

FLUID PROPERTY CALCULATIONS PROGRAM
(For the ROC809)

User Manual
(QER 07Q014)

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1 INTRODUCTION

1.1 Scope and Organization

This document serves as the user manual for the Fluid Property Calculations Program, which is intended for use in the ROC809 Remote Operations Controllers. This manual describes how to download, install, and configure the Fluid Property Calculations Program (referred to as the “Fluid Property Calculations” 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 (PC) running Windows® 2000 (with Service Pack 2) or XP.

The sections in this manual are arranged to provide information in the order in which it is needed for first-time users. Once you become familiar with the procedures, and the software running in the ROC, the manual may be used as a reference tool.

The manual has the following major sections:

- *Section 1, Introduction*
- *Section 2, Installation*
- *Section 3, Configuration*
- *Section 4, Reference Materials*

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

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

1.2 Product Overview

The program calculates density, compressibility, viscosity, and isentropic exponent values for fluids not supported by AGA 8. The program supports up to 12 meter runs with a maximum of 8 streams in any one unit. The following fluid types can be configured:

Fluid	Temperature Correction Factor Method	Pressure Correction Factor Method
Steam	International Association for the Properties of Water and Steam (IAPWS-97)	International Association for the Properties of Water and Steam (IAPWS-97)
Saturated Steam	International Association for the Properties of Water and Steam (IAPWS-97)	International Association for the Properties of Water and Steam (IAPWS-97)
Ethylene	API 2565	API 2565
Propylene	API 2565	API 2565
Butene-1/Light Hydrocarbon	API tables 53E and 54E (draft) GPA-TP27 (draft version)	API Chapter 11.2.2M
Benzene	ASTM D1555M-00	API Chapter 11.2.1M
Para-Xylene	ASTM D1555M-00	API Chapter 11.2.1M
MTBE or ETBE	ISO 91.2, Table C	API Chapter 11.2.1M
Butadiene	ASTM D1550-94	API Chapter 11.2.2M
Crude Oil	ISO 91.2, Table A	API Chapter 11.2.1M
Gasoline and Naphta	ISO 91.2, Table B	API Chapter 11.2.1M

The system then stores the values in either an orifice or turbine (linear) meter run for use in calculating volume, mass, and energy values. ROC809 firmware version 2.00 or greater is required to support writing values to density and compressibility.

A user-defined point, accessed through the Field Setup screen (see *Figure 12*), allows you to enter the values the system needs to configure the fluid and assign it to a meter run.

1.3 Program Requirements

The Fluid Property Calculations (QER 07Q014) version 1.02 is compatible with ROC800 firmware version 2.00 and with version 1.20 (or greater) of ROCLINK 800 software. A hardware based License Key is required to enable the user program.

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
fluid_properties.tar	2.0	60	67,552	3,528	253,952	1.20	1

Note: You must connect a PC to the ROC809's LOI port **before** starting the download.

For information on viewing the memory allocation of user programs, refer to the *ROCLINK 800 Configuration Software User Manual* (Form A6121), *Section 7.7*.

1.3.1 License Keys

License keys, when matched with valid license codes, grant access to applications such as Fluid Property Calculations.

The term "license key" refers to the physical piece of hardware that can contain up to seven different licenses (refer to *Figure 1*). Each ROC809 can have none, one, or two license keys installed. If you remove a license key after enabling an application, the firmware disables the task from running. This prevents unauthorized execution of protected applications in a ROC809.

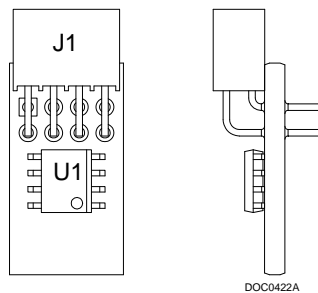


Figure 1. License Key

Note: The Fluid Property Calculations program requires both a Fluid Properties license key and an AGA 3/7/8 license key. The program includes a Fluid Properties license key. You must have previously installed the AGA 3/7/8 license key.

2 INSTALLATION

This section provides instructions for installing the user program into the ROC. Read *Section 1.3* of the manual for program requirements.

The downloadable program name is fluid_properties.tar.

Notes:

- An IBM-compatible computer must be connected to the Local Operator Interface (LOI) port before you begin the download.
- For firmware version 2.0, the Fluid Property Calculations program must be downloaded as program number 1. For later versions of firmware, the program can be loaded into any available empty position.

2.1 Installing the License Key

If you order the Fluid Property Calculations program for a new ROC809, your ROC809 is delivered with the license key installed. Go to *Section 2.2*.

If you order the program for an existing ROC809, you must install the license key yourself.

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

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

To install a license key:

1. Remove power from the ROC809.
2. Remove the wire channel cover.
3. Unscrew the screws from the Central Processing Unit (CPU) faceplate.
4. Remove the CPU faceplate.
5. Place the license key in the appropriate terminal slot (**P4** or **P6**) in the CPU.

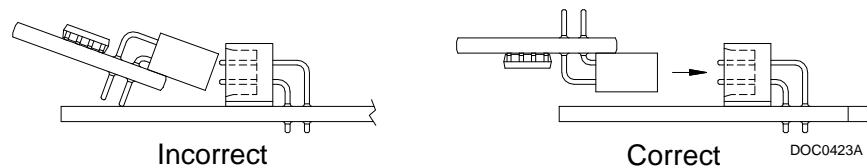


Figure 2. License Key Installation

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

6. Press the license key into the terminal until it is firmly seated (refer to Figure 2).

7. Replace the CPU faceplate.
8. Replace the screws on the CPU faceplate.
9. Replace the wire channel cover.
10. Restore power to the ROC809.

2.1.1 Verifying the License Key Installation

After you install the license key, you can verify whether the ROC809 recognizes the key. From the ROCLINK 800 screen, select **Utilities > License Key Administrator**. The License Key Administrator screen displays:

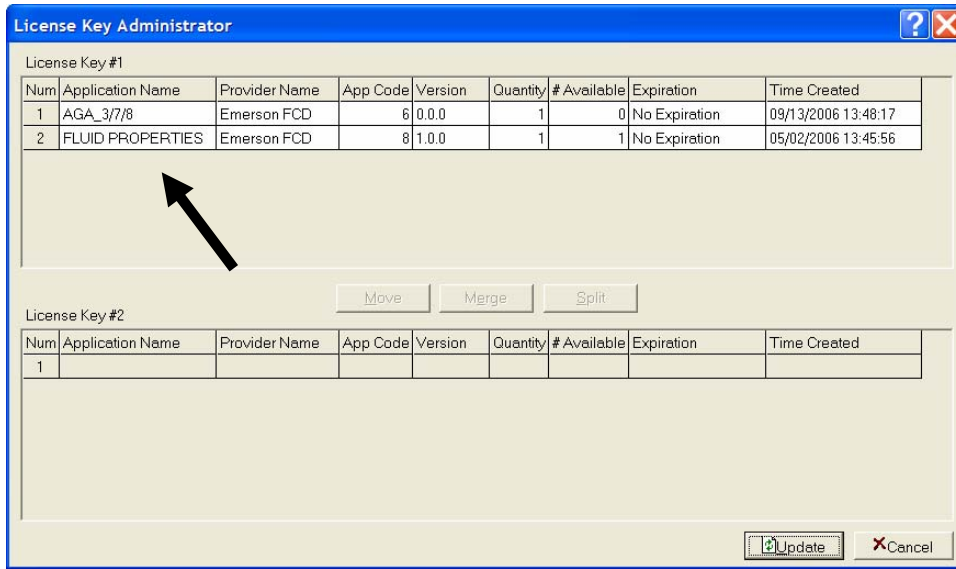


Figure 3. License Key Administrator

Fluid Properties and AGA_3/7/8 appear in the Application Name column. (For further information on the License Key Administrator screen, refer to the *ROCLINK 800 Configuration Software User Manual, Form A6121 Section 2.4.*)

Note: The value in the App Code field on this screen indicates the total number of stream licenses available on this ROC809.

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

2.2 Downloading the fluid_properties.tar Program

This section provides instructions for installing the fluid_properties.tar program file into the Flash memory on the ROC809.

To download the program using ROCLINK 800 software:

1. Connect the ROC to your computer using the LOI port.
2. Start ROCLINK 800 and connect to the ROC809.
3. Select **Utilities > User Program Administrator** from the ROCLINK 800 menu bar. The User Program Administrator screen displays:

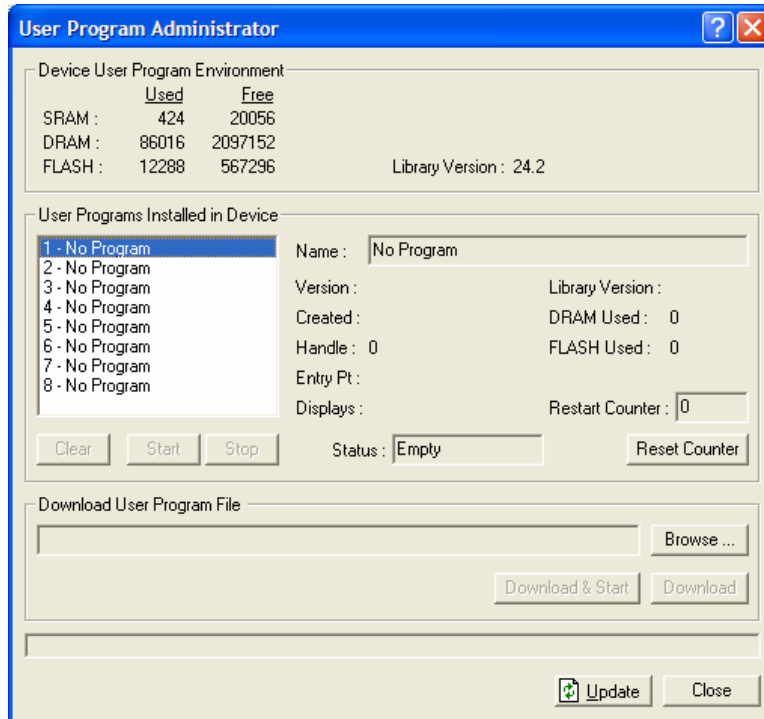


Figure 4. User Program Administrator

4. Select any empty program number (in this case, number 1) into which to download the program.

Note: If you have an older version of the Fluid Property Calculations Program installed on the ROC, you must uninstall the old version by highlighting the program name and clicking **Clear**.

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

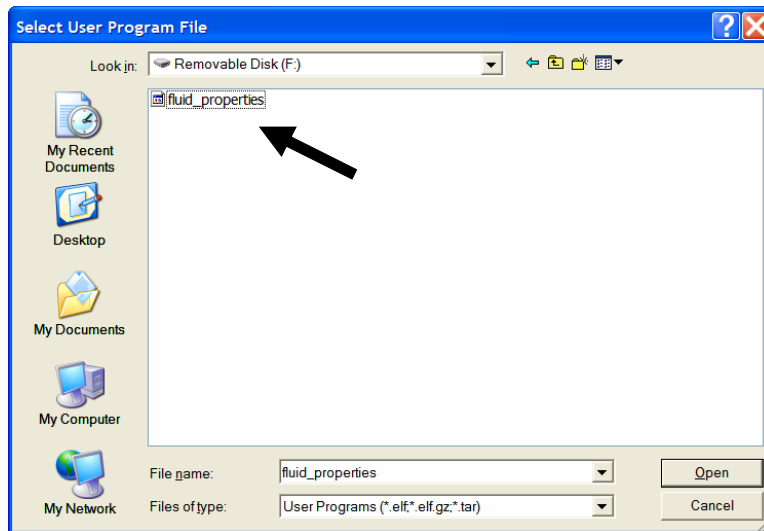


Figure 5. Select User Program File

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

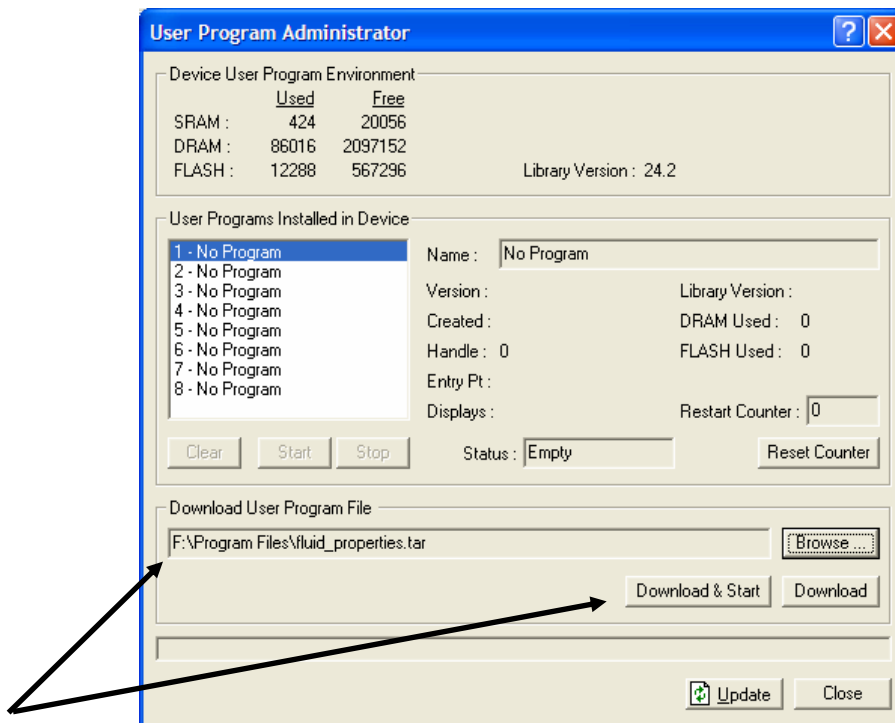


Figure 6. User Program Administrator

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

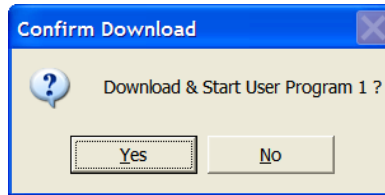


Figure 7. Confirm Download

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

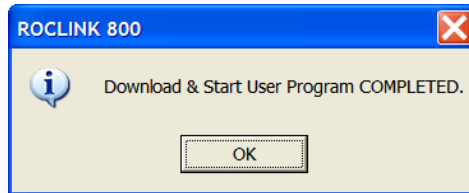


Figure 8. ROCLINK 800 Download Confirmation

10. Click **OK**. The User Program Administrator screen displays (see Figure 9). Note that:

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

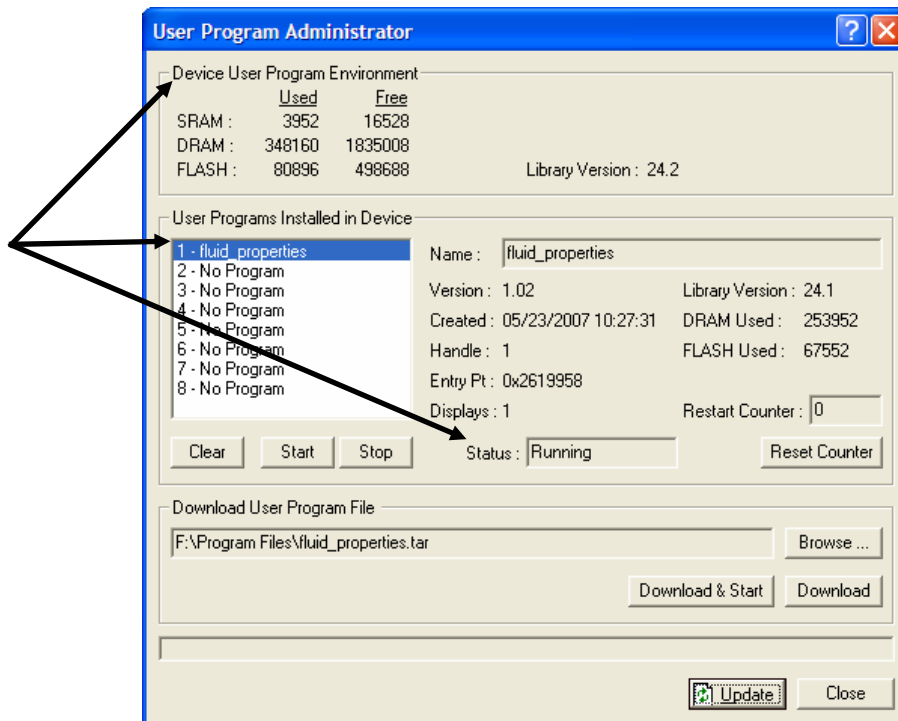


Figure 9. User Program Administrator

11. Proceed to *Section 3* to configure the ROC and the program.

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3 CONFIGURATION

After you have loaded the Fluid Property Calculations program on the ROC809, you must configure ROCLINK 800 and the program for proper operation. You access all screens from the main ROCLINK 800 screen.

Note: If you are using this program to measure pure gas values, refer to *Section 3.3, Configuring a Display for Pure Gas*.

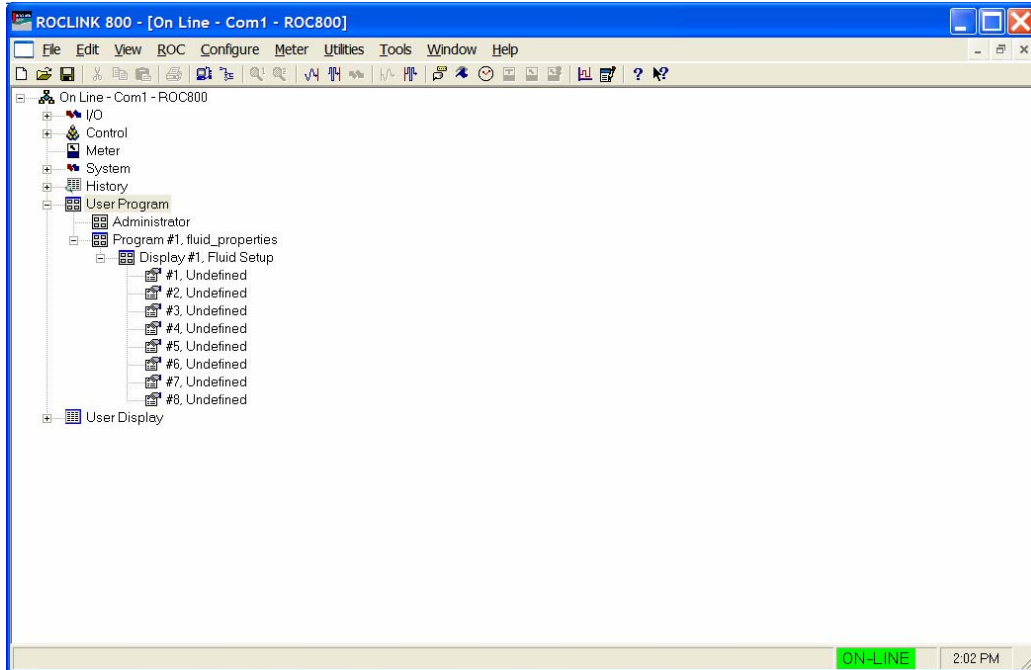


Figure 10. Configuration Tree Menu

3.1 Configuring ROCLINK 800

Before configuring the user program, you must configure the ROC809 unit. In addition to the parameters normally configured for a ROC809 unit, configure or verify the following parameters.

Note: An AGA license key must be installed in the device to access this screen.

Figure 11. Station Setup

1. Login to ROCLINK 800 and connect to the ROC809.
2. Select **Meter > Setup > Station** from the ROCLINK 800 menu bar.
3. On the General tab, select the Calculation Standard of either ISO5167/ISO9951 for gas or ISO5167/API 12 for liquid. **Do not use the AGA3/AGA7 standard.**
4. On the Advanced tab, select **User** for the FPV Method.
5. Click **Apply** and then **OK**. The ROCLINK 800 screen appears.
6. Select **Meter > Setup > Orifice Meter** or **Turbine Meter** from the ROCLINK 800 menu bar. Assign the meter run(s) to the station that will calculate fluid properties and configure the meter run(s) and inputs.
7. Click **Apply** then **OK**.
8. Proceed to *Section 3.2* to define fluid properties.

3.2 Fluid Setup

Once you have loaded and started the program, ROCLINK 800 provides a display screen in which you configure the Fluid Property Calculations program. Use the Fluid Setup screen to specify which fluid is to be calculated, assign the calculations to a meter run, as well as specify the density and viscosity. The screen also provides program status and displays mass accumulation totals.

There are three options that appear at the top of the screen. These options appear on both tabs and define which meter run the information is applied to. To move from one calculation setup to another, use the Configuration Tree Menu or the **Point Number** drop down box.

To access this screen:

1. From the Directory Tree, select **User Program > Program #1, fluid_properties > Display #1, Fluid Setup.**
2. Double-click **Display #1, Undefined.** The Fluid Setup screen displays, showing the General tab:

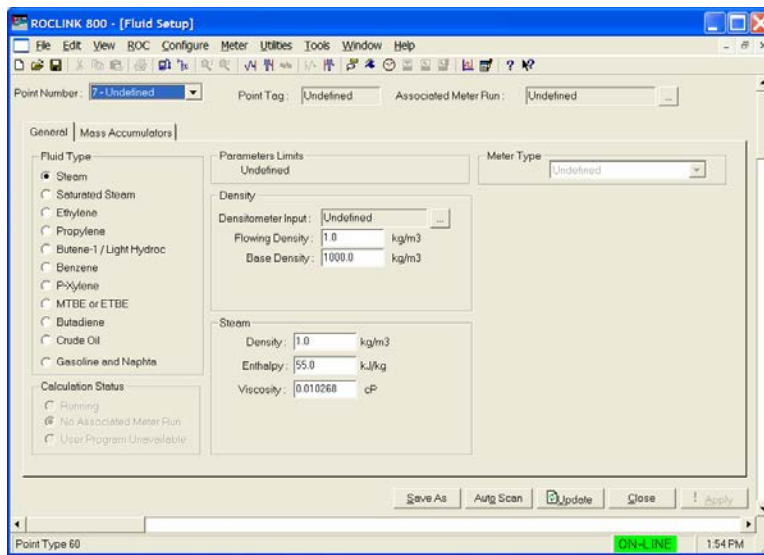


Figure 12. Fluid Setup, General tab

Note: The Fluid Setup screen has a tab format. Sections 3.2.1 and 3.2.2 discuss the requirements for each tab on the Fluid Setup screen.

Field	Description
Point Number	Indicates the specific fluid type you want to define. You can define up to eight.
Point Tag	System defined name for the selected point number.
Associated Meter Run	Click "... " to display a TLP dialog box you use to associate a meter run with the selected fluid.

3.2.1 Fluid Setup – General Tab

Use this tab (which displays when you access the Fluid Setup screen) to specify which fluid is to be calculated, assign the calculations to a meter run, specify the density and viscosity, and view program status

Note: *Figure 13* is an example containing all possible fields and would not normally display as shown.

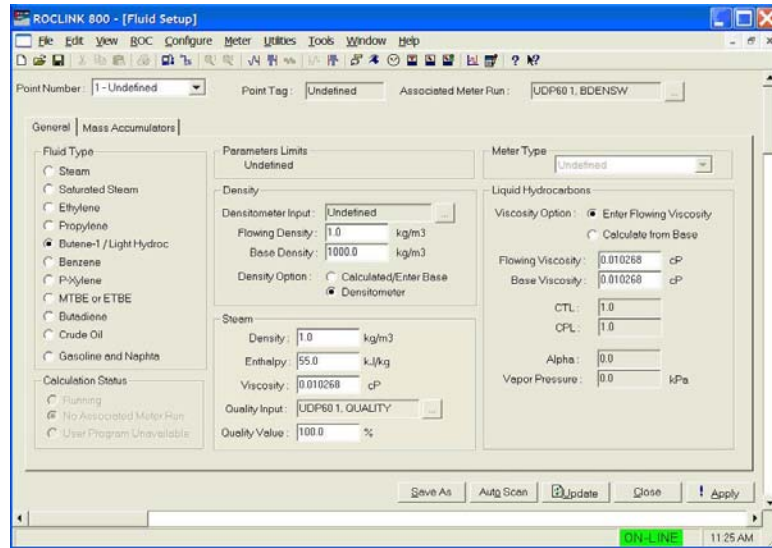


Figure 13. Fluid Setup, General tab (example)

1. Select a **Point Number** and **Associated Meter Run** to configure. The program will accept either the Orifice Configuration, Orifice Values, Turbine Configuration, or Turbine Values point types and any parameter designating which meter run the calculation values will be written.

Note: The program enables the calculation as soon as you associate it with a meter run. To disable the calculation, select **Undefined** from the Select TLP dialog box.

2. Select a **fluid type**.

Field	Description
Fluid Type	Defines the type of fluid being measured. Configure the following parameters for each fluid type:
Steam	For steam, the following fields must be configured: Density and Steam .
Saturated Steam	For saturated steam, the following fields must be configured: Density and Steam .
Ethylene	For Ethylene, the following fields must be configured: Density and Liquid Hydrocarbons .
Propylene	For Propylene configure Density and Liquid Hydrocarbons .
Butene-1/ Light Hydrocarbons	For Butane-1/Light Hydrocarbons configure Density and Liquid Hydrocarbons .

Field	Description	
Fluid Type (continued)	Benzene	For Benzene configure Density and Liquid Hydrocarbons .
	Para-Xylene	For Para-Xylene configure Density and Liquid Hydrocarbons .
	MTBE or ETBE	For MTBE or ETBE configure Density and Liquid Hydrocarbons .
	Butadiene	For Butadiene configure Density and Liquid Hydrocarbons .
	Crude Oil	For Crude Oil configure Density and Liquid Hydrocarbons .
	Gasoline and Naphta	For Gasoline and Naphta configure Density and Liquid Hydrocarbons .

Note: You may assign more than one meter run to a station if you choose the same fluid type. Each meter run would require its own calculation screen.

3. Configure and verify the parameters for the fluid type chosen.

Field	Description	
Calculation Status	Displays the current status of calculations for a particular point number.	
Parameter Limits	Displays a warning message if any parameters are outside of the current fluid/standards limit.	
Density	Defines how the program obtains a density value. Note: This parameter is not applicable to steam or saturated steam.	
	Densitometer Input	Click “...” to assign a densitometer to provide the density.
	Flowing Density	Sets the overall density at flowing conditions, measured by a hydrometer or densitometer.
	Base Density	Sets the density of the fluid at base pressure and temperature.
	Calculate/Enter Base	Sets the density value from the fluid properties. (Enter Base density applies to Liquid Hydrocarbons only.)
	Densitometer	Enables the Densitometer Input field.
Steam	Defines which input provides the percent of steam flow that is vapor. Note: This parameter applies only to steam or saturated steam.	
	Density	Displays the calculated density at flowing conditions.
	Enthalpy	Defines the energy content of the steam on a per unit mass basis.
Steam (continued)		
	Viscosity	Defines the viscosity of the steam.
	Quality Input	Click “...” to assign an input to provide the quality calculation.
	Quality Value	Specifies the percent of steam flow that is vapor.

Field	Description	
Meter Type	Defines the type of meter associated with the calculations. Note: This parameter applies to butene-1 and benzene only.	
Liquid Hydrocarbons	Defines viscosity settings for liquid hydrocarbons.	
	Viscosity Option	Set the option to calculate the viscosity. Valid values are Enter Flowing Viscosity and Calculate from Base .
	Flowing Viscosity	Viscosity of the flowing liquid.
	Base Viscosity	Viscosity of the base liquid.
	CTL	Correction for the Temperature of the Liquid.
	CPL	Correction for the Pressure of the Liquid.
	Alpha	Thermal coefficient of expansion.
	Vapor Pressure	Pressure of the vapor being measured.

4. Click **Apply** to save any changes you have made to this screen.
5. Proceed to *Section 3.2.2* to view accumulated totals.

3.2.2 Fluid Setup – Mass Accumulators Tab

Use this screen to view (in tonnes) current day, previous day, current month, previous month, and accumulated fluid totals.

To access this screen:

1. Select the **Mass Accumulators** tab on the Fluid Setup screen.

Note: All fields displayed on this tab are **read-only**.

2. Proceed to *Section 3.4* to save your configuration.

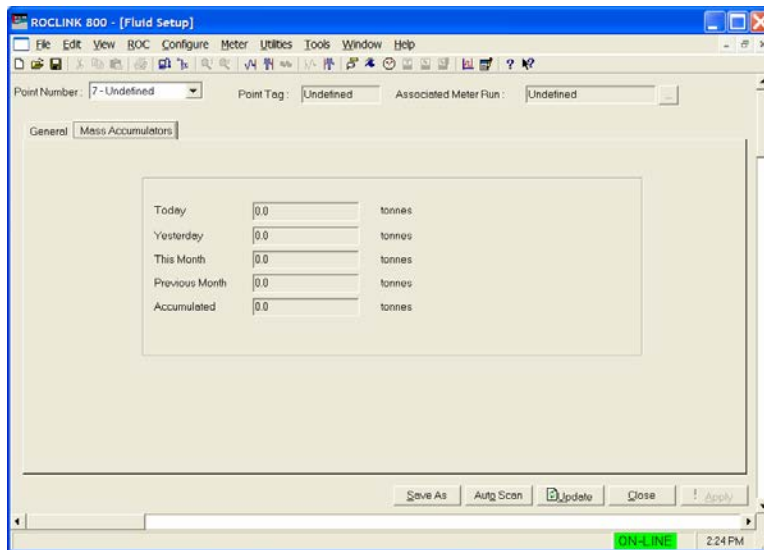


Figure 14. Fluid Setup, Mass Accumulators tab

3.3 Configuring a Display for Pure Gas

The Fluid Property Calculations program can calculate pure gas using Redlich-Kwong compressibility. The displays discussed in *Section 3.2* do not configure or display pure gas values. You must create a custom display for pure gas calculations.

1. Follow the instructions for downloading the program given in *Section 2.2*.
2. Follow the instructions for ROCLINK 800 configuration in *Section 3.1*. Be sure to select **ISO 5167** as the calculation type.
3. Follow the custom display procedure in *Section 12.9* of the *ROCLINK 800 Configuration Software User Manual* (Form A6121). Create fields to associate the calculation with a meter run (Point Type 60, Parameter 2) and enter 2, the value for the pure gas fluid type (Point Type 60, Parameter 1). Add fields for the various gas components (see *Section 4, Reference Materials*).
4. Click **Apply** and then **OK** after the program has been configured.
5. Proceed to *Section 3.4* to save your configuration.

3.4 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:

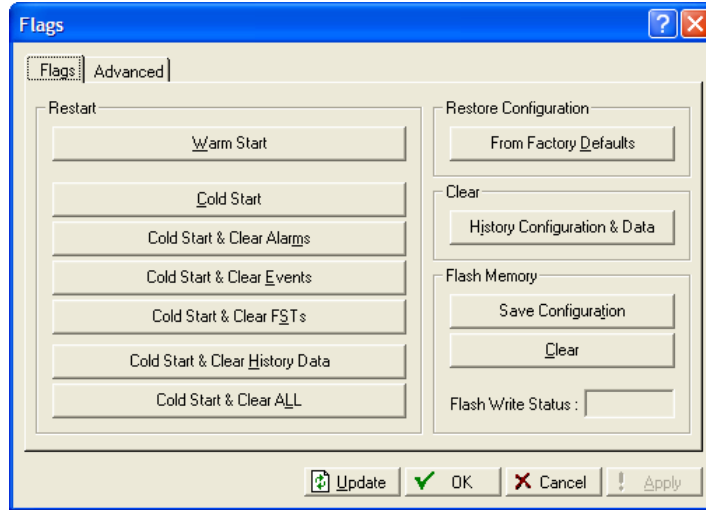


Figure 15. Flags screen

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

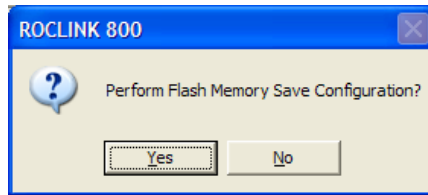


Figure 16. Perform screen

3. Click **Yes**. A confirmation message displays:



Figure 17. Flags screen

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

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4 REFERENCE MATERIALS

This section provides tables of information on the user-defined point type the Fluid Property Calculations program uses:

Parameter Limits Errors.

- Possible error messages received in the Parameter Limits field.

Fluid Property Calculations

- Point Type 60 (Fluid Properties).

4.1 Parameter Limits

Possible error messages that display in the Parameter Limits field.

Error	Description
Steam Errors	Possible error messages when calculating steam.
Within Limits	All parameters are within an acceptable range.
Process Temperature Low	Process temperature is below the acceptable range.
Process Temperature High	Process temperature is above the acceptable range.
Process Pressure Low	Process pressure is below the acceptable range.
Process Pressure High	Process pressure is above the acceptable range.
Both Pressure and Temperature High	Process temperature and pressure are above the acceptable range.
Saturation Temperature High	Saturation temperature is above the acceptable range.
Liquid Hydrocarbons Errors	Possible error messages when calculating liquid hydrocarbons.
Within Limits	All parameters are within an acceptable range.
Process Temperature Low	Process temperature is below the acceptable range.
Process Temperature High	Process temperature is above the acceptable range.
Process Pressure Low	Process pressure is below the acceptable range.
Process Pressure High	Process pressure is above the acceptable range.
Density Low	Density is below the acceptable range.
Density High	Density is above the acceptable range.
Max # of Iterations Reached	Maximum number of iterations has been reached.
Contract Temperature Low	Contract temperature is below the acceptable range.
Contract Temperature High	Contract temperature is above the acceptable range.
Contract Pressure Low	Contract pressure is below the acceptable range.
Contract Pressure High	Contract pressure is above the acceptable range.
Base Density Un-initialized	Base density is not initialized.
Critical Temperature Low !!!	Critical temperature is low.
Saturation Pressure High	Saturation pressure is above the acceptable range.
Unexpected error	An unexpected error has occurred.
Pure Gas Errors	Possible error messages when calculating pure gas.
Within Limits	All parameters are within an acceptable range.

4.2 Point Type 60: Fluid Properties

Point Type 60 Fluid Properties									
Parameter #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of functionality and meaning of values
1	Meter Run TLP	R/W	User	TLP	3	TLP 0,0,0 and TLP 113,0→11,Any and TLP 114, 0→11,Any and TLP 115, 0→11,Any and TLP 116, 0→11,Any	0,0,0	1.00	Meter run associated with this fluid. Calculated density and compressibility values will be copied to the selected meter run and its associated station. Meter run station must be configured for "User Method" for Fpv method (Pt type 112, parameter 4).
2	Fluid Type	R/W	User	UIINT8	1	0→25	0	1.00	Type of fluid flowing through the meter. 0 = Steam, 1 = Saturated Steam, 2 = Pure Gas, 3 = Generalized Crude Oils, 4 = Gasoline, 5 = Jet Fuel, 6 = Diesel, 8 = NGL, 9 = Benzene, 10 = Toluene, 11 = m-Xylene, 12 = Styrene, 13 = o-Xylene, 14 = p-Xylene, 15 = Cyclohexane, 16 = Ethylbenzene, 17 = Cumene, 20 = Water, 22 = Ethylene, 23 = Propylene, 24 = MTBE-ETBE, 25 = Butadiene.
24	N2 Nitrogen	R/W	User	FL	4	0.0 → 100.0	1.0	1.00	Percent of gas present.
25	CO2 Carbon Dioxide	R/W	User	FL	4	0.0 →100.0	0.0	1.00	Percent of gas present.
26	CH4 Methane	R/W	User	FL	4	0.0 → 100.0	96.0	1.00	Percent of gas present.
27	C2H6 Ethane	R/W	User	FL	4	0.0 → 100.0	3.0	1.00	Percent of gas present.
28	C3H8 Propane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
29	C4H10 n-Butane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
30	C4H10 i-Butane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
31	C5H12 n-Pentane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
32	C5H12 i-Pentane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
33	C6H14 n-Hexane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
34	C7H16 n-Heptane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
35	C8H18 n-Octane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
36	C9H20 n-Nonane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
37	C10H22 n-Decane	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
38	H2S Hydrogen Sulfide	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.

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Point Type 60 Fluid Properties									
Parameter #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of functionality and meaning of values
39	H2O Water	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
40	He Helium	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
41	O2 Oxygen	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
42	CO Carbon Monoxide	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
43	H2 Hydrogen	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
44	Ar Argon	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
45	Ne Neon	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
46	SO2 Sulfur Dioxide	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
47	NH3 Ammonia	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
48	HCN Hydrogen Cyanide	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
49	CS2 Carbon Disulfide	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
50	C2H4 Ethylene	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
51	C3H6 Propylene	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
52	C2H2 Acetylene	R/W	User	FL	4	0.0 → 100.0	0.0	1.00	Percent of gas present.
53	CPL Mixture	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Pressure Correction Factor for the oil-water mixture.
54	CPL Oil	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Pressure Correction Factor for the oil.
55	CTL Mixture	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Temperature Correction Factor for the oil-water mixture.
56	CTL Oil	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Temperature Correction Factor for the oil.
57	CTL Water	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Temperature Correction Factor for the water.
58	Hydrometer Correction	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Hydrometer Correction, not used.
59	Brine	R/O	System	FL	4	Any IEEE float value	1.0	1.00	Calculated brine percentage in the water, not used.
60	Alpha	R/W	Both	FL	4	Any IEEE float value	0.0	1.01	Alpha factor for oil CTL calculations, user entered for MTBE-ETBE, calculated for the rest of products.
61	Vapor Pressure	R/O	System	FL	4	Any IEEE float value	0.0	1.01	Vapor Pressure.

Point Type 60 Fluid Properties									
Parameter #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of functionality and meaning of values
62	Status Message	R/O	System	String	30	Within Limits, Process Temperature Low, Process Temperature High, Saturation Temperature High, Density Low, Density High	Within Limits	1.01	Calculation Domain Status Message.
63	Meter Type	R/O	System	U8	1	0->3	0	1.01	0 = Unknown, 1 = Orifice Plate, 2 = Volume Turbine , 3 = Mass Turbine
64	Mass Today	R/O	System	FL	4	Any IEEE float value	0.0	1.01	Mass Today.
65	Mass Yesterday	R/O	System	FL	4	Any IEEE float value	0.0	1.01	Mass Yesterday.
66	Mass Current Month	R/O	System	FL	4	Any IEEE float value	0.0	1.01	Mass Current Month.
67	Mass Previous Month	R/O	System	FL	4	Any IEEE float value	0.0	1.01	Mass Previous Month.
68	Mass Accumulator	R/O	System	FL	4	Any IEEE float value	0.0	1.01	Mass Accumulator.

If you have comments or questions regarding this manual, please direct them to your local sales representative or contact:

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