Pt Type 107) |
| 18 | R/O | INT 16 | 2 | Actual Scan Time | 103/106/107/109 | 4/4/6/4 | Partial – ROC800 Actual Scan Time in seconds (FLP) converts to 50 ms periods (INT16) |

## 4.2.4    Point Type 4: Analog Output

**Point Type 4: Analog Output**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|------------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | AC | 10 | Point Tag Identification | 104 | 0 | Full |
| 1 | R/W | AC | 10 | Units | 104 | 1 | Full |
| 2 | R/W | INT 16 | 2 | Adjusted D/A 0% | 104 | 8 | Full |
| 3 | R/W | INT 16 | 2 | Adjusted D/A 100% | 104 | 9 | Full |
| 4 | R/W | FLP | 4 | Low Reading EU | 104 | 10 | Full |
| 5 | R/W | FLP | 4 | High Reading EU | 104 | 11 | Full |
| 6 | R/W | FLP | 4 | Value in EUs | 104 | 12,14, or 16 | Full – When reading, use param 16 (Physical). When writing, use 12 (Auto) or 14 (Manual) depending on mode. |
| 7 | R/W | BIN | 1 | Mode | 104 | 2 | Partial – Normal Scan maps to Automatic in the ROC800 and Scan Disabled maps to Disabled in the ROC800 |
| | | | | Bit 7 – Manual Mode<br>0 = Normal Scan<br>1 = Manual Scan | | | |
| | | | | Bit 6 – RBX on Set<br>0 = Disabled<br>1 = Active | 104 | 5 | Full |
| | | | | Bit 5 – RBX on Clear<br>0 = Disabled<br>1 = Active | 104 | 4 | Full |
| | | | | Bit 4 – ALM Enable<br>0 = Disabled<br>1 = Log Alarms | 104 | 3 | Full |
| | | | | Bit 3 – Clear on Reset<br>0 = Disabled<br>1 = Enable | 104 | 7 | Partial – ROC800 actually uses Failsafe value rather than clear |
| | | | | Bit 2-0 – Unused | N/A | N/A | Full |

**Point Type 4: Analog Output**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 8 | R/O | BIN | 1 | Alarm Code:<br><br>Bit 7 = Manual Mode<br><br>Bit 6 = Point Fail<br><br>Bits 5 through 0 – Not Used | 104 | 6 | Partial – Scanning Disabled alarm in ROC800 maps to bit 7, manual alarm in ROC800 is not mapped. |
| 9 | R/O | INT 6 | 2 | Raw D/A Output | 104 | 13 | Full |

## 4.2.5    Point Type 5: Pulse Input

**Point Type 5: Pulse Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Point Tag Identification | 105 | 0 | Full |
| 1 | R/W | AC | 10 | Units | 105 | 1 | Full |
| 2 | R/W | UINT 8 | 1 | Rate Flag | 105 | 11 | Full |
| 3 | R/W | UINT 8 | 1 | Rate Period | 105 | 7 | Full |
| 4 | R/O | UINT 8 | 1 | Not Used | N/A | N/A | Full |
| 5 | R/W | UINT 16 | 2 | Scan Period | 105 | 3 | Partial – ROC800 Scan Period in seconds (FLP) converts to 50 ms periods (UINT16) |
| 6 | R/W | FLP | 4 | Conversion | 105 | 9 | Full |
| 7 | R/W | FLP | 4 | Low Alarm EU | 105 | 15 | Full |
| 8 | R/W | FLP | 4 | High Alarm EU | 105 | 16 | Full |
| 9 | R/W | FLP | 4 | Low Low Alarm EU | 105 | 14 | Full |
| 10 | R/W | FLP | 4 | Hi Hi Alarm EU | 105 | 17 | Full |
| 11 | R/W | FLP | 4 | Rate Alarm EU | 105 | 18 | Full |
| 12 | R/W | FLP | 4 | Alarm Deadband – Rollover Maximum | 105 | 12 and 19 | Full |
| 13 | R/W | FLP | 4 | Value in EUs | 105 | 13 | Full |
| 14 | R/W | BIN | 1 | Mode | 105 | 2 | Full |
| | | | | Bit 7 – Manual Mode 0 = Normal Scan 1 = Manual Scan | | | |
| | | | | Bit 6 – RBX on Set 0 = Disabled 1 = Active | 105 | 22 | Full |
| | | | | Bit 5 – RBX on Clear 0 = Disabled 1 = Active | 105 | 21 | Full |

**Point Type 5: Pulse Input**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 14 (cont'd) | | | | Bit 4 – ALM Enable<br>0 = Disabled<br>1 = Log Alarm | 105 | 20 | Full |
| | | | | Bit 3 – Conversion<br>0 = Reciprocal Conversions – EUs/Pulse<br>1 = Direct Conversion – Pulses/EU | 105 | 8 | Full |
| | | | | Bits 2 through 0 – Not Used | N/A | N/A | Full |
| 15 | R/O | BIN | 1 | Alarm Code<br><br>Bit 7 – Manual Mode<br>Bits 5 through 6 – Not Used<br>Bit 4 – Rate Alarm<br>Bit 3 – High High Alarm<br>Bit 2 – High Alarm<br>Bit 1 – Low Low Alarm<br>Bit 0 – Low Alarm | 105 | 23 | Full |
| 16 | R/W[1] | UINT 32 | 4 | Accumulated Value | 105 | 4 | Full |
| 17 | R/O | FLP | 4 | Current Rate | 105 | 10 | Full |
| 18 | R/W | FLP | 4 | Today's Total | 105 | 24 | Full |
| 19 | R/O | FLP | 4 | Yesterday's Total | 105 | 25 | Full |
| 20 | R/W | UINT 32 | 4 | Pulses for Day – FloBoss 500-series, FloBoss 103, RegFlo | 105 | 6 | Full |

## 4.2.6    Point Type 6: PID

**Point Type 6: PID**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|-----------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | AC | 10 | Point Tag Identification | 110 | 0 | Full |
| 1 | R/W | BIN | 1 | Control Type | 110 | 1 | Full |
| | | | | Bit 7 – Shutdown 1 = Shutdown 0 = PID Loop Operational | | | |
| | | | | Bit 6 – Manual Tracking Enable 1 = Manual Mode 0 = Disable | 110 | 7 | Full |
| | | | | Bit 5 – Not Used unless the PID Point is Configured for DO Control (ROC300-series and FloBoss 407) 1 = Error 0 = Off | N/A | N/A | Not supported |
| | | | | Bit 4 – Control Loop Shut Down 1 = Stop on reset 0 = Disable | 110 | 6 | Full |
| | | | | Bit 3 – Override Select (FloBoss 500-series, FloBoss 103, & RegFlo) | 110 | 22 | Full |
| | | | | Bit 2 – DO Control 1 = DO Control 0 = AO Control | 110 | 5 | Full |
| | | | | Bit 1 – Selects Primary or Override 1 = Override 0 = Primary | 110 | 21 | Partial – ROC800 Override only mode **not** supported |

**Point Type 6: PID**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 1 (cont'd) | | | | Bit 0 – Mode of Operation<br>1 = Automatic<br>0 = Manual | 110 | 1 | Partial – ROC800 remote setpoint mode **not** supported |
| 2 | R/O | UINT 8 | 1 | Switch (Loop) Status | 110 | 36 | Full |
| 3 | R/O | UINT 16 | 2 | Actual Loop Period – Scan Time | 110 | 3 | Partial – ROC800 Actual Loop Period in seconds (FLP) converts to 50 ms periods (UINT16) |
| 4 | R/W | TLP | 3 | Primary Input Point | 110 | 8 | Full |
| 5 | R/W | TLP | 3 | Primary Output – Output of PID | 110 | 38 or 39 | Full |
| 6 | R/O | FLP | 4 | Primary Switch Setpoint | N/A | N/A | None – returns 0.0 |
| 7 | R/O | TLP | 3 | Primary Switch Process Variable | N/A | N/A | None – returns 0,0,0 |
| 8 | R/O | AC | 1 | Primary Switch Mode | N/A | N/A | None – returns blank |
| 9 | R/W | TLP | 3 | Override Input Point | 110 | 23 | Full |
| 10 | R/W | TLP | 3 | Second Output of PID | 110 | 40 | Full |
| 11 | R/O | FLP | 4 | Override Switch Setpoint | N/A | N/A | None – returns 0.0 |
| 12 | R/O | TLP | 3 | Override Switch Process Variable | N/A | N/A | None – returns 0,0,0 |
| 13 | R/O | AC | 1 | Override Switch Mode | N/A | N/A | None – returns blank |
| 14 | R/W | FLP | 4 | Primary Setpoint | 110 | 11 | Full |
| 15 | R/W | FLP | 4 | Primary Setpoint Maximum Change Rate | 110 | 14 | Full |
| 16 | R/W | UINT 16 | 2 | Primary Loop Period | 110 | 2 | Partial – ROC800 Loop Period in seconds (FLP) converts to 50 ms periods (UINT16) |
| 17 | R/W | FLP | 4 | Primary Proportional Gain | 110 | 15 | Full |
| 18 | R/W | FLP | 4 | Primary Integral Gain | 110 | 16 | Full |
| 19 | R/W | FLP | 4 | Primary Derivative Gain | 110 | 17 | Full |

**Point Type 6: PID**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 20 | R/W | FLP | 4 | Primary Scale Factor | 110 | 18 | Full |
| 21 | R/W | FLP | 4 | Primary Integral Deadband | 110 | 19 | Full |
| 22 | R/W | FLP | 4 | Primary Process Variable | 110 | 9 | Full |
| 23 | R/W | FLP | 4 | Primary Output EU – Current Output of PID | 110 | 37 | Full |
| 24 | R/O | FLP | 4 | Primary Switch Process Variable - Primary Change in Output | 110 | 20 | Partial – Supports the FB503 interpretation of this parameter as the primary change in output |
| 25 | R/O | FLP | 4 | Minimum Control Time | N/A | N/A | None – returns 0.0 |
| 26 | R/W | FLP | 4 | Override Setpoint | 110 | 26 | Full |
| 27 | R/W | FLP | 4 | Override Setpoint Maximum Change Rate | 110 | 29 | Full |
| 28 | R/O | UINT 16 | 4 | Override Loop Period | 110 | 2 | Partial – provides overall loop period converted to 50 ms periods |
| 29 | R/W | FLP | 4 | Override Proportional Gain | 110 | 30 | Full |
| 30 | R/W | FLP | 4 | Override Integral Gain | 110 | 31 | Full |
| 31 | R/W | FLP | 4 | Override Derivative Gain | 110 | 32 | Full |
| 32 | R/W | FLP | 4 | Override Scale Factor | 110 | 33 | Full |
| 33 | R/W | FLP | 4 | Override Integral Deadband | 110 | 34 | Full |
| 34 | R/W | FLP | 4 | Override Process Variable | 110 | 24 | Full |
| 35 | R/O | FLP | 4 | Override Output EU – Current Output of PID | 110 | 37 | Partial – this value is R/O, uses parameter 23 to write to the output |
| 36 | R/O | FLP | 4 | Override Switch Process Variable – Override Change in Output | 110 | 35 | Partial – Supports the FB503 interpretation of this parameter as the override change in output. |

## 4.2.7    Point Type 7: AGA Flow Parameters

**Point Type 7: AGA Flow Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|-----------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | AC | 10 | Point Tag Identification | 113/115 | 0/0 | Full |
| 1 | R/W | FLP | 4 | Latitude | 112 | 20 | Full |
| 2 | R/W | FLP | 4 | Elevation | 112 | 19 | Full |
| 3 | R/W | BIN | 1 | Calculation Method | N/A | N/A | None – returns 0 |
| | | | | Bit 7 – Manual Mode<br>0 = Normal<br>1 = Manual | | | |
| | | | | Bit 6 – RBX Set<br>0 = Disabled<br>1 = Active | 113/115 | 6/5 | Full |
| | | | | Bit 5 – RBX on Clear<br>0 = Disabled<br>1 = Active | 113/115 | 5/4 | Full |
| | | | | Bit 4 – ALM Enable<br>0 = Disabled<br>1 = Log Alarms | 113/115 | 4/3 | Full |
| | | | | Bit 3 – US or Metric<br>0 = US Units<br>1 = Metric Units | 112 | 4 | Full |
| | | | | Bit 2 – AGA3 Algorithm<br>0 = 1985 Algorithm<br>1 = 1992 Algorithm | 112 | 2 | Partial –always returns 1 |
| | | | | Bit 1 – Flow Calculation Method<br>0 = AGA3<br>1 = AGA7 | N/A | N/A | Partial – Fills requests for logical instances of AGA points with orifice points first, and then turbine points, so this is R/O |
| | | | | Bit 0 – Compressibility Method<br>0 = NX19<br>1 = AGA8 | N/A | N/A | Partial – always returns 1 |

**Point Type 7: AGA Flow Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 4 | R/W | BIN | 1 | AGA Configuration Options<br><br>Bit 7 – Log Methane Adjustment<br>0 = Yes<br>1 = No | 112 | 24 | Partial – this is based on the gas quality live/constant parameter in the ROC800 |
| | | | | Bit 6 – Heating Value<br>0 = Mass<br>1 = Volume Basis | N/A | N/A | Partial – always returns 1 |
| | | | | Bit 5 – Gravitational Acceleration<br>0 = Calculate<br>1 = Enter Acceleration | 112 | 17 | Full |
| | | | | Bit 4 – Heating Capacity<br>0 = Calculate<br>1 = Enter Heating Value | N/A | N/A | Partial – always returns 1 |
| | | | | Bit 3 – Static Pressure Value<br>0 = Gauge<br>1 = Absolute Static Press | 113/115 | 2/2 | Full |
| | | | | Bit 2 – Static Pressure Value<br>0 = Downstream<br>1 = Upstream Static Press | 113/115 | 3/NA | Full |
| | | | | Bit 1 – Specific Gravity<br>0 = Calculate<br>1 = Enter Specific Gravity | N/A | N/A | None – always returns 0 |
| | | | | Bit 0 – Tap<br>0 = Flange Tap<br>1 = Pipe Tap | N/A | N/A | None – always returns 0 |
| 5 | R/W | FLP | 4 | Specific Gravity | 112 | 23 | Full |
| 6 | R/W | FLP | 4 | Heating Value | 112 | 22 | Full |
| 7 | R/W | FLP | 4 | Gravitational Acceleration | 112 | 18 | Full |

**Point Type 7: AGA Flow Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 8 | R/O | UINT 16 | 2 | Scan Period | N/A | N/A | None – always returns 1 |
| 9 | R/W | FLP | 4 | Pipe Diameter | 113/115 | 12/NA | Full |
| 10 | R/W | FLP | 4 | Orifice Diameter | 113/115 | 15/NA | Full |
| 11 | R/W | FLP | 4 | Orifice Ref. Temperature | 113/115 | 16/NA | Full |
| 12 | R/W | FLP | 4 | Orifice Material | 113/115 | 17/NA | Full |
| 13 | R/W | AC | 30 | Meter Run Identification | 113/115 | 1/1 | Full |
| 14 | R/O | BIN | 1 | Alarm Code<br><br>Bit 7 – Manual Mode<br>Bit 6 – No Flow<br>Bits 5, 4, and 1 – Not Used<br>Bit 2 – High Alarm<br>Bit 0 – Low Alarm | 113/115 | 7/6 | Full |
| 15 | R/W | FLP | 4 | Low Alarm EU | 113/115 | 8/7 | Full |
| 16 | R/W | FLP | 4 | High Alarm EU | 113/115 | 9/8 | Full |
| 17 | R/W | FLP | 4 | Viscosity | 113/115 | 18/NA | Full |
| 18 | R/W | FLP | 4 | Specific Heat Ratio | 113/115 | 19/NA | Full |
| 19 | R/W | FLP | 4 | Contract or Base Pressure | 112 | 13 | Full |
| 20 | R/W | FLP | 4 | Contract or Base Temperature | 112 | 14 | Full |
| 21 | R/W | FLP | 4 | Low DP Cutoff or K-Factor | 113/115 | 20/11 | Full |
| 22 | R/W | FLP | 4 | Fpwl – Gravitational User Correction Factor | 113/115 | 34/21 | Partial – Despite description, this factor has always been used as the "User Correction Factor," so that value is mapped. |
| 23 | R/W | FLP | 4 | $N_2$ – Nitrogen | 112 | 26 | Full |
| 24 | R/W | FLP | 4 | $CO_2$ – Carbon Dioxide | 112 | 27 | Full |
| 25 | R/W | FLP | 4 | $H_2S$ – Hydrogen Sulfide | 112 | 40 | Full |
| 26 | R/W | FLP | 4 | $H_2O$ – Water | 112 | 41 | Full |

**Point Type 7: AGA Flow Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 27 | R/W | FLP | 4 | He – Helium | 112 | 42 | Full |
| 28 | R/W | FLP | 4 | $CH_4$ – Methane | 112 | 28 | Full |
| 29 | R/W | FLP | 4 | $C_2H_6$ – Ethane | 112 | 29 | Full |
| 30 | R/W | FLP | 4 | $C_3H_8$ – Propane | 112 | 30 | Full |
| 31 | R/W | FLP | 4 | $C_4H_{10}$ – n-Butane | 112 | 31 | Full |
| 32 | R/W | FLP | 4 | $C_4H_{10}$ – i-Butane | 112 | 32 | Full |
| 33 | R/W | FLP | 4 | $C_5H_{12}$ – n-Pentane | 112 | 33 | Full |
| 34 | R/W | FLP | 4 | $C_5H_{12}$ – i-Pentane | 112 | 34 | Full |
| 35 | R/W | FLP | 4 | $C_6H_{14}$ – n-Hexane | 112 | 35 | Full |
| 36 | R/W | FLP | 4 | $C_7H_{16}$ – n-Heptane | 112 | 36 | Full |
| 37 | R/W | FLP | 4 | $C_8H_{18}$ – n-Octane | 112 | 37 | Full |
| 38 | R/W | FLP | 4 | $C_9H_{20}$ – n-Nonane | 112 | 38 | Full |
| 39 | R/W | FLP | 4 | $C_{10}H_{22}$ – n-Decane | 112 | 39 | Full |
| 40 | R/W | FLP | 4 | $O_2$ – Oxygen | 112 | 43 | Full |
| 41 | R/W | FLP | 4 | CO – Carbon Monoxide | 112 | 44 | Full |
| 42 | R/W | FLP | 4 | $H_2$ – Hydrogen | 112 | 45 | Full |
| 43 | R/O | UINT 8 | 1 | Not Used | N/A | N/A | Full |
| 44 | R/W | UINT 8 | 1 | Stacked DP Enable | 113/115 | 21/NA | Full |
| 45 | R/W | TLP | 3 | Low DP Input | 113/115 | 24/NA | Full |
| 46 | R/W | TLP | 3 | DP/Flow Meter Input | 113/115 | 25/13 | Full |
| 47 | R/W | TLP | 3 | Static Press Input | 113/115 | 27/15 | Full |
| 48 | R/W | TLP | 3 | Temperature Input | 113/115 | 29/17 | Full |
| 49 | R/W | FLP | 4 | Low DP Setpoint | 113/115 | 23/NA | Full |
| 50 | R/W | FLP | 4 | High DP Setpoint | 113/115 | 22/NA | Full |
| 51 | R/W | FLP | 4 | DP/Meter Input Value | 113/115 | 26/14 | Full |
| 52 | R/W | FLP | 4 | Static Press Value | 113/115 | 28/16 | Full |

**Point Type 7: AGA Flow Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|------------|-----------|--------|-------------|-------------------|------------------|---------|
| 53 | R/W | FLP | 4 | Temperature Value | 113/115 | 30/18 | Full |

## 4.2.8     Point Type 10: AGA Flow Calculation Values

**Point Type 10: AGA Flow Calculation Values**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/O | FLP | 4 | Orifice DP/Turbine Meter Value | 113/115 | 26/14 | Full |
| 1 | R/O | FLP | 4 | Static Pressure Value | 113/115 | 28/16 | Full |
| 2 | R/O | FLP | 4 | Temperature Value | 113/115 | 30/18 | Full |
| 3 | R/O | FLP | 4 | Instantaneous Flow (Flow rate per Day) – MCF/Day or $Km^3$/Day | 114/116 | 0/0 | Full |
| 4 | R/O | FLP | 4 | Instantaneous Energy (Energy rate per Day) – MMBTU/Day or GJ/Day | 114/116 | 1/1 | Full |
| 5 | R/O | FLP | 4 | Flow Today – MCF or Km3 | 114/116 | 19/12 | Full |
| 6 | R/O | FLP | 4 | Energy Today – MMBTU or GJ | 114/116 | 29/22 | Full |
| 7 | R/O | FLP | 4 | Flow Yesterday – MCF or Km3 | 114/116 | 20/13 | Full |
| 8 | R/O | FLP | 4 | Energy Yesterday – MMBTU or GJ | 114/116 | 30/23 | Full |
| 9 | R/O | FLP | 4 | Orifice Pressure Extension (hwPf) / Turbine Uncorrected Flow Rate | 114/115 | 4/14 | Full |
| 10 | R/O | FLP | 4 | Orifice Multiplier Value (Cprime) / Turbine Multiplier Value | 114/116 | 12/8 | Full |
| 11 | R/O | FLP | 4 | Sample Time | N/A | N/A | None – always returns 1 |
| 12 | R/O | FLP | 4 | Orifice Expansion Factor (Y) / Turbine Pressure Multiplier | 114/116 | 7/4 | Full |
| 13 | R/O | FLP | 4 | Reynolds Number | 114/116 | 16/NA | Full |
| 14 | R/O | FLP | 4 | Orifice Ftf / Turbine Temperature Multiplier | 114/116 | NA/5 | Partial – No Ftf factor in 1992 implementation of AGA3 |

**Point Type 10: AGA Flow Calculation Values**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 15 | R/O | FLP | 4 | Fpv - compressibility | 114/116 | 9/6 | Partial – Orifice returns Zf1 and Turbine returns compressibility multiplier |
| 16 | R/O | FLP | 4 | Fgr | N/A | N/A | None – always returns 1 |
| 17 | R/O | FLP | 4 | Orifice Coefficient of Discharge (CdFT) / Turbine Temperature Multiplier | 114/116 | 5/5 | Full |
| 18 | R/O | FLP | 4 | Fpb | 114/116 | 10/NA | Partial – not supported for AGA7 |
| 19 | R/O | FLP | 4 | Ftb | 114/116 | 11/NA | Partial – not supported for AGA7 |
| 20 | R/O | FLP | 4 | Velocity of Approach (Ev) | 114/116 | 6/NA | Full |
| 21 | R/O | FLP | 4 | Flowing Minute | N/A | N/A | None |

## 4.2.9    Point Type 12: ROC Clock

**Point Type 12: ROC Clock**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|-----------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | UINT 8 | 1 | Seconds | 136 | 0 | Full |
| 1 | R/W | UINT 8 | 1 | Minutes | 136 | 1 | Full |
| 2 | R/W | UINT 8 | 1 | Hours | 136 | 2 | Full |
| 3 | R/W | UINT 8 | 1 | Day | 136 | 3 | Full |
| 4 | R/W | UINT 8 | 1 | Month | 136 | 4 | Full |
| 5 | R/W | UINT 8 | 1 | Year | 136 | 5 | Full – converts to 2-digit year |
| 6 | R/O | UINT 8 | 1 | Leap Year | N/A | N/A | None – returns 0 |
| 7 | R/O | UINT 8 | 1 | Day of Week | 136 | 6 | Partial – Read only |
| 8 | R/O | UINT 8 | 6 | Time: Seconds, Minutes, Hour, Day, Month, and Year | 136 | 0-5 | Full – program calculates this |
| 9 | R/O | UINT 8 | 1 | Century | 136 | 5 | Full – converts to century |
| 10 | R/W | UINT 8 | 1 | Daylight Savings Time Enable | 136 | 8 | Full |

## 4.2.10   Point Type 13: System Flags

**Point Type 13: System Flags**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|-----------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | UINT 8 | 1 | CRC Check | 91 | 35 | Full |
| 1 | R/O | UINT 8 | 1 | DI/PI Selection | N/A | N/A | None |
| 2 | R/O | UINT 8 | 1 | User LCD Enable | N/A | N/A | None |
| 3 | R/O | UINT 8 | 1 | User Operator Port Enable | N/A | N/A | None |
| 4 | R/W | UINT 8 | 1 | FST/Display Clear | 91 | 19 | Partial – clears **only** FSTs, not user displays |
| 5 | R/O | UINT 8 | 1 | User COM1 Enable | N/A | N/A | None |
| 6 | R/O | UINT 8 | 1 | User COM2 Enable | N/A | N/A | None |
| 7 | R/O | UINT 8 | 1 | User Calc Enable | N/A | N/A | None |
| 8 | R/W | UINT 8 | 1 | RTS Operator Interface Port (LOI) | 95 | 45 (logical 0) | Full |
| 9 | R/W | UINT 8 | 1 | RTS COM1 Port | 95 | 45 (logical 1) | Full |
| 10 | R/W | UINT 8 | 1 | RTS COM2 Port | 95 | 45 (logical 2) | Full |
| 11 | R/W | UINT 8 | 1 | Clear Config Memory | 91 | 20 | Full |
| 12 | R/W | UINT 8 | 1 | I/O Scan Enable | 91 | 25 | Full |
| 13 | R/O | UINT 8 | 1 | Auxiliary Output 2 On | N/A | N/A | None |
| 14 | R/O | UINT 8 | 1 | Auxiliary Output 1 On | N/A | N/A | None |

**Point Type 13: System Flags**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 15 | R/W | UINT 8 | 1 | Cold (Hard) Start options:<br><br>0 = None<br>1 = Restore config from flash/defaults<br>2 = Restore config and clear alarm/event logs<br>3 = Restore config and clear ROC displays<br>4 = Restore config and clear FSTs<br>5 = Restore config and clear history<br>6 = Restore config and clear all of above | 91 | 27 | Partial – No ROC displays |
| 16 | R/W | UINT 8 | 1 | Warm Start | 91 | 26 | Full |
| 17 | R/O | UINT 8 | 1 | Read I/O | N/A | N/A | None |
| 18 | R/W | UINT 8 | 1 | Write to Config Memory | 91 | 21 | Full |
| 19 | R/O | UINT 8 | 1 | Config Memory Write Complete | 91 | 22 | Full |
| 20 | R/O | UINT 8 | 1 | Event Log Flag | N/A | N/A | None |
| 21 | R/W | UINT 8 | 1 | LOI Security On | 95 | 44 (logical 0) | Partial – Read Only |
| 22 | R/W | UINT 8 | 1 | Comm Port 1 Security On | 95 | 44 (logical 1) | Partial – Read Only |
| 23 | R/W | UINT 8 | 1 | Comm Port 2 Security On | 95 | 44 (logical 2) | Partial – Read Only |
| 24 | R/O | UINT 8 | 1 | Flag 24 | N/A | N/A | None |
| 25 | R/O | UINT 8 | 1 | Flag 25 | N/A | N/A | None |
| 26 | R/O | UINT 8 | 1 | Flag 26 | N/A | N/A | None |
| 27 | R/O | UINT 8 | 1 | Flag 27 | N/A | N/A | None |
| 28 | R/O | UINT 8 | 1 | Flag 28 | N/A | N/A | None |
| 29 | R/O | UINT 8 | 1 | Flag 29 | N/A | N/A | None |

## 4.2.11    Point Type 14: Communication Ports

**Point Type 14: Communication Ports**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Tag Identification | 95 | 0 | Full |
| 1 | R/W | UINT 16 | 2 | Baud Rate | 95 | 1 | Partial – only sets the baud rate if a baud rate generator is available for that baud rate |
| 2 | R/W | UINT 8 | 1 | Stop bits | 95 | 2 | Full |
| 3 | R/W | UINT 8 | 1 | Data bits | 95 | 3 | Full |
| 4 | R/W | UINT 8 | 1 | Parity<br><br>0 = None<br>1 = Odd<br>2 = Even | 95 | 4 | Full |
| 5 | R/W | BIN | 1 | Status<br><br>Bit 7 – User Status (ROC300-series, FloBoss 103, and FloBoss 407)<br><br>Bits 6 through 2 – Not Used<br><br>Bit 1 – RBX Status<br>0 = RBX Inactive<br>1 = RBX Active for this port<br><br>Bit 0 – No Port Installed<br>0 = Comm Board<br><br>Present<br>1 = No Comm Cards<br><br>Installed | 95 | 17 – Bit 1 (RBX Status)<br><br>5 – Bit 0 (No Port Installed) | Partial – No support for Bit 7 (User Status) |

| 6 | R/W | BIN | 1 | Mode | N/A | N/A | None |
|---|---|---|---|---|---|---|---|
| | | | | Bit 7 – User Flag<br>0 = Reset<br>1 = Set | | | |
| | | | | Bit 6 – User Flag<br>0 = Reset<br>1 = Set | N/A | N/A | None |
| | | | | Bit 5 – Store and Forward Port (FlashPAC & FloBoss 103)<br>0 = Same<br>1 = Opposite | N/A | N/A | None |
| | | | | Bit 4 – Enable RTS / CTS<br>0 = Disabled<br>1 = Enabled | N/A | N/A | None |
| | | | | Bit 3 – Not Used | N/A | N/A | None |
| | | | | Bit 2 – Enable Extra Key-On (ROC300-series, FloBoss 103, and FloBoss 407)<br>0 = Disabled<br>1 = Enabled | N/A | N/A | None |
| | | | | Bit 1 = Enable RBX<br>0 = RBX Disabled<br>1 = RBX Enabled | 95 | 18 | Full |
| | | | | Bit 0 – Not Used | N/A | N/A | None |
| 7 | R/W | UINT 8 | 1 | Key On Delay | 95 | 7 | Full |
| 8 | R/W | UINT 8 | 1 | Key Off Delay – Turnaround | 95 | 8 | Full |
| 9 | R/W | UINT 8 | 1 | Host Table Start (Modbus) | N/A | N/A | None |
| 10 | R/W | UINT 16 | 2 | Host Retry Time (Modbus); Extra Key-on (RBX) | N/A | N/A | None |
| 11 | R/O | UINT 16 | 2 | Alarm Pointer | 95 | 19 | Full |
| 12 | R/O | UINT 16 | 2 | Receive Counter Copy | N/A | N/A | None |
| 13 | R/O | UINT 16 | 2 | Retry Counter | N/A | N/A | None |

| 14 | R/O | UINT 16 | 2 | Valid Receive Counter | 95 | 36 | Partial – returns ROC Plus Protocol valid receive counter |
| --- | --- | --- | --- | --- | --- | --- | --- |
| 15 | R/O | UINT 8 | 1 | Modem Status | 95 | 9 | Full |
| 16 | R/W | UINT 8 | 1 | Modem Type | 95 | 10 | Full |
| 17 | R/W | FLP | 4 | Connect Time | 95 | 11 | Full |
| 18 | R/W | AC | 40 | Configuration Command | 95 | 12 | Full |
| 19 | R/W | AC | 40 | Connect Command | 95 | 13 | Full |
| 20 | R/W | FLP | 4 | Disconnect Time | 95 | 14 | Full |
| 21 | R/W | FLP | 4 | Inactivity Time | 95 | 15 | Full |
| 22 | R/W | FLP | 4 | RBX Time Base #1 | 95 | 20 | Full |
| 23 | R/W | UINT 8 | 1 | RBX Retry Count #1 | 95 | 21 | Full |
| 24 | R/W | FLP | 4 | RBX Time Base #2 | 95 | 22 | Full |
| 25 | R/W | UINT 8 | 1 | RBX Retry Count #2 | 95 | 23 | Full |
| 26 | R/W | FLP | 4 | RBX Time Base #3 | 95 | 24 | Full |
| 27 | R/W | UINT 8 | 1 | RBX Retry Count #3 | 95 | 25 | Full |
| 28 | R/W | UINT 8 | 1 | RBX Address | 95 | 26 | Full |
| 29 | R/W | UINT 8 | 1 | RBX Group | 95 | 27 | Full |
| 30 | R/W | UINT 8 | 1 | Store & Forward Address #1 (not used for RegFlo) | 95 | 28 | Full |
| 31 | R/W | UINT 8 | 1 | Store & Forward Group #1 (not used for RegFlo) | 95 | 29 | Full |
| 32 | R/W | UINT 8 | 1 | Store & Forward Address #2 (not used for RegFlo) | 95 | 30 | Full |
| 33 | R/W | UINT 8 | 1 | Store & Forward Group #2 (not used for RegFlo) | 95 | 31 | Full |
| 34 | R/W | UINT 8 | 1 | Store & Forward Address #3 (not used for RegFlo) | 95 | 32 | Full |
| 35 | R/W | UINT 8 | 1 | Store & Forward Group #3 (not used for RegFlo) | 95 | 33 | Full |

## 4.2.12    Point Type 15: System Variables

**Point Type 15: System Variables**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | UINT 8 | 1 | ROC Address | 91 | 0 | Full |
| 1 | R/W | UINT 8 | 1 | ROC Group | 91 | 1 | Full |
| 2 | R/W | AC | 20 | Station Name | 91 | 2 | Full |
| 3 | R/W | UINT 8 | 1 | Active PIDs | 91 | 15 | Full |
| 4 | R/O | UINT 8 | 1 | Active AGA Meter Runs | 91 | 17+18 | Partial – Read only |
| 5 | R/O | UINT 8 | 1 | Active Tanks | N/A | N/A | None –always returns 0 |
| 6 | R/O | UINT 8 | 1 | Base Database Points – History 1 | 124 | 1 (logical 0) | Partial – no support for history segments 7-10 |
| 7 | R/O | UINT 8 | 1 | RAM1 Database Points – History 2 | 124 | 1 (logical 1) | Partial – no support for history segments 7-10 |
| 8 | R/O | UINT 8 | 1 | RAM2 Database Points – History 3 | 124 | 1 (logical 2) | Partial – no support for history segments 7-10 |
| 9 | R/W | UINT 8 | 1 | Force End of Day | 124 | 11 (All logicals) | Full |
| 10 | R/W | UINT 8 | 1 | Contract Hour | 124 | 8 (logical 0) | Partial – Segment 0 Support only |
| 11 | R/O | AC | 20 | Version Name – Part Number | 91 | 3 | Full |
| 12 | R/O | AC | 20 | Hardware Identification Number | 91 | 5 | Full |
| 13 | R/O | AC | 20 | Time Created | 91 | 4 | Full |
| 14 | R/O | AC | 12 | ROM Serial Number | 91 | 7 | Partial – converts ROC800 serial number (UINT32) to 12 byte string |
| 15 | R/O | AC | 20 | Customer Name | N/A | N/A | None – returns blanks |
| 16 | R/O | UINT 8 | 1 | Maximum PIDs | 91 | 10 | Full |
| 17 | R/O | UINT 8 | 1 | Maximum AGA Meter Runs | 91 | 11 | Full |
| 18 | R/O | UINT 8 | 1 | Maximum Tanks | N/A | N/A | None – always returns 0 |

**Point Type 15: System Variables**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 19 | R/O | UINT 8 | 1 | FSTs Possible | 91 | 12 | Full |
| 20 | R/O | BIN | 1 | RAM Installed | N/A | N/A | None – always returns 0 |
| 21 | R/O | BIN | 1 | ROM Installed | N/A | N/A | None – always returns 0 |
| 22 | R/O | FLP | 4 | MPU Loading | 91 | 23 | Full |
| 23 | R/O | BIN | 1 | Utilities | N/A | N/A | None – always returns 0 |
| 24 | R/O | UINT 16 | 2 | Type of ROC or FloBoss | N/A | N/A | Return 3 (FlashPAC) |
| 25 | R/O | UINT 8 | 1 | Units Flag | N/A | N/A | None – always returns 0 |

## 4.2.13   Point Type 16: FST Parameters

**Point Type 16: FST Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|--------|------------|-----------|--------|-------------|-------------------|------------------|---------|
| 0 | R/W | AC | 10 | Point Tag Identification | 96 | 0 | Full |
| 1 | R/W | FLP | 4 | Result Register | 96 | 1 | Full |
| 2 | R/W | FLP | 4 | Register #1 | 96 | 2 | Full |
| 3 | R/W | FLP | 4 | Register #2 | 96 | 3 | Full |
| 4 | R/W | FLP | 4 | Register #3 | 96 | 4 | Full |
| 5 | R/W | FLP | 4 | Register #4 | 96 | 5 | Full |
| 6 | R/W | FLP | 4 | Register #5 | 96 | 6 | Full |
| 7 | R/W | FLP | 4 | Register #6 | 96 | 7 | Full |
| 8 | R/W | FLP | 4 | Register #7 | 96 | 8 | Full |
| 9 | R/W | FLP | 4 | Register #8 | 96 | 9 | Full |
| 10 | R/W | FLP | 4 | Register #9 | 96 | 10 | Full |
| 11 | R/W | FLP | 4 | Register #10 | 96 | 11 | Full |
| 12 | R/W | UINT 32 | 4 | Timer #1 | 96 | 12 | Full |
| 13 | R/W | UINT 32 | 4 | Timer #2 | 96 | 13 | Full |
| 14 | R/W | UINT 32 | 4 | Timer #3 | 96 | 14 | Full |
| 15 | R/W | UINT 32 | 4 | Timer #4 | 96 | 15 | Full |
| 16 | R/W | AC | 30 | Message #1 | 96 | 16 | Full |
| 17 | R/W | AC | 30 | Message #2 | 96 | 17 | Full |
| 18 | R/O | AC | 10 | Message Data #1 | 96 | 18 | Full |
| 19 | R/W | UINT 8 | 1 | Miscellaneous #1 | 96 | 19 | Full |
| 20 | R/W | UINT 8 | 1 | Miscellaneous #1 | 96 | 20 | Full |
| 21 | R/W | UINT 8 | 1 | Miscellaneous #1 | 96 | 21 | Full |
| 22 | R/W | UINT 8 | 1 | Miscellaneous #1 | 96 | 22 | Full |
| 23 | R/W | UINT 8 | 1 | Compare Flag – SVD | 96 | 23 | Full |

**Point Type 16: FST Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 24 | R/W | UINT 8 | 1 | Run Flag | 96 | 24 | Full |
| 25 | R/O | UINT 16 | 2 | Code Size | 96 | 25 | Partial – Read Only |
| 26 | R/O | UINT 16 | 2 | Instruction Pointer | 96 | 26 | Partial – Read Only |
| 27 | R/W | UINT 16 | 2 | Execution Delay | 96 | 27 | Full |

## 4.2.14    Point Type 17: Soft Point Parameters

**Point Type 17: Soft Point Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Point Tag Identification | 98 | 0 | Full |
| 1 | R/W | UINT 16 | 2 | Integer Flag | 98 | 23 | Partial – maps to first short integer |
| 2 | R/W | FLP | 4 | Data #1 | 98 | 1 | Full |
| 3 | R/W | FLP | 4 | Data #2 | 98 | 2 | Full |
| 4 | R/W | FLP | 4 | Data #3 | 98 | 3 | Full |
| 5 | R/W | FLP | 4 | Data #4 | 98 | 4 | Full |
| 6 | R/W | FLP | 4 | Data #5 | 98 | 5 | Full |
| 7 | R/W | FLP | 4 | Data #6 | 98 | 6 | Full |
| 8 | R/W | FLP | 4 | Data #7 | 98 | 7 | Full |
| 9 | R/W | FLP | 4 | Data #8 | 98 | 8 | Full |
| 10 | R/W | FLP | 4 | Data #9 | 98 | 9 | Full |
| 11 | R/W | FLP | 4 | Data #10 | 98 | 10 | Full |
| 12 | R/W | FLP | 4 | Data #11 | 98 | 11 | Full |
| 13 | R/W | FLP | 4 | Data #12 | 98 | 12 | Full |
| 14 | R/W | FLP | 4 | Data #13 | 98 | 13 | Full |
| 15 | R/W | FLP | 4 | Data #14 | 98 | 14 | Full |
| 16 | R/W | FLP | 4 | Data #15 | 98 | 15 | Full |
| 17 | R/W | FLP | 4 | Data #16 | 98 | 16 | Full |
| 18 | R/W | FLP | 4 | Data #17 | 98 | 17 | Full |
| 19 | R/W | FLP | 4 | Data #18 | 98 | 18 | Full |
| 20 | R/W | FLP | 4 | Data #19 | 98 | 19 | Full |
| 21 | R/W | FLP | 4 | Data #20 | 98 | 20 | Full |

## 4.2.15   Point Type 19: Database Parameters

**Point Type 19: Database Parameters**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/O | FLP | 4 | Point to Tag | NA | NA | None – always returns 0 |
| 1 | R/O | UINT 8 | 1 | Archive Type | 125-131 | 3 | Partial – converts archive type |
| 2 | R/O | UINT 8 | 1 | Point Type | 125-131 | 2 | Full |
| 3 | R/O | UINT 8 | 1 | Point/Logical Number | 125-131 | 2 | Full |
| 4 | R/O | UINT 8 | 1 | Parameter Number | 125-131 | 2 | Full |
| 5 | R/O | FLP | 4 | Yesterday's Value | 125-131 | 6 | Full |

## 4.2.16   Point Type 40: Multi-Variable Sensor

**Point Type 40: Multi-Variable Sensor**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Sensor Tag Identification | 108 | 0 | Full |
| 1 | R/W | UINT 8 | 1 | Sensor Address | 108 | 1 | Full |
| 2 | R/W | BIN | 1 | Sensor Configuration | 108 | 3/4/5/6 | Full |
| 3 | R/W | UINT 8 | 1 | Poll Mode | 108 | 2 | Full |
| 4 | R/O | UINT 8 | 1 | Interface Revision | 108 | 7 | Full |
| 5 | R/O | BIN | 1 | Sensor Status (1 = True)<br><br>Bit 7 = Manual Mode<br>Bit 6 = 485 Comm Fail<br>Bit 5 = Sensor Comm Fail<br>Bit 4 = Input Frozen<br>Bit 3 = Not Used<br>Bit 2 = PT Fail<br>Bit 1 = AP Fail<br>Bit 0 = DP Fail | 108 | 10 | Partial – No support for bits 0, 1, 2 |
| 6 | R/O | BIN | 1 | Sensor Alarms<br>(1 = Enabled)<br><br>Bit 6 through 7 = Not Used<br>Bit 5 = PT High Alarm<br>Bit 4 = AP High Alarm<br>Bit 3 = DP High Alarm<br>Bit 2 = PT Low Alarm<br>Bit 1 = AP Low Alarm<br>Bit 0 = DP Low Alarm | 108 | 11 | Full |
| 7 | R/W | FLP | 4 | Sensor Voltage | 108 | 8 | Full |
| 8 | R/W | FLP | 4 | Differential Pressure (DP) Reading | 108 | 19 | Full |
| 9 | R/W | FLP | 4 | Static Pressure (AP) Reading | 108 | 35 | Full |
| 10 | R/W | FLP | 4 | Temperature (PT) Reading | 108 | 50 | Full |

**Point Type 40: Multi-Variable Sensor**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 11 | R/W | FLP | 4 | DP Reverse Flow | 108 | 20 | Full |
| 12 | R/O | FLP | 4 | Static Pressure Effect | 108 | 12 | Full |
| 13 | R/O | FLP | 4 | DP Minimum Calibration Value | 108 | 13 | Full |
| 14 | R/O | FLP | 4 | DP Calibration Midpoint 1 | 108 | 14 | Full |
| 15 | R/O | FLP | 4 | DP Calibration Midpoint 2 | 108 | 15 | Full |
| 16 | R/O | FLP | 4 | DP Calibration Midpoint 3 | 108 | 16 | Full |
| 17 | R/O | FLP | 4 | DP Maximum Calibration Value | 108 | 17 | Full |
| 18 | R/O | FLP | 4 | AP Minimum Calibration Value | 108 | 29 | Full |
| 19 | R/O | FLP | 4 | AP Calibration Midpoint 1 | 108 | 30 | Full |
| 20 | R/O | FLP | 4 | AP Calibration Midpoint 2 | 108 | 31 | Full |
| 21 | R/O | FLP | 4 | AP Calibration Midpoint 3 | 108 | 32 | Full |
| 22 | R/O | FLP | 4 | AP Maximum Calibration Value | 108 | 33 | Full |
| 23 | R/O | FLP | 4 | PT Minimum Calibration Value | 108 | 44 | Full |
| 24 | R/O | FLP | 4 | PT Calibration Midpoint 1 | 108 | 45 | Full |
| 25 | R/O | FLP | 4 | PT Calibration Midpoint 2 | 108 | 46 | Full |
| 26 | R/O | FLP | 4 | PT Calibration Midpoint 3 | 108 | 47 | Full |
| 27 | R/O | FLP | 4 | PT Maximum Calibration Value | 108 | 48 | Full |
| 28 | R/O | UINT 8 | 1 | Calibration Command | NA | NA | None – always returns 0 |
| 29 | R/O | UINT 8 | 1 | Calibration Type | NA | NA | None – always returns 0 |
| 30 | R/O | FLP | 4 | Calibrate Set Value | NA | NA | None – always returns 0.0 |
| 31 | R/O | FLP | 4 | Manual DP | NA | NA | None – always returns 0 |
| 32 | R/O | FLP | 4 | Manual AP | NA | NA | None – always returns 0 |
| 33 | R/O | FLP | 4 | Manual PT | NA | NA | None – always returns 0 |

**Point Type 40: Multi-Variable Sensor**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 34 | R/W | BIN | 1 | DP Mode | 108 | 25,26,27 | Partial – No support for bit 0 |
| | | | | Bit 7 – Not Used | | | |
| | | | | Bit 6 – RBX on Set<br>0 = Disable<br>1 = Enable | | | |
| | | | | Bit 5 – RBX on Clear<br>0 = Disable<br>1 = Enable | | | |
| | | | | Bit 4 – Alarm Enable<br>0 = Disable Alarm<br>1 = Enable Alarm | | | |
| | | | | Bit 1 through 3 – Not Used | | | |
| | | | | Bit 0 – Sensor Alarms<br>0 = Disable Alarm<br>1 = Enable Alarm | | | |
| 35 | R/O | BIN | 1 | DP Alarm Code | 108 | 28 | Full |
| | | | | Bit 6 – Point Fail<br>Bit 2 – High Alarm<br>Bit 0 – Low Alarm<br>Bit 7, 5, 4, 3, 1 – Not Used | | | |
| 36 | R/W | FLP | 4 | DP Low Alarm | 108 | 22 | Full |
| 37 | R/W | FLP | 4 | DP High Alarm | 108 | 23 | Full |
| 38 | R/W | FLP | 4 | DP Deadband | 108 | 24 | Full |
| 39 | R/W | FLP | 4 | DP Alarm Fault Value | 108 | 21 | Full |

**Point Type 40: Multi-Variable Sensor**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 40 | R/W | FLP | 4 | AP Mode | 108 | 40, 41, 42 | Partial – No support for bit 0 |
| | | | | Bit 7 – Not Used | | | |
| | | | | Bit 6 – RBX on Set<br>0 = Disable<br>1 = Enable | | | |
| | | | | Bit 5 – RBX on Clear<br>0 = Disable<br>1 = Enable | | | |
| | | | | Bit 4 – Alarm Enable<br>0 = Disable Alarm<br>1 = Enable Alarm | | | |
| | | | | Bit 1 through 3 – Not Used | | | |
| | | | | Bit 0 – Sensor Alarms<br>0 = Disable Alarm<br>1 = Enable Alarm | | | |
| 41 | R/O | BIN | 1 | AP Alarm Code | 108 | 43 | Full |
| | | | | Bit 6 – Point Fail<br>Bit 2 – High Alarm<br>Bit 0 – Low Alarm<br>Bit 7, 5, 4, 3, 1 – Not Used | | | |
| 42 | R/W | FLP | 4 | AP Low Alarm | 108 | 37 | Full |
| 43 | R/W | FLP | 4 | AP High Alarm | 108 | 38 | Full |
| 44 | R/W | FLP | 4 | AP Deadband | 108 | 39 | Full |
| 45 | R/W | FLP | 4 | AP Alarm Fault Value | 108 | 36 | Full |

**Point Type 40: Multi-Variable Sensor**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 46 | R/W | FLP | 4 | PT Mode | 108 | 55, 56, 57 | Partial – No support for bit 0 |
| | | | | Bit 7 – Not Used | | | |
| | | | | Bit 6 – RBX on Set<br>0 = Disable<br>1 = Enable | | | |
| | | | | Bit 5 – RBX on Clear<br>0 = Disable<br>1 = Enable | | | |
| | | | | Bit 4 – Alarm Enable<br>0 = Disable Alarm<br>1 = Enable Alarm | | | |
| | | | | Bit 1 through 3 – Not Used | | | |
| | | | | Bit 0 – Sensor Alarms<br>0 = Disable Alarm<br>1 = Enable Alarm | | | |
| 47 | R/O | BIN | 1 | PT Alarm Code | 108 | 58 | Full |
| | | | | Bit 6 – Point Fail<br>Bit 2 – High Alarm<br>Bit 0 – Low Alarm<br>Bit 7, 5, 4, 3, 1 – Not Used | | | |
| 48 | R/W | FLP | 4 | PT Low Alarm | 108 | 52 | Full |
| 49 | R/W | FLP | 4 | PT High Alarm | 108 | 53 | Full |
| 50 | R/W | FLP | 4 | PT Deadband | 108 | 54 | Full |
| 51 | R/W | FLP | 4 | PT Alarm Fault Value | 108 | 51 | Full |

## 4.2.17 Point Type 41: Run Parameters (#1)

**Point Type 41: Run Parameters (#1)**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Point Tag Identification | 113/115 | 0/0 | Partial – The event for a change to this parameter references point type 7 |
| 1 | R/W | FLP | 4 | Atmospheric Pressure | 112 | 16 | Full |
| 2 | R/W | BIN | 1 | Calculation Method II | NA | NA | None – returns 0 |
| | | | | Bits 5 to 7 – Not used | | | |
| | | | | Bit 4 – BTU Dry or Wet Override<br>0 = See Bit 3<br>1 = BTU as Delivered | 112 | 21 | Full |
| | | | | Bit 3 – BTU Dry or Wet<br>0 = BTU Dry<br>1 = BTU Wet | 112 | 21 | Full |
| | | | | Bit 2 – Calculated or Manual Value<br>0 = Calculated<br>1 = Enter Atmospheric Pressure – AGA 1992 | 112 | 15 | Full |
| | | | | Bit 1 – Gross Method<br>0 = Gross Method II<br>1 = Gross Method I | 112 | 3 | Full |
| | | | | Bit 0 – Detail Level<br>0 = Detailed Method<br>1 = Gross Method | 112 | 3 | Full |
| 3 | R/O | TLP | 3 | Not Used | NA | NA | None – returns 0 |
| 4 | R/W | FLP | 4 | Pipe Reference | 113 | 13 | Full |
| 5 | R/W | UINT8 | 1 | Pipe Material – AGA 1992 | 113 | 14 | Full |
| 6 | R/O | UINT8 | 1 | Not Used | NA | NA | None – returns 0 |
| 7 | R/O | FLP | 4 | Fb – AGA 1985, Cd – AGA 1992, Ftm – Turbine | 114/116 | 5/5 | Full |

**Point Type 41: Run Parameters (#1)**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 8 | R/O | FLP | 4 | Fr – AGA 1985, Reynolds Number – AGA 1992 | 114/116 | 16/NA | Full |
| 9 | R/O | FLP | 4 | Y – Expansion Factor – Orifice, Fpm – Turbine | 114/116 | 7/4 | Full |
| 10 | R/O | FLP | 4 | Fpb Factor | 114/116 | 10/NA | Full |
| 11 | R/O | FLP | 4 | Ftb Factor | 114/116 | 11/NA | Full |
| 12 | R/O | FLP | 4 | Ftf Factor | NA | NA | None – returns 0 |
| 13 | R/O | FLP | 4 | Fgr Factor | 114/116 | 18/11 | Full |
| 14 | R/O | FLP | 4 | Fpv – Super-compressibility Factor | 114/116 | 9/7 | Full |
| 15 | R/O | UINT8 | 1 | History Point 1 | NA | | None – returns 0 |
| 16 | | UINT8 | 1 | RollUp | NA | | None – returns 0 |
| 17 | | FLP | 3 | TLP | NA | | None – returns 0 |
| 18 | | FLP | 4 | Conversion | NA | | None – returns 0 |
| 19 to 78: Same as 15 to 18, History points 2 to 16 | | | | | NA | | None – returns 0 |

## 4.2.18   Point Type 42: Run Parameters (#2)

**Point Type 42: Run Parameters (#2)**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 0 | R/W | AC | 10 | Point Tag Identification | 113/115 | 0/0 | Full |
| 1 | R/O | FLP | 4 | Flow Today | 114/116 | 19/12 | Full |
| 2 | R/O | FLP | 4 | Flow Yesterday | 114/116 | 20/13 | Full |
| 3 | R/O | FLP | 4 | Flow Month | 114/116 | 21/14 | Full |
| 4 | R/O | FLP | 4 | Flow Previous Month | 114/116 | 22/15 | Full |
| 5 | R/O | FLP | 4 | Flow Accumulated | 114/116 | 23/16 | Full |
| 6 | R/O | FLP | 4 | Minutes Today | 114/116 | 24/17 | Full |
| 7 | R/O | FLP | 4 | Minutes Yesterday | 114/116 | 25/18 | Full |
| 8 | R/O | FLP | 4 | Minutes Month | 114/116 | 26/19 | Full |
| 9 | R/O | FLP | 4 | Minutes Previous Month | 114/116 | 27/20 | Full |
| 10 | R/O | FLP | 4 | Minutes Accumulated | 114/116 | 28/21 | Full |
| 11 | R/O | FLP | 4 | Energy Today | 114/116 | 29/22 | Full |
| 12 | R/O | FLP | 4 | Energy Yesterday | 114/116 | 30/23 | Full |
| 13 | R/O | FLP | 4 | Energy Month | 114/116 | 31/24 | Full |
| 14 | R/O | FLP | 4 | Energy Previous Month | 114/116 | 32/25 | Full |
| 15 | R/W | FLP | 4 | Energy Accumulated | 114/116 | 33/26 | Full |
| 16 | R/W | FLP | 4 | Uncorrected Today | 116 | 27 | Full |
| 17 | R/W | FLP | 4 | Uncorrected Yesterday | 116 | 28 | Full |
| 18 | R/W | FLP | 4 | Uncorrected Month | 116 | 29 | Full |
| 19 | R/W | FLP | 4 | Uncorrected Previous Month | 116 | 30 | Full |
| 20 | R/W | FLP | 4 | Uncorrected Accumulated | 116 | 31 | Full |
| 21 | R/O | FLP | 4 | Orifice Plate Bore Diameter | 116 | 8 | Full |
| 22 | R/O | FLP | 4 | Meter Type (Pipe) Internal Diameter | 114 | 13 | Full |
| 23 | R/O | FLP | 4 | Beta – Diameter Ratio | 114 | 14 | Full |

**Point Type 42: Run Parameters (#2)**

| Parm # | Read-Write | Data Type | Length | Description | ROC800 Point Type | ROC800 Parameter | Support |
|---|---|---|---|---|---|---|---|
| 24 | R/O | FLP | 4 | Ev (Velocity of approach) | 114 | 6 | Full |
| 25 | R/O | FLP | 4 | Cd (Coefficient of discharge) | 114 | 5 | Full |
| 26 | R/O | FLP | 4 | Reynolds Number | 114 | 16 | Full |
| 27 | R/O | FLP | 4 | Upstream Static Pressure | 114 | 17 | Full |
| 28 | R/O | FLP | 4 | Molecular Weight | NA | | None – returns 0 |

## 4.3     User Defined Point Type 69/76: Protocol Emulation Program Configuration

Point type 69/76 is the protocol emulation configuration and accumulation point type. The program maintains one instance of this point type, and saves point type 69/76 to internal configuration memory.

**Point Type 69/76: Protocol Emulation Program Configuration**

| Parm # | Name | Access | System or User Update | Data Type | Length | Range | Default | Version | Description of functionality and meaning of values |
|---|---|---|---|---|---|---|---|---|---|
| 0 | Port #1 | R/O | System | STRING 20 | 20 | | Default Tag | 1.00 | Identifies Comm Port #1 on the ROC800-SERIES. |
| 1 | Port #2 | R/O | System | STRING 20 | 20 | | Default Tag | 1.00 | Identifies Comm Port #2 on the ROC800-SERIES.  Comm Port #2 is not used. |
| 2 | Port #3 | R/O | System | STRING 20 | 20 | | Default Tag | 1.00 | Identifies Comm Port #3 on the ROC800-SERIES. |
| 3 | Port #4 | R/O | System | STRING 20 | 20 | | Default Tag | 1.00 | Identifies Comm Port #4 on the ROC800-SERIES. |
| 4 | Port #5 | R/O | System | STRING 20 | 20 | | Default Tag | 1.00 | Identifies Comm Port #5 on the ROC800-SERIES. |
| 5 | Port #6 | R/O | System | STRING 20 | 20 | | Default Tag | 1.00 | Identifies Comm Port #6 on the ROC800-SERIES. |
| 6 | Protocol Converter on Port #1 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Enables the program on Comm Port #1. |
| 7 | Protocol Converter on Port #2 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Not used. |
| 8 | Protocol Converter on Port #3 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Enables the program on Comms Port #3. |
| 9 | Protocol Converter on Port #4 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Enables the program on Comm Port #4. |
| 10 | Protocol Converter on Port #5 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Enables the program on Comm Port #5. |
| 11 | Protocol Converter on Port #6 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Enables the program on Comm Port #6. |

**Point Type 69/76: Protocol Emulation Program Configuration**

| 12 | Alarm Log Last 240 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Determines how many alarm entries are sent and whether filtered for non-ROC protocol equivalents. |
|----|----|----|----|----|----|----|----|----|----|
| | | | | | | | | | 0 = 240<br>1 = 450 |
| 13 | Event Log Last 240 | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.00 | Determines how many alarm entries are sent and whether filtered for non-ROC protocol equivalents. |
| | | | | | | | | | 0 = 240<br>1 = 450 |
| 14 | IO Addressing | R/W | User | UINT8 | 1 | 0,1 | 0 | 1.23 | Determines the number of points used per module. |
| | | | | | | | | | 0 = Always use 16 points per module. |
| | | | | | | | | | 1 = Use 8 or 16 points per module (according to System parameter 50). |

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