FOUNDATION™ Fieldbus Interface Software (for the ROC800-Series) User Manual

Remote Automation Solutions

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Process Management

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Chapter 1 – Introduction

This document serves as the user manual for the FOUNDATION™ Fieldbus Interface software. This software is intended for use in the Series 2 ROC800-Series Remote Operations Controllers (ROC800s), and is designed for use in coordination with the Field Interface Configurator software and FOUNDATION Fieldbus Interface hardware, as described in the following manuals:

- *Field Interface Configurator User Manual* (Form A6250).
- *FOUNDATION™ Fieldbus Interface Instruction Manual* (Form A6259).

This manual describes how to download, install, and configure the Foundation Fieldbus ("FFbus") Application software on your ROC800 using ROCLINK™ 800 Configuration Software loaded on a personal computer (PC) running Windows® XP® (with Service Pack 2), or Windows Vista®.

Note: This FFbus Interface software application program is a **required** software component of the FFbus Interface environment. After you install and configure the ROC800-based software application, you must then also install the Field Interface Configurator software on your PC. The Field Interface Configurator software enables you to configure the FOUNDATION Fieldbus Interface.

1.1 Scope and Organization

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, you can use the manual 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 units and their configuration. For more information, refer to the following manuals:

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

1.2 Product Overview

The FFbus Interface software consists of a program that enables the ROC800 to read and write data to the FFbus Interface. The program provides 100 logicals (iterations), each of which can accommodate one of

three data types (float, signed, or unsigned integer) and the data's status. You use an application-specific FOUNDATION Fieldbus screen to define the type of data for each logical.

1.3 Program Requirements

The FFbus Application Software version 1.00 is compatible with ROC800 firmware version 3.05 (or greater) and with version 1.85 (or greater) of ROCLINK 800 software.

Program specifics include:

File Name	Target Unit/ Version	User Defined Point (UDP)	Flash Used (in bytes)	SRAM Used (in bytes)	DRAM Used (in bytes)	ROCLINK 800 Version	Display Number
FF.tar	ROC800 3.05	196	35,840	5,600	180,224	1.85	196

Note: Connect a PC running ROCLINK 800 to the ROC800's LOI port **before** starting the download.

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

Chapter 2 – Installation

This section provides instructions for installing the user program into the ROC800. Read *Section 1.3* of the manual for program requirements.

Note: Connect a PC running ROCLINK 800 to the Local Operator Interface (LOI) port before you begin the download.

2.1 Downloading the FFbus (FF.tar) Application Program

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

To download the program using ROCLINK 800 software:

1. Connect the ROC to your computer using the LOI port.

2. Start and logon to ROCLINK 800.

3. Select **Utilities** > **User Program Administrator** from the ROCLINK menu bar. The User Program Administrator screen displays (see *Figure 1*):
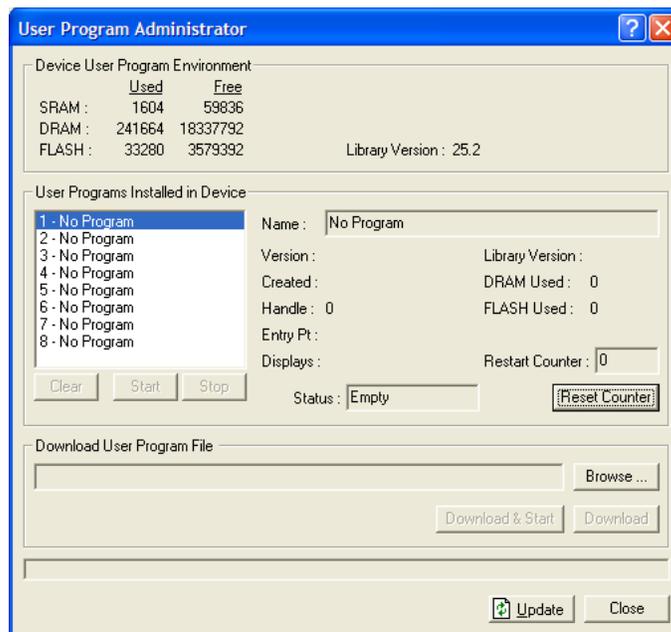

Figure 1. User Program Administrator

4. Select any empty program number (in this case, number 1) 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:
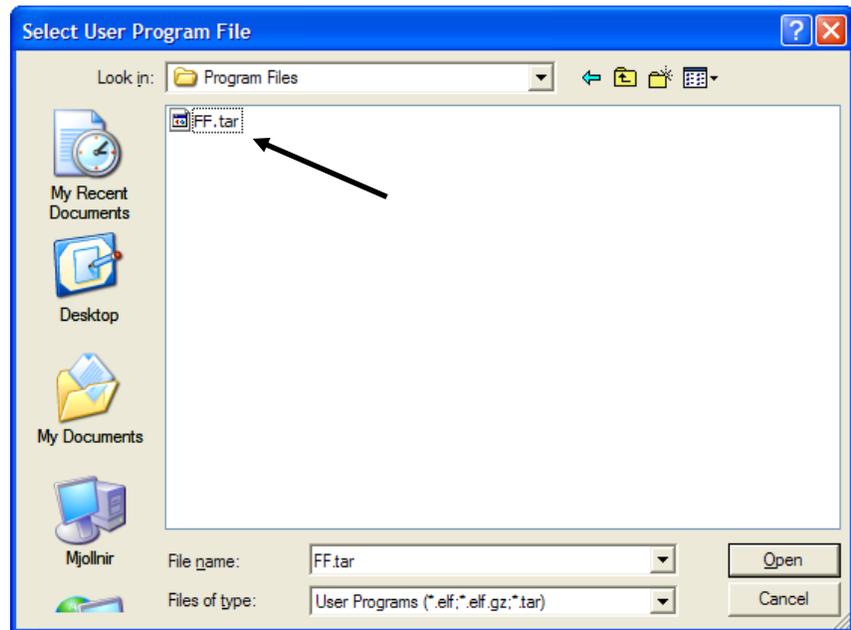

Figure 2. Select User Program File

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:
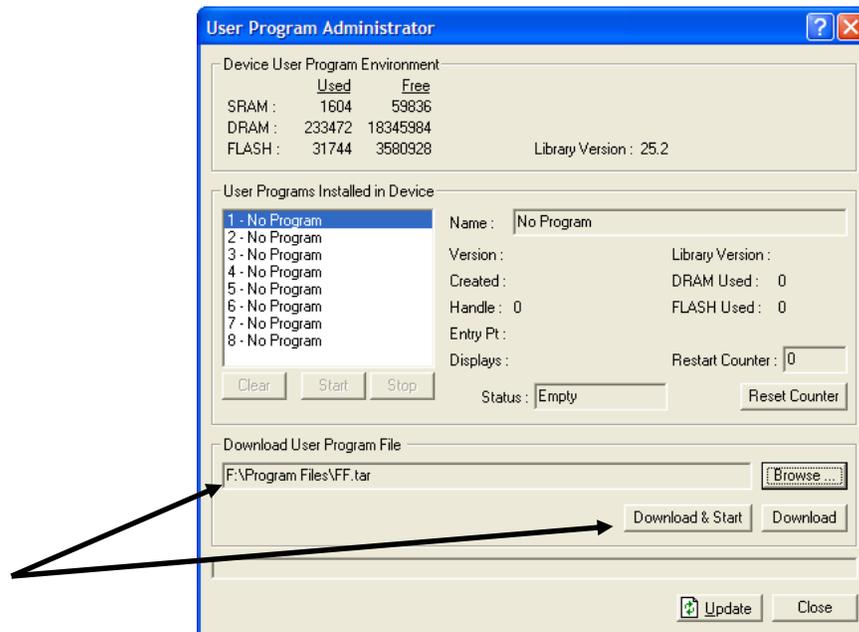

Figure 3. User Program Administrator

8. Click **Download & Start** to begin loading the selected program. The following message displays:
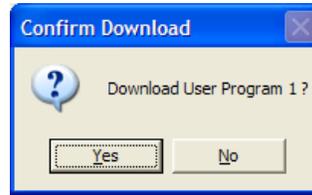
Figure 4. Confirm Download

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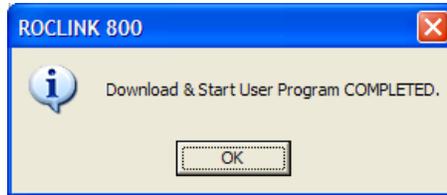

Figure 5. ROCLINK 800 Download Confirmation

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.
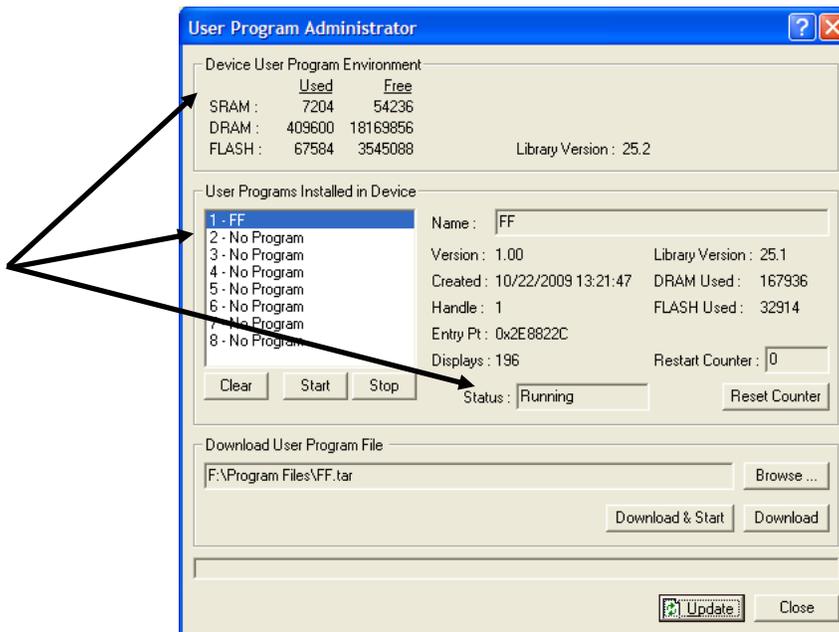   ▪ The Status field indicates that the program is loaded and running.

Figure 6. User Program Administrator

11. Proceed to *Section 3, Configuration*.

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Chapter 3 – Configuration

After you have downloaded and started the FOUNDATION Fieldbus Application program, you use an application-specific FOUNDATION Fieldbus screen (see *Figure 7*) to configure the program. The application provides 100 point numbers for this screen.

3.1 FOUNDATION Fieldbus Screen

Use this screen to define the values and default values for the three data types (float, unsigned integer, and signed integer) as well as status and fault value configuration.

To access this screen:

1. From the Directory Tree, double-click **User Program.**

2. Double-click **Program #1, FF**.

3. Double-click **Display #196, Foundation Fieldbus**.

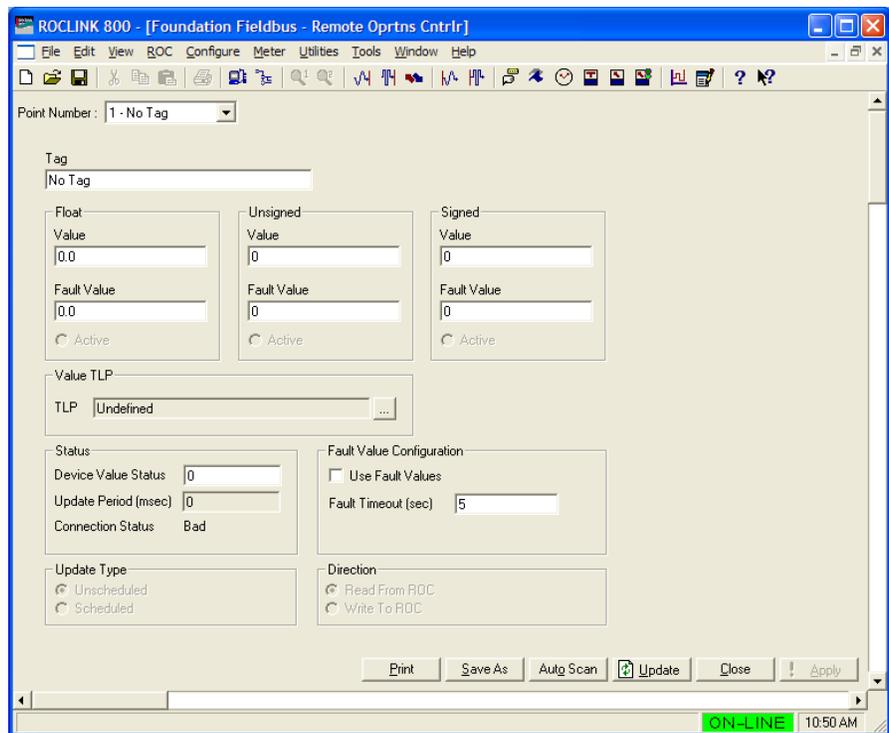4. Double-click **#1 No Tag**. The Foundation Fieldbus screen displays.

Figure 7. Foundation Fieldbus

5. Review the values in the following fields:

Field	Description
Point Number	Selects one of 100 possible points for incoming fieldbus data.

Field	Description
Tag	Sets an identifying label up to 20 characters long for the selected point number (fieldbus device). The FF Interface module provides this label when powered.
Float Value	Contains the floating value for this point as received from the FFbus Interface. **Note**: f you enable the **Use Fault Values** option **and** specify a Fault Timeout value, once that timeout period expires the program overwrites this value with the specified Float Fault Value.
Float Fault Value	Indicates the value the program uses in the Float Value field if the FFbus Interface does not update that value within the Fault Timeout period.
Unsigned Value	Contains the unsigned integer value for this point as received from the FFbus Interface. If you enable the **Use Fault Values** option **and** specify a Fault Timeout value, once that timeout period expires the program overwrites this value with the specified Unsigned Fault Value.
Unsigned Fault Value	Indicates the value the program uses in the Unsigned Value field if the FFbus Interface does not update that value within the Fault Timeout period.
Signed Value	Contains the signed integer value for this point as received from the FFbus Interface. **Note**: If you enable the **Use Fault Values** option **and** specify a Fault Timeout value, once that timeout period expires the program overwrites this value with the specified Signed Fault Value.
Signed Fault Value	Indicates the value the program uses in the Signed Value field if the FFbus Interface does not update that value within the Fault Timeout period.
Value TLP	Indicates a TLP the ROC800-based Interface uses for mapping. Click **…** to display a Select TLP screen you use to select the TLP.
Device Value Status	This **read-only** field shows the status associated with the FFbus data value. In a FFbus device, each data value has an assigned value. The device manufacturer defines the meaning of the value status.
Update Period	This **read-only** field shows, in milliseconds, how much time has passed since the FFbus Interface last updated the selected logical.
Connection Status	This **read-only** field shows the connection status between this data parameter and the FFbus Interface. Valid values are **Bad** (connection is lost) and **Good** (connection is present).
Use Fault Values	Select to allow the program to use fault values in the event of communication timeouts between the ROC and the FFbus Interface.

Field	Description
Fault Timeout	Indicates, in seconds, how long the enabled system waits before applying the fault values to the particular data types. The default is **5** seconds.
Update Type	Indicates whether the update is a scheduled or unscheduled communication.
Direction	Indicates whether the data is read from or written to the ROC.

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

7. Click **OK** to close the screen. Proceed to *Section 3.2* to save the configuration.

3.2 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:

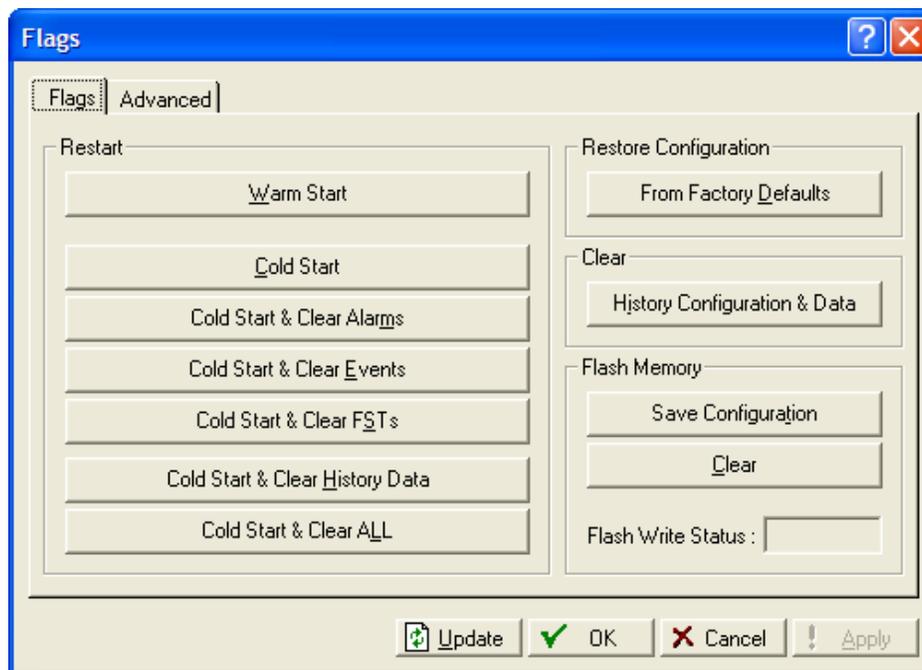1. Select **ROC** > **Flags**. The Flags screen displays:

Figure 8. Flags screen

2. Click **Save Configuration**. A verification message displays:
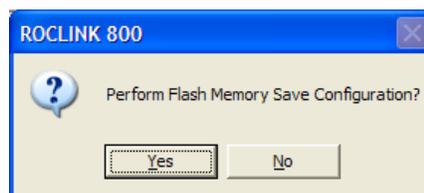
Figure 9. Perform screen

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

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

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

Chapter 4 – Reference Materials

This section provides information on the user-defined point type (196) the FOUNDATION Fieldbus program uses.

4.1 Point Type 196: Data Types

Point type 196 contains the parameters defining values for data types. The program maintains 100 logical points and saves point type 196 information to internal configuration memory.

Point Type 196: Data Types

Parm #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of functionality and meaning of values
0	Tag	R/O	System	String	20	0x20 → 0x7E for each byte	"No Tag"	1.00	Sets an identifying label up to 20 characters log for the selected point number
1	Float Value	R/W	User	Float	4	Any valid IEEE 754 float	0.0	1.00	Contains the floating value for this point as received from the FFbus interface. **Note**: If you enable the Use Fault Values option and specify a Fault Timeout, once the communication's timeout period expires the program overwrites this value with the specified Fault Value.
2	Float Fault Value	R/W	User	Float	4	Any valid IEEE 754 float	0.0	1.00	Indicates the value the program uses in the Float Value field if the FFbus does not update that value within the Timeout period
3	Unsigned Integer Value	R/W	User	UINT32	4	0x0 → 0xFFFFFFFF	0	1.00	Contains the unsigned integer value for this point as received from the FFbus interface. **Note**: If you enable the Use Fault Values option and specify a Fault Timeout, once the communication's timeout period expires the program overwrites this value with the specified Fault Value.
4	Unsigned Integer Fault Value	R/W	User	UINT32	4	0x0 → 0xFFFFFFFF	0	1.00	Indicates the value the program uses in the Unsigned Value field if the FFbus does not update that value within the Fault Timeout period.
5	Signed Integer Value	R/W	User	INT32	4	0x0 → 0xFFFFFFFF	0	1.00	Contains the signed integer value for this point as received from the FFbus interface. **Note**: If you enable the Use Fault Values option and specify a Fault Timeout, once the communication's timeout period expires the program overwrites this value with the specified Fault Value.
6	Signed Integer Fault Value	R/W	User	INT32	4	0x0 →	0	1.00	Indicates the value the program uses in the

Point Type 196: Data Types

Parm #	Name	Access	System or User Update	Data Type	Length	Range	Default	Version	Description of functionality and meaning of values
						0xFFFFFFFF			Signed Value field if the FFbus does not update that value within the Fault Timeout period.
7	Active Value Parameter	R/O	System	UINT8	1	1, 3, or 5	0	1.00	Indicates I/O date point parameter the SBC is currently accessing.
8	Direction	R/O	System	UINT8	1	0x00 = SBC read; 0x01 = SBC written	0	1.00	Indicates whether the SBC has read or written the active data parameter.
9	Scheduled Parameter	R/O	System	UINT8	1	0x00 = unscheduled data; 0x01 = data schedule for writes	0	1.00	Indicates whether the active data parameter is scheduled or not.
10	Value Status	R/W	User	UINT8	1	0x00 → 0xFF	0	1.00	Indicates the status associated with the defined data value.
11	Value Update Period	R/O	System	UINT16	2	0x00 → 0xFFF	0	1.00	Indicates, in milliseconds, the time between updates between the HSE and ROC or ControlWave. The ControlWave calculates this value whenever it accesses an I/O data point.
12	Value TLP	R/W	User	TLP	3	Any valid TLP	0,0,0	1.00	Indicates the TLP for mapping. Not used by ControlWave.
13	Connection Status	R/O	System	UINT8	1	0x00 → 0x01	1	1.00	Indicates status of connection between the HSE and ControlWave where: 0x00 = Active Connection 0x01 = Bad/Disconnected 0x02 = Bad/Timeout 0x03 = Fault/Disconnected 0x04 = Fault/Timeout
14	Use Fault Value	R/W	User	UINT8	1	0x00 → 0x01	0	1.00	Indicates a non-zero value that enables use of the define fault value (HSE-provided)
15	Fault Timeout	R/W	User	UINT8	1	0x00 → 0xFF	5	1.00	Defined, in seconds, the data update timeout period (HSE-provided).

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

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