Integration Document

Promag 53 Flowmeter via EtherNet/IP to the PlantPAx Process Automation System

PlantPAx
Process Automation System

Endress+Hauser
People for Process Automation

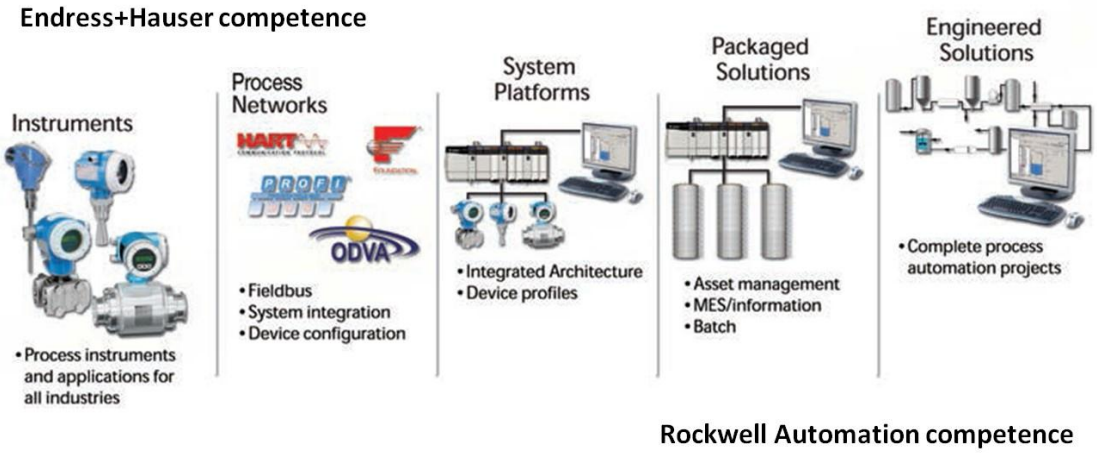
Allen-Bradley • Rockwell Software

Rockwell Automation

Preferred Integration

Rockwell Automation and Endress+Hauser have strengthened their strategic alliance to provide complete process automation solutions that use best-in-class instrumentation, software, and control systems.

There are hundreds of different components in a typical plant: controllers, remote I/O, electrical drives, safety equipment, and sensors. Each must be integrated, configured, and optimized during start-up and operation. Recognizing the challenges this creates, Rockwell Automation and Endress+Hauser are focused on providing scalable, off-the-shelf solutions.



To reduce the risks associated with integrating many devices from many different suppliers, Rockwell Automation pretests many third-party manufactured HART, FOUNDATION Fieldbus, EtherNet/IP, and PROFIBUS PA field devices in the system test laboratory for compatibility with the Rockwell Automation PlantPAx automation system. Each field device is connected to the PlantPAx system and is subjected to interoperability testing procedures similar to operating procedures in your plant. The results of each field test are recorded in a test report for integration planning purposes.

For Endress+Hauser field devices, an additional step provides an "Integration Document" and "Interoperability Statement" for each tested instrument. The Integration Document provides information on installation, configuration, startup, and operation of the integrated system. The Interoperability Statement is assurance that the Endress+Hauser field device meets PlantPAx system interoperability performance measures, as jointly established by Rockwell Automation and Endress+Hauser and verified through completion of common test procedures performed by either company. Both the Integration Document and Interoperability Statement help reduce risk and provide ease of integration.

The overall mission of the alliance is to provide proven solutions that combine field instrumentation with fieldbus networks, such as HART, FOUNDATION Fieldbus, PROFIBUS PA, and EtherNet/IP networks, with asset management capabilities and Rockwell Automation's system capabilities to provide a total engineered solution.

Through preferred integration and support of increasing requirements for plant-wide control, the alliance offers the following benefits:

- Reduced integration costs throughout engineering, commissioning, and start-up
- Optimized plant availability and output
- Ensured product quality and consistency
- Optimized traceability to meet regulatory demands
- Predictive maintenance through intelligent instruments

For new construction, process improvements at an existing plant, or operating cost reductions, the alliance delivers the following:

- Certified integration reduces risk, reduces integration costs, and protects investment with pre-engineered interoperability.

  Both companies believe open systems and standardized interfaces bring maximum benefits.
- Advanced capabilities with plant-wide asset management provides better visibility of plant health and easier access to instrument diagnostics, which ultimately leads to faster troubleshooting and improves decision-making.

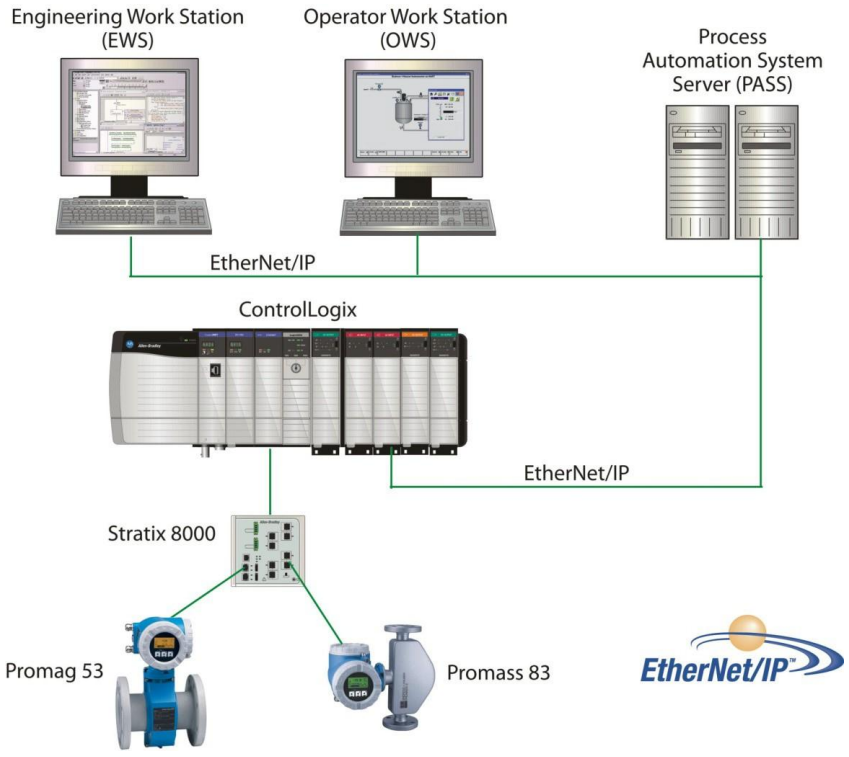
PlantPAx
Process Automation System

Application Overview

This document provides a step-by-step approach to integrating an Endress+Hauser Promag 53 Electromagnetic Mass Flow Measuring System into a Rockwell Automation PlantPAx process automation system via EtherNet/IP.

This Section	Describes
Application overview	Details about the field instrument and control system.
Example system	Specifications on the required hardware and software components.
Installation	How to: • Connect the measurement instrument to the EtherNet/IP interface. • Configure the EtherNet/IP interface.
Configuration	How to: • Configure the measurement instrument using the Add-On Profile (AOP). • Configure the measurement instrument using two optional methods: the quick setup menus on the local display or the Webserver.
Visualization	How to implement and configure a graphical display of device information.

The ControlLogix platform provides a robust EtherNet/IP backbone for communication to process fieldbus networks. The PlantPAx system architecture uses producer/consumer technology, allowing input information and output status to be shared by all ControlLogix controllers in the system.



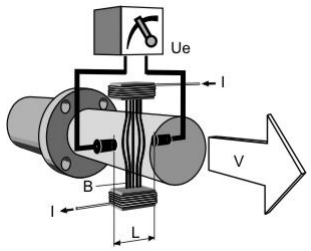
This integration document assumes you have a working knowledge of ControlLogix systems. For more details regarding the equipment and tasks described in this document, see Additional Resources on page 47.

Promag Flowmeter

Promag measuring instruments offer you cost-effective flow measurement with a high degree of accuracy for a wide range of process conditions. Promag sensors, tried and tested in thousands of applications, offer the following:

- No pressure loss
- Not sensitive to vibrations
- Simple installation and commissioning
- Modular device and operating concept resulting in a higher degree of efficiency
- Software options for batching, electrode cleaning and for measuring pulsating flow
- High degree of reliability and measuring stability

The measuring principle is based on *Faraday's law of magnetic induction*, a voltage is induced in a conductor moving through a magnetic field.
In the electromagnetic measuring principle, the flowing medium is the moving conductor. The voltage induced is proportional to the flow velocity and is supplied to the amplifier by means of two measuring electrodes. The flow volume is calculated by means of the pipe cross-sectional area. The DC magnetic field is created through a switched direct current of alternating polarity.



Ue = B•L•v	*Ue*	*Induced voltage*
Q = A•v	*B*	*Magnetic induction (magnetic field)*
	L	*Electrode spacing*
	v	*Flow velocity*
	Q	*Volume flow*
	A	*Pipe cross-section*
	I	*Current strength*

Measuring System

The measuring system consists of a transmitter and a sensor.
Two versions are available:

- Compact version: Transmitter and sensor form a mechanical unit.
- Remote version: Sensor is mounted separate from the transmitter.

Transmitter:

- Promag 53 ("Touch Control" without opening the housing, four-line display, unilluminated)

Sensor:

- Promag W (DN 25 to 2000 / 1 to 78")

Measured Variable

- Flow velocity (proportional to induced voltage)

Instrument Specifications

- Communication: Standard, EtherNet/IP™ up to 100 Mbps
  - ODVA™ compliant
  - IEEE 802.3
- Power supply option: 16 to 62 VDC, 85 to 260 VAC, 20 to 55 VAC
- Ambient temperature: -20 to +80 °C (-4 to +176 °F)
- Degree of protection: IP 67 (NEMA 4X), IP 68 (NEMA 6P)
- Approvals: CE marked for nonhazardous area application, ATEX
- EMC: IEC/EN 61326 and NAMUR Recommendation NE21
- Certified – Class 1, Div 2; CSA/FM
- Device configuring: Multiple options
- Ethernet connection: (2) RJ-45 female sockets, optional prewired bus plug, or customer terminated wiring:
  - Bus Plug: 4-pole M12 connector per IEC 61076-2-10
  - RJ-45 plug and cable (not supplied)
- Cable entry options: Threaded ½ inch NPT, G Thread ½, M20 gland
- IP Addressing: Configurable EtherNet/IP and Webserver addresses
  - Hardware device addressing by DIP switches
  - Software device addressing by integrated Webserver
  - DHCP or Static IP addressing supported
- Status condition: Four LEDs for communication status
- Security: Password protected with four definable levels
- Data mapping: (16) Autoscan registers for data transmission:
  - Preconfigured for easy integration
  - Allows change to user parameter if needed
  - Positions 1 to 10 for input value reporting
  - Positions 11 to 16 for output control
- Integrated Web server: Operation supported in standard web browser
- EDS file: Embedded in the device for RSLogix 5000 integration
- Add-on profile: Available for Promag 53 with EtherNet/IP

IMPORTANT The use of DLR requires Stratix 4000 EtherNet Tap.

Control System

The control system includes these components:

Component	Description
Controller	The Logix controller is a modular, high performance controller, which uses RSLogix 5000 programming software to configure, program, and monitor a system.
EtherNet/IP Communication	The EtherNet/IP Communication Module serves as a linking device/bridge module. Seamless integration into control systems with direct EtherNet/IP connection, e.g., ControlLogix, CompactLogix or PlantPAx from Rockwell Automation.
Programming software	PlantPAx is an easy object-oriented, explorer-based, drag-and-drop configuration that allows you to build complex process functions. Furthermore, the software allows you to mix and match IEC61131-3 compliant programming languages. All supported programming languages share the same development environment, tag database, and user interface, resulting in reduced training and higher productivity.
Visualization software	FactoryTalk® View Site Edition software is an HMI software program for monitoring, controlling, and acquiring data from manufacturing operations throughout an enterprise. A faceplate provides a graphical representation of the instrument through the Operator Work Station. Faceplates associated with every instruction help you set up, tune and control the element with a minimum of effort. Additions and modifications can be performed online, while your process keeps running.

Example System

Endress+Hauser and Rockwell Automation interoperability testing is performed for every new device and product.

Hardware Components

Component	Catalog Number
Promag 53 Electromagnetic Flowmeter	8-ANESAAAACCAA
EtherNet/IP Communications Module	1756-EN2T
ControlLogix Control System	1756-L63

For further details, see the PlantPAx Process Automation System Selection Guide, publication PROCES-SG001-EN-P.

Software Components

Component	Catalog Number
PlantPAx	
RSLogix 5000 Enterprise Series programming software, Professional edition Includes: • RSLinx Classic software • RSLinx Enterprise software	9324-RLD700NXENE
FactoryTalk View Site Edition (SE) software (optional)	9701-VWSXXXXXENE
FactoryTalk AssetCentre server (optional)	9515-ASTSRVRENE
FactoryTalk AssetCentre process device configuration (optional)	9515-ASTPRDCFENE
E+H FieldCare Standard Asset Management software (optional)	SFE500

For additional information on drivers, see Additional Resources on page 47.

For specifications of the engineering workstation (EWS) and operator workstation (OWS), see the PlantPAx Process Automation System Reference Manual, publication PROCES-RM001.

Installation

The information in this section provides a summary of the installation procedures.

IMPORTANT For complete installation instructions, including warnings, see Additional Resources on page 47.

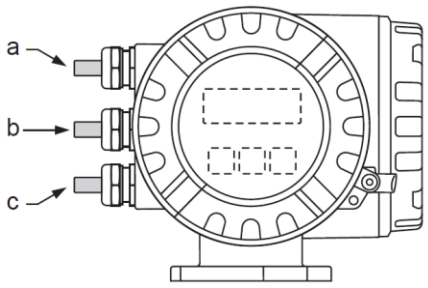
Installation can be accomplished by either traditional methods or by utilizing fieldbus connectors (optional). In this section, both methods are described to allow you to choose the installation method best suited to the application.

Overview

Refer to the figures in this section when using the installation instructions.

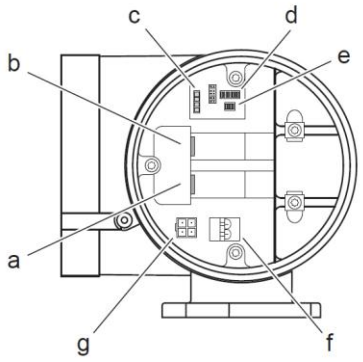
- Figure 1 provides an overview of three possible connection versions when installing the Promag 53 Flowmeter.
- Figure 2 shows the structure of the dual Ethernet module of the Promag 53 Flowmeter.

Figure 1: Transmitter Cable Entries on the Promag 53 Flowmeter



Connector	Connection Version 1	Connection Version 2	Connection Version 3
a	Ethernet via cable entry/cable gland	Ethernet via fieldbus connector	Ethernet via fieldbus connector
b	Dummy plug	Dummy plug	Ethernet via fieldbus connector
c	Power supply via cable entry/cable gland	Power supply via cable entry/cable gland	Power supply via cable entry/cable gland

Figure 2: Structure of the Dual Ethernet Module



Part	Description
a	Ethernet port 1 for EtherNet/IP network or Webserver
b	Ethernet port 2 for EtherNet/IP network or Webserver
c	Status light emitting diodes (LED)
d	DIP switches for hardware addressing
e	DIP switches to reset software addressing
f	Power supply connection
g	Port for service interface FSA193 (FieldCare)

Connect a Promag 53 Flowmeter (Typical Procedure – Connection Version 1)

For illustrations, refer to the figures in Installation Overview on pages 9 and 10.

1. Unscrew the solid metal cover (side) of the electronics compartment from the transmitter housing.

2. Push the power supply cable (Figure 1c) and the Ethernet cable (Figure 1a) through the cable glands.

3. Tighten the cable glands.

4. Unplug the terminal connector (Figure 2f), remove it from the transmitter housing, and then connect the power supply cable.

   Power Supply Specifications

   85 to 260 VAC, 20 to 55 VAC, or 16 to 62 VDC

   - Terminal No. 1: L1 for AC; L+ for DC
   - Terminal No. 2: N for AC; L- for DC

5. Plug the terminal connector (Figure 2f) into the transmitter housing.
6. Secure the ground cable to the ground terminal.
7. Secure the RJ45 plug on the Ethernet cable to Ethernet port 1 (Figure 2a).

   The opposite end of the Ethernet cable is connected to the network.
8. Secure the ground cable to the ground terminal.

IMPORTANT Between the stripped cable and the ground terminal, the cable shielding should not exceed a length of 5 mm (0.20 in).

9. Screw the cover of the electronics compartment onto the transmitter housing.

Verify Grounding and Shielding

If the EtherNet/IP cable is routed directly into the measuring device through the cable entry (a fieldbus connector is not used), ensure that the grounding and shielding are correct. This is required to guarantee electromagnetic compatibility (EMC).

Connect the Ethernet Port

The measuring device has a dual Ethernet module to connect it to an EtherNet/IP network and to connect it to a Webserver integrated in the measuring device. It uses the EtherNet/IP communication protocol (Ethernet Industrial Protocol) in accordance with the ODVA specification.

If you want to establish a connection to the EtherNet/IP network and to the Webserver, you can use the two Ethernet ports. The ports are assigned using the individual IP addresses.

The measuring device has the following default addresses when delivered:

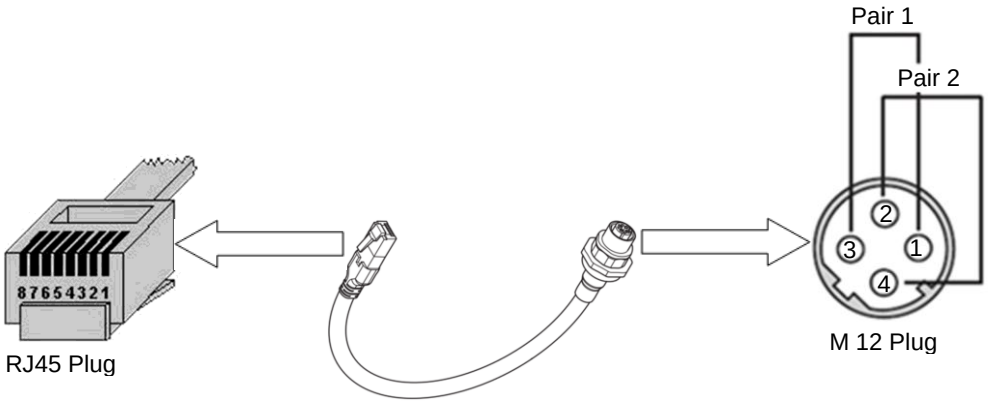
Address Type	EtherNet/IP Network	Webserver
IP address	192.168.212.212	192.168.212.213
Netmask	255.255.255.0	255.255.255.0
Gateway	192.168.212.212	192.168.212.213

IMPORTANT A connection label in the cover of the connection compartment provides information on the default IP addresses and the device-specific MAC addresses. If a new IP address is assigned, you can document this on the connection label.

Fieldbus Connectors (Optional – Connection Version 2 or 3)

For more information about Connection Version 2 or 3, refer to Figure 1 on page 9.

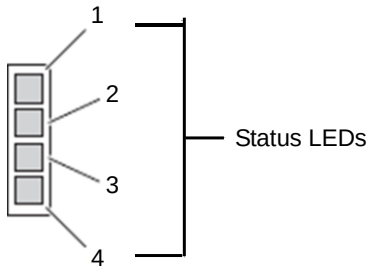
The device can be supplied with an optional, ready-mounted M12 fieldbus connector that is connected to the internal Ethernet port of the device using an RJ45 plug. Fieldbus connectors for retrofitting can be ordered from Entress+Hauser as a spare part. For more information, contact Endress+Hauser Support, as described on the last page of this document.



4-pole M12 Port with an RJ45 Plug

Signal	Name	Pin RJ45	Pin M12
TD+	Transmit Data +	1	1
TD-	Transmit Data -	2	3
RD+	Receive Data +	3	2
RD-	Receive Data -	6	4

Interpret the Status LED Signals



The status LEDs are located in the dual Ethernet module, as shown in Figure 2c on page 10. Use the following information to interpret the signals from the status LEDs:

LED	Signal	Significance
1	Not used	
2	Not used	
3	Steady off	The device does not have an IP address. or The device is without a power supply.
	Flashing green	The device has no established connection, but has obtained an IP address.
	Steady green	The device has at least one established connection. (This may include the message router.)
	Flashing red	One or more of the connections in which the device is the target has a time out. This signal does not turn off until all connections are reestablished or the device is reset.
4	Steady off	The device is without a power supply.
	Flashing green	No I/O connection is established. or Any established I/O connection is in idle mode (1 Hz).
	Steady green	All established I/O connections are in run mode.

Configure the IP Address

The IP address of the measuring device can be configured for the EtherNet/IP network through software settings or through the Dual In-line Package (DIP) switches for hardware addressing.

IMPORTANT The preferred method for configuring the IP address is using the BootP/DHCP Server software, as described on page 15.

The IP address for software addressing is active when the device leaves the factory (default IP address: 192.168.212.212), and all the DIP switches for hardware addressing are set to OFF.

Dynamic Host Configuration Protocol (DHCP) Client

If a DHCP server is used within the EtherNet/IP network, the IP address, gateway and subnet mask are set automatically when the DHCP client function is enabled.

The MAC address of the measuring device is used for identification purposes. (See also the connection label.)

You can enable the DHCP client function in the "Network Configuration" menu of the Webserver, which is described on page 40.

IMPORTANT

- The measuring device has the following DHCP default settings when delivered:

	EtherNet/IP Network	Webserver
DHCP	Yes (enabled)	No (disabled)

- The DHCP client function is disabled if hardware addressing is enabled. If you need to disable the hardware addressing, refer to Disable Hardware Addressing and Enable Software Addressing on page 18.

BOOTP/DHCP Server Software (preferred)

You can use any DHCP server, such as the Rockwell Automation BOOTP/DHCP Server (BOOTP) to set up the network parameters for the Ethernet link on the Promag 53 Flowmeter.

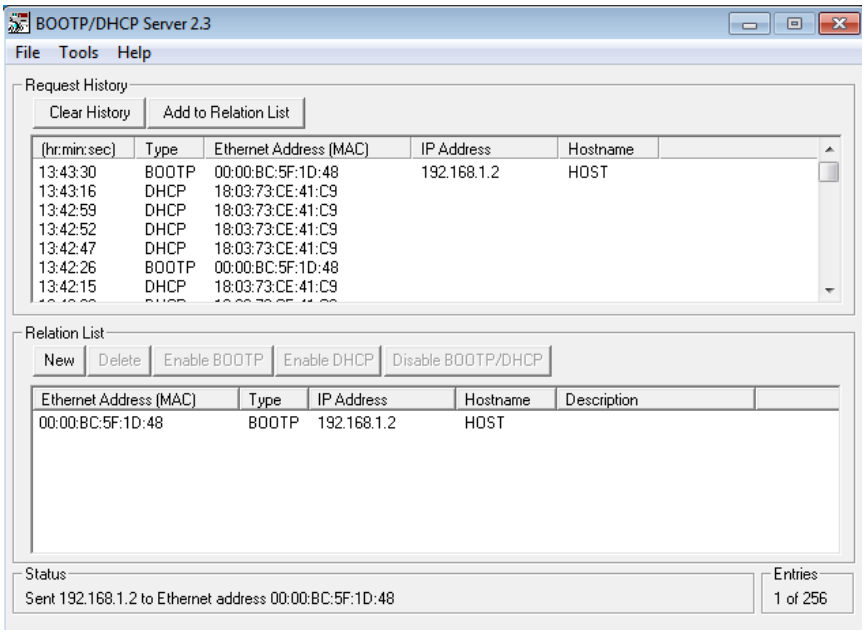
To configure the linking device using BOOTP/DHCP Server, perform the following steps:

1. If possible, disable any virus protection that may be running. This can affect the connection process.

2. Select **Start** > **Programs** > **Rockwell Software** > **BOOTP-DHCP Server** > **BOOTP-DHCP Server**.

   BOOTP/DHCP Server opens and sends the device a request for a connection.

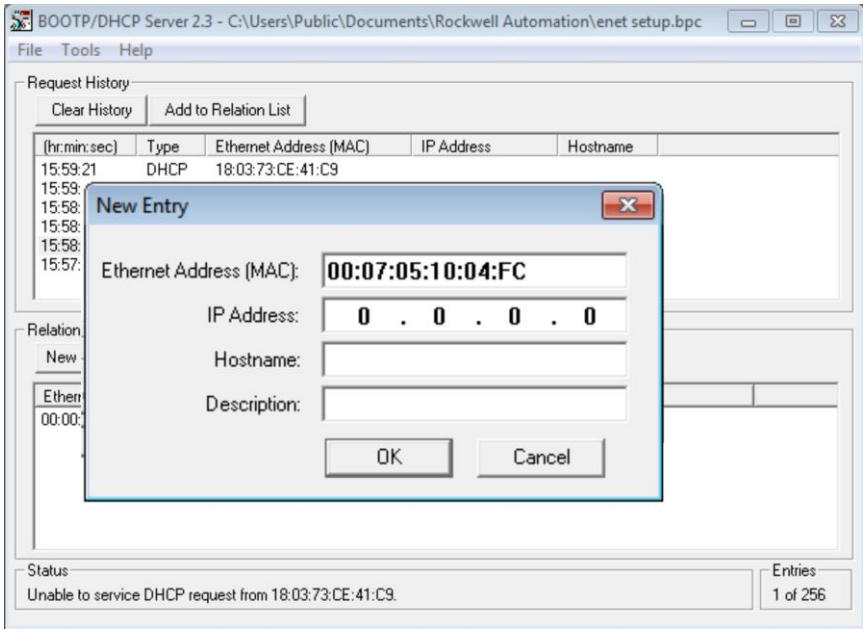
   If additional devices are on your network, you may see other devices in the Request History or Relation lists.



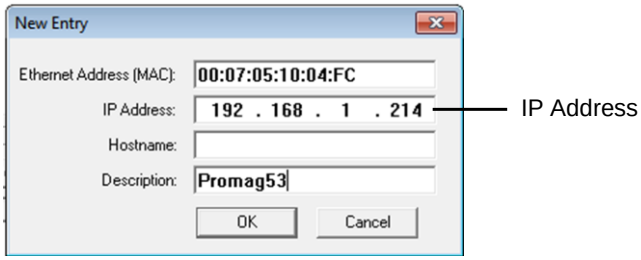
3. Access the MAC address of the Promag 53 using the local display or the documentation that arrived with the device.

   To access the MAC address on the local display, select **SUPERVISION** > **VERSION INFO** > **ETHERNET**.

4. Double-click the request with the Promag 53 MAC address in the Request History section of the screen, and the New Entry screen is displayed.



5. In the New Entry screen, type the IP address for the Promag 53.



6. Click **OK**.

   The device is added to the Relation List section of the screen.

7. Depending on your preference, perform the appropriate task:

If you want to...	Then...
permanently assign the configuration to the Promag 53	select the address in the Relation List section of the screen and click **Disable BOOTP/DHCP**. When you cycle power to the linking device, it uses the configuration you assigned and does not issue a DHCP request.
enable DHCP for the linking device	select the device and click **Enable DHCP**.

DIP Switches for Hardware Addressing

If you do not want to configure the IP address through software settings, you can configure the IP address of the measuring device for the EtherNet/IP network using the DIP switches. The permitted addresses are in the range 0 to 254. (The address 255 is reserved for the broadcast address.)

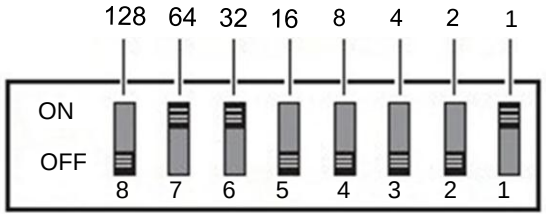
Hardware Addressing

IMPORTANT The DIP switches can configure the last three digits (last octet) of the IP address, represented by the X's in the following: 192.168.212.XXX. The first nine decimal digits (first three octets) can be configured only through software addressing.

1. Refer to the example in step 2 below and set the desired IP address using the corresponding DIP switches.

2. Wait 10 seconds, and the hardware addressing with the defined IP address is activated.

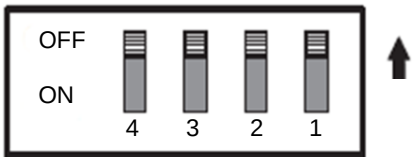
Example of Hardware Addressing for Address 97



DIP Switch	Position	Value
128	Off	0
64	On	64
32	On	32
16	Off	0
8	Off	0
4	Off	0
2	Off	0
1	On	1
Add the Values:	**97**	= 192.168.212.**97**

Disable Hardware Addressing and Enable Software Addressing

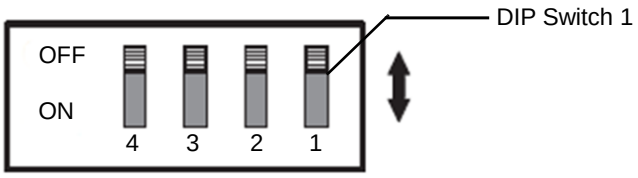
Move all the DIP switches for hardware addressing to the **OFF** position.



Reset the IP Address Set Through Software Addressing

Use this procedure to restore the IP address of the measuring device to the default value, 192.168.212.212.

1. Enable software addressing, as described in Disable Hardware Addressing and Enable Software Addressing in the previous section.
2. Turn the measuring device (power supply) on.
3. Move DIP switch 1 from **OFF** to **ON**.
4. Move DIP switch 1 from **ON** to **OFF**.



The IP address of the measuring device is restored to 192.168.212.212.

Webserver IP Address: Configure the Personal Computer (PC) or Laptop

The IP address of the Webserver (default IP address: 192.168.212.213) must be configured on the PC/laptop to establish a connection to the Webserver of the measuring device. You can launch the Webserver using any standard Web browser.

IMPORTANT To establish a connection, ensure that the option for using the proxy server for the local-area network (LAN) is disabled in the settings for the Web browser.

For more information about the Webserver, refer to Configure the E+H Promag 53 Flowmeter (Optional Methods) on page 34.

Software Addressing

Software addressing is performed in the "Network Configuration" menu of the Webserver, which is shown on page 40. You can configure both the IP address for the Webserver and the IP address for the EtherNet/IP network.

The measuring device has the following default addresses when delivered:

Address Type	EtherNet/IP network	Webserver
IP address	192.168.212.212	192.168.212.213
Netmask	255.255.255.0	255.255.255.0
Gateway	192.168.212.212	192.168.212.213

The permitted addresses are in the range 0 to 254. (The address 255 is reserved for the broadcast address.)

IMPORTANT

- If hardware addressing is activated, software addressing is disabled. If you need to disable the hardware addressing, refer to Disable Hardware Addressing and Enable Software Addressing on page 18.
- If you change from software addressing to hardware addressing, the first nine digits (first three octets) configured using software addressing remain unchanged.
- If necessary, you can reset the software addressing settings to the default setting. Refer to Reset the IP Address Set Through Software Addressing on page 18.

Install the Endress + Hauser Promag 53 Add-On Profile (AOP)

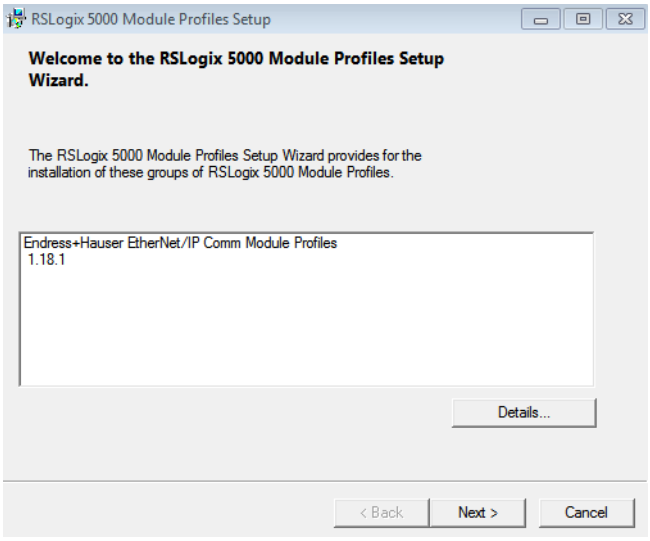
An AOP is a way to bring a definition of a new Allen-Bradley device or devices from our Encompass partners into RSLogix 5000. These profiles will vary, depending on the manufacturing and function of the target device. All contain some configuration and automatic tag creation, so you do not have to figure out how data is mapped or spend time creating aliases to point at the generic tags.

This section describes how to install an AOP from Endress+Hauser for a Promag 53 Flowmeter.

Note: The AOP is preinstalled in RSLogix 5000 versions 20 and higher.

1. Download the Promag 53 AOP from www.endress.com.
2. Double click the MPSetup.exe file from the download location.

The setup screen is displayed.



3. Click **Next**, and on subsequent screens, continue to follow the prompts, accepting the default selections and clicking **Next**.

4. When a screen saying that the setup is complete is displayed, click **Finish**.

   The AOP is installed and available to add to the RSLogix 5000 Project, as described in the following section.

Load the Electronic Data Sheet (EDS) File

Although the EDS file for this device is typically included in the installation of the AOP, it is also available for you to install separately. If necessary, you can access it from the device through the Webserver or the manufacturer's website.

If you want to access the EDS file from...	Then...
the device through the Webserver	1. Go to the Network Configuration screen (shown on page 40). 2. Click the button **Load EDS File**.
www.endress.com	1. Download the EDS file. 2. Save the file to your desktop. 3. Double click the file and follow the on-screen prompts.

IMPORTANT Use the RSLinx EDS Hardware Installation Tool to install the EDS file.

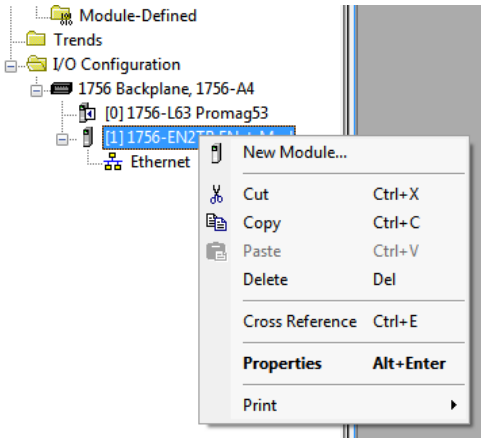
Configure the E+H Promag 53 Flowmeter with the AOP

The available options to configure the I/O in the AOP are presented in the table on page 23. The option "Device Config. via AOP" described in the procedure below is used as an example.

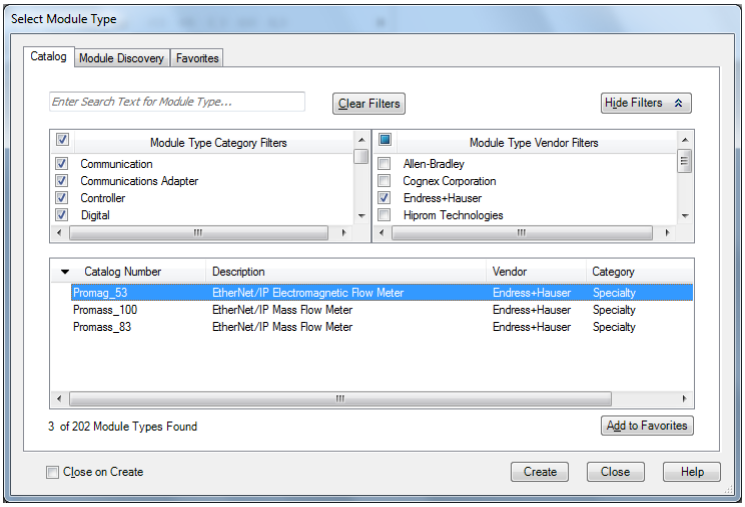
In the RSLogix 5000 project, ensure that the Ethernet Module(s) and communication settings are established before installing the Promag 53. For assistance with setting up Ethernet communications via the ControlLogix Platform, refer to www.rockwell.com or ask the local Rockwell Automation distributor.

Establish the Configuration of the E+H AOP

1. On the left side of the RSLogix 5000 project screen, right click the **Ethernet Module**, and then select **New Module**.



2. Choose **Endress+Hauser** under **Module Type Vendor**, select **Promag_53** and then click **Create**.

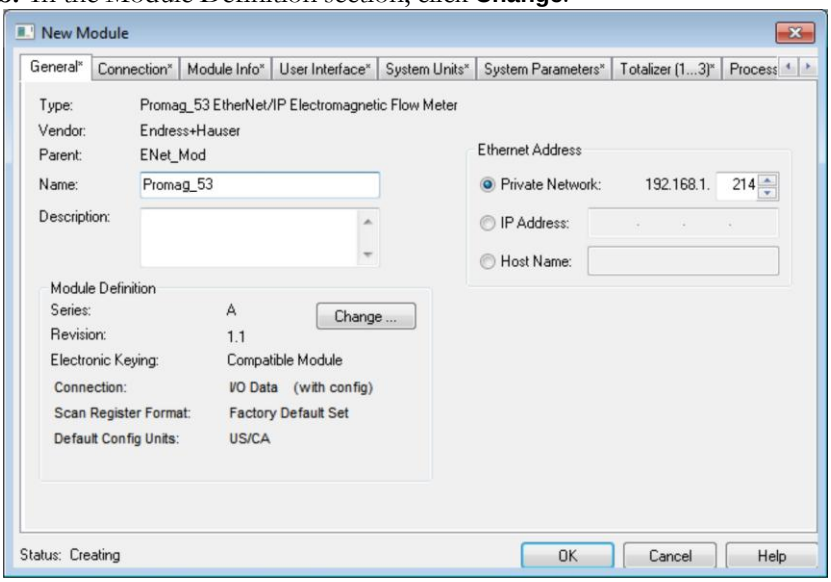


IMPORTANT Do not click **OK** in the New Module screen until you have completed defining the module, as described in steps 3 through 5.

3. In the New Module screen:

   a. Enter the necessary information in the Name and Ethernet Address sections of the screen.

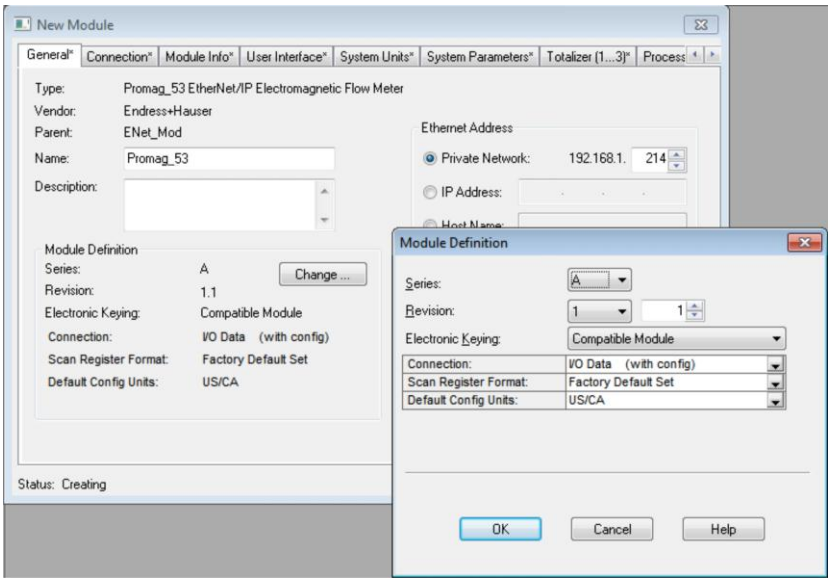
   b. In the Module Definition section, click **Change**.



4. In the Module Definition screen:

   a. Click the **Connection** drop-down list and select **I/O Data (with config)**.

   b. Click **OK**.



For more information about the available connections in the AOP, refer to the table on the following page:

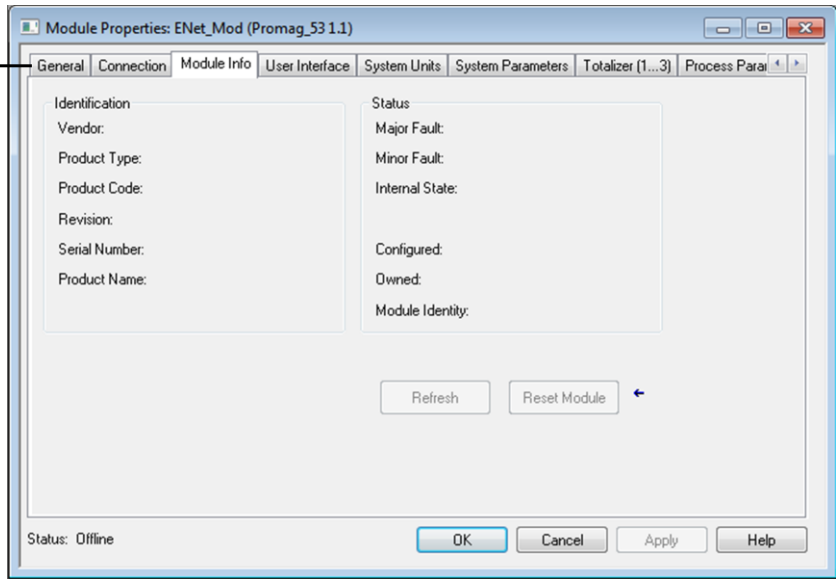
Available Connections in AOP	Device Config. via AOP (Recommended)	Device Config. via Webserver (Optional)	Device Config. via Local Device Display (Optional)
I/O Data	Not available	Yes	Yes
Input only	Not available	Yes	Yes
I/O Data (with config.)*	Yes*	Not recommended*	Not recommended*
Input only (with config.)*	Yes*	Not recommended*	Not recommended*

*If using the AOP for device configuration (I/O Data [with config.] or Input only [with config.]), the configuration in the device is overwritten with every Forward Open command.

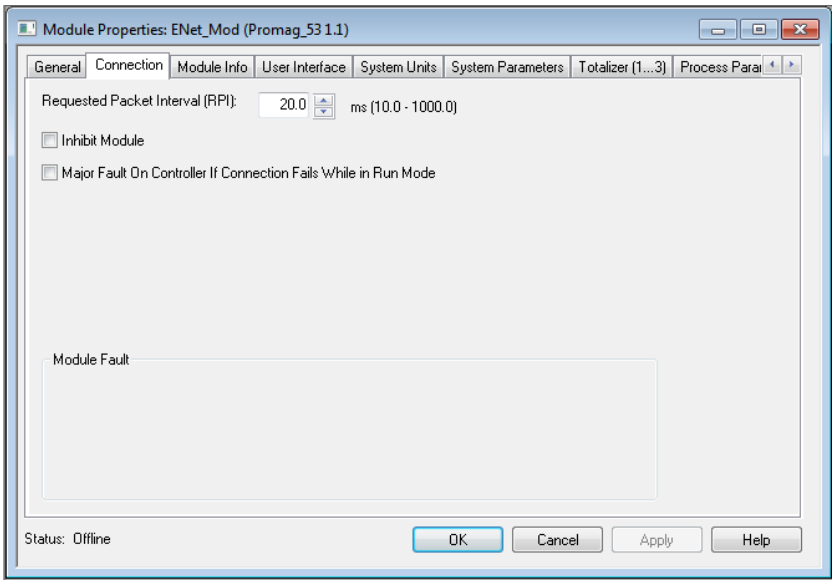
IMPORTANT Do not click **OK** in the Module Properties screen, until you ensure that the module properties have the settings that you prefer.

5. If preferred, you can customize the Endress+Hauser Promag 53 AOP properties using the tabs at the top of the Module Properties screen.

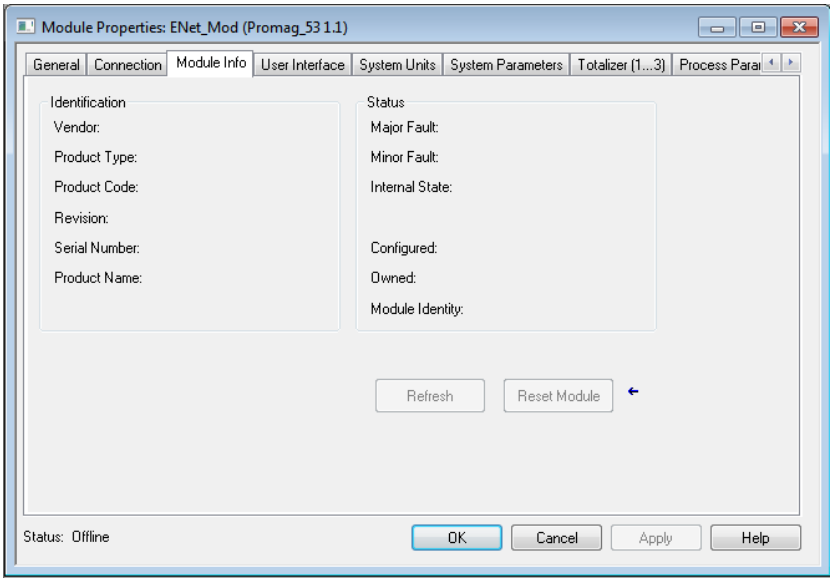
Tabs for Customizing AOP Properties



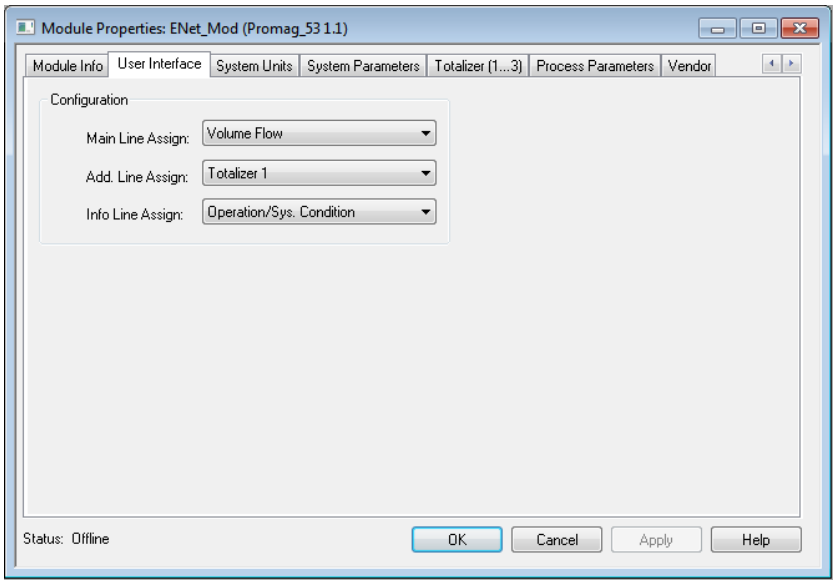
- In the Connection screen, you can set the Requested Packet Interval (RPI) and other communication parameters.



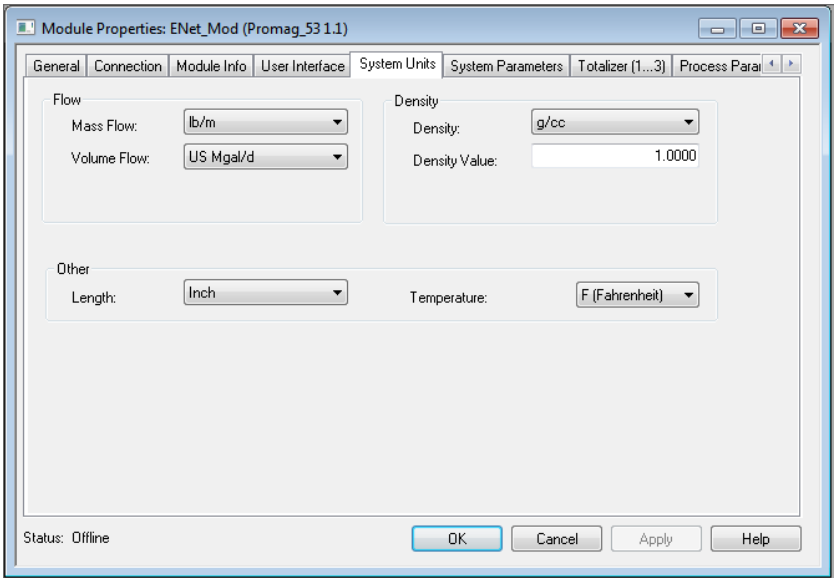
- In the Module Info screen, you can view the device information.



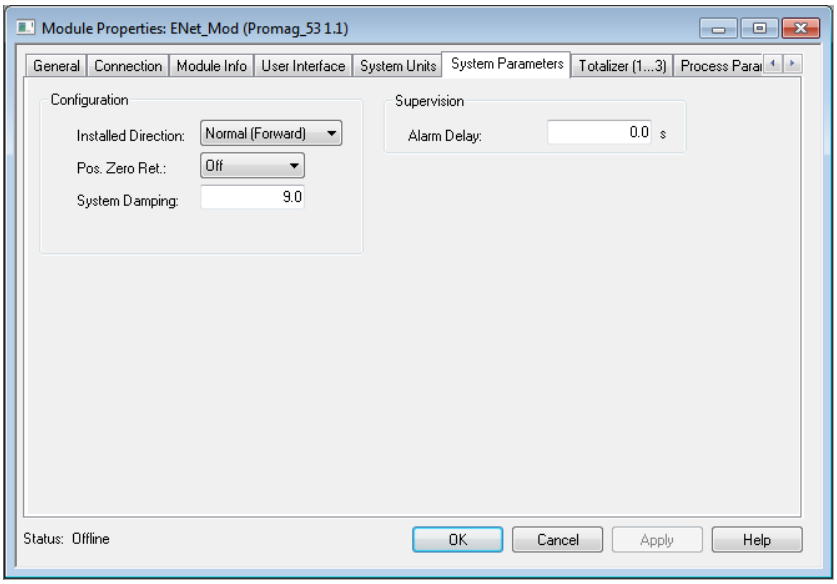
- In the User Interface screen, you can select the measurement values on the local display for the device.



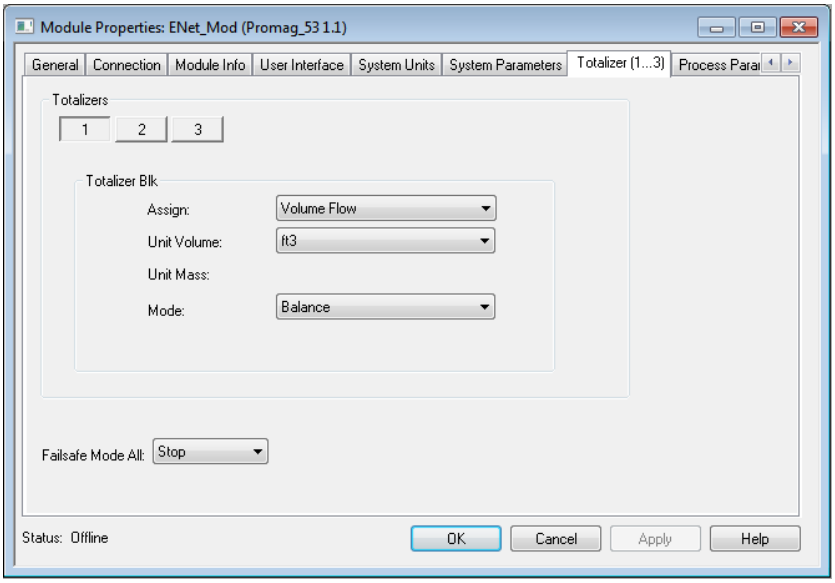
- In the System Units screen, you can configure the units of measure for the system.



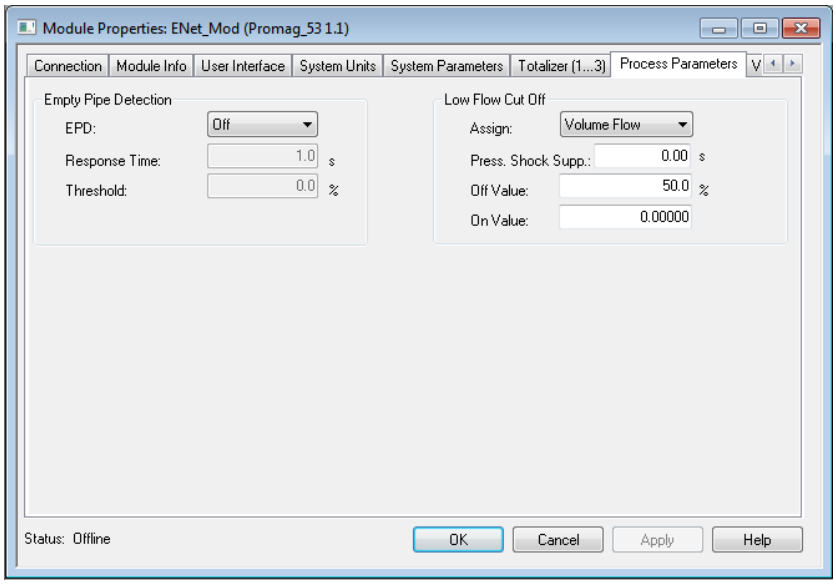
- In the System Parameters screen, you can configure the system parameters, as shown below. .



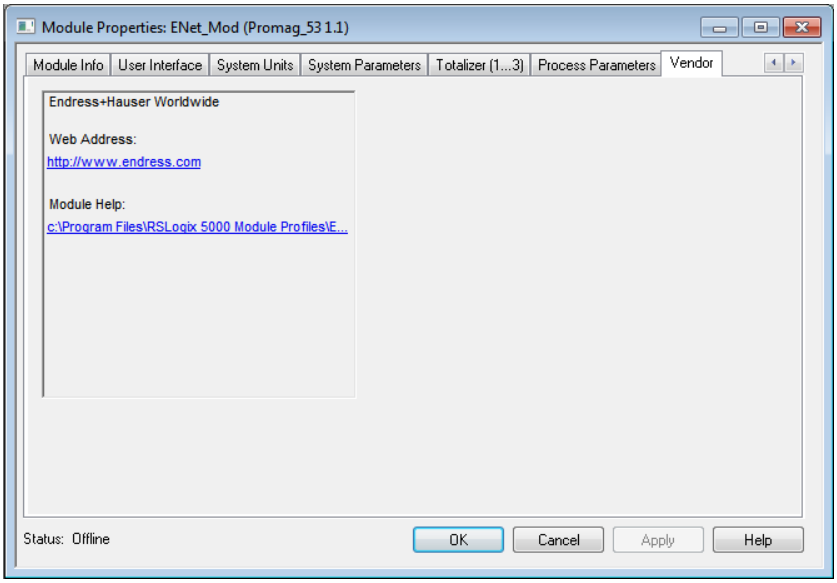
- In the Totalizer (1...3) screen, you can assign the device totalizer configuration and units.



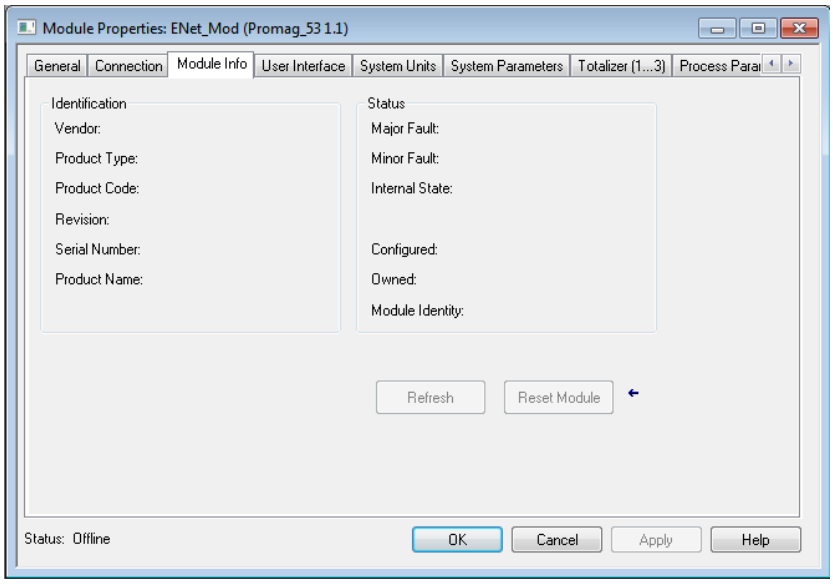
- In the Process Parameters screen, you can configure process parameters such as empty pipe and density calculations.



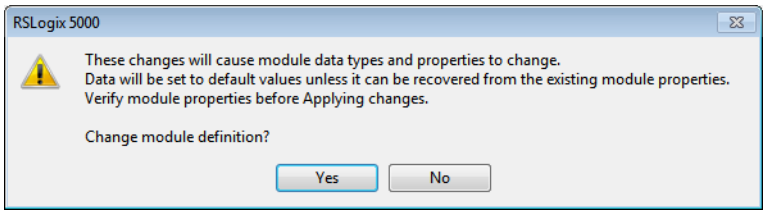
- In the Vendor screen, you can view vendor information.



6. When the module is defined according to your preferences, in the Module Properties screen, click **OK**.



7. In the RSLogix 5000 warning screen, click **Yes**.



8. Ensure that you save the RSLogix 5000 file first, and then download the file to the ControlLogix controller.

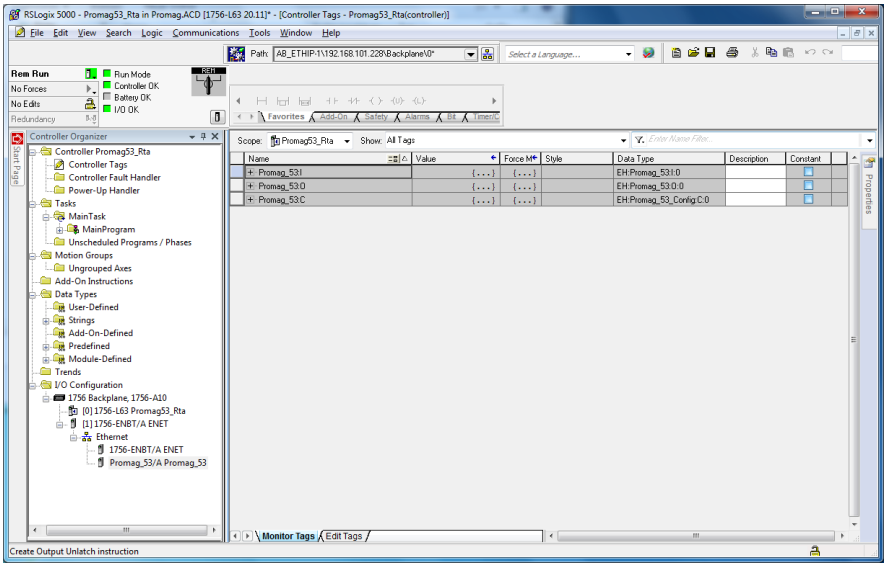
Available Data for the Promag 53

In RSLogix 5000, the Promag 53 has available data that is imported during the EDS file installation. This data generated pre-configured Controller Tags that are available to use for programming or monitoring/verification of the device operation.

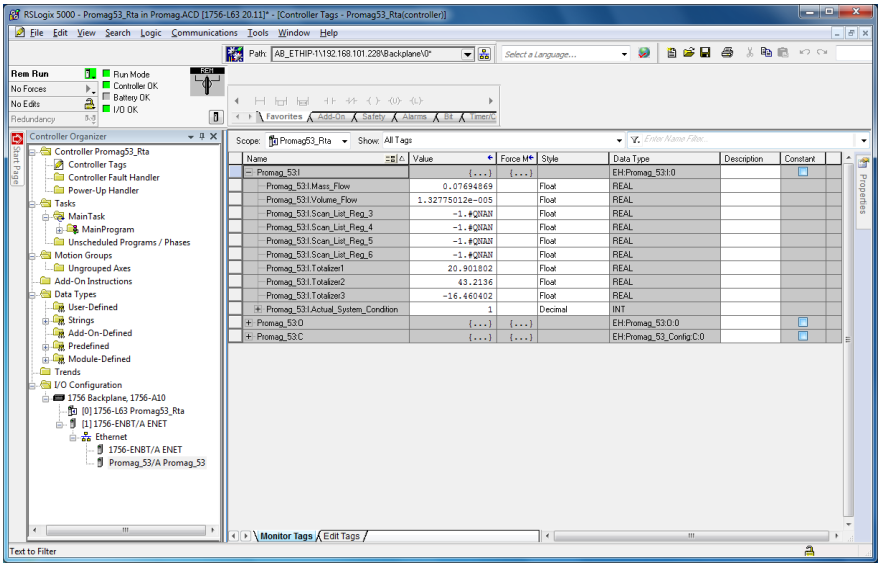
Perform the following steps to access the Controller Tags in RSLogix 5000.

1. Download the RSLogix Project, with the proper module configuration, and change the controller to Run Mode.

2. Right click on **Controller Tags** in the top of the Controller Organizer window. The following screen will appear.



3. To expand the tag lists, click on the **plus (+)** signs to the left of the tag names.



Visualization – Using AOIs and Faceplates

To monitor the instruments using the predesigned faceplates, the EtherNet/IP must be set up as specified in this integration document and the manual. The controller exchanges data between the devices, and the FactoryTalk View SE faceplates notify personnel what is happening in the plant.

The following information allows you to customize the Promag 53 and set up the function blocks to use the Add-On Instructions (AOI) with an HMI server.

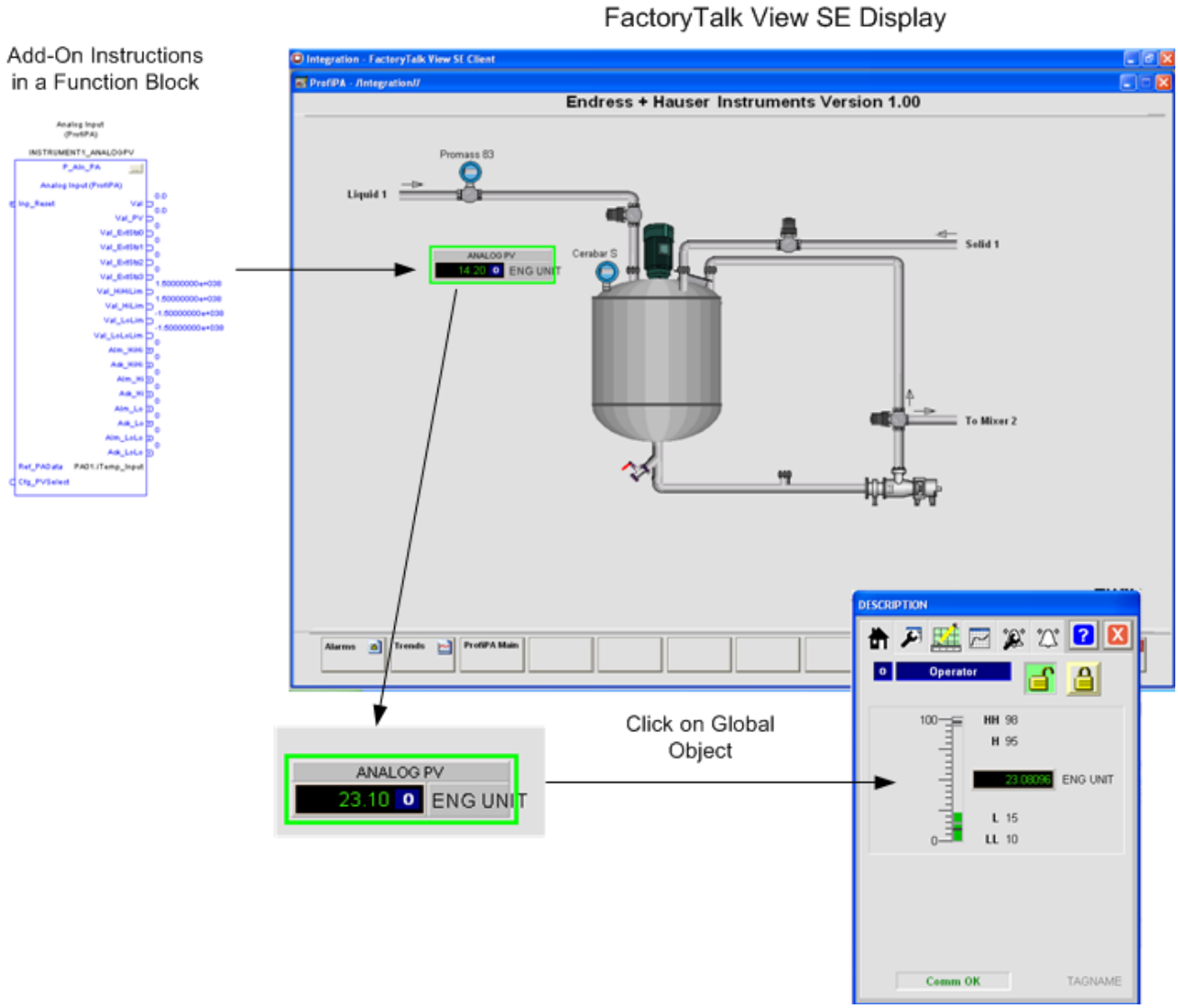
See Additional Resources on page 47 for more detailed information.

Add-On Instructions

An Add-On Instruction exchanges data between each process variable located in the process device and the faceplate installed on a display. The name of the specific instance of the Add-On Instruction becomes the link from the actual instrument to the faceplate on the graphic.

Global Object

A global object links the tag name to the faceplate, provides a touch area for the faceplate to be launched from, and displays the process variables and alarms.

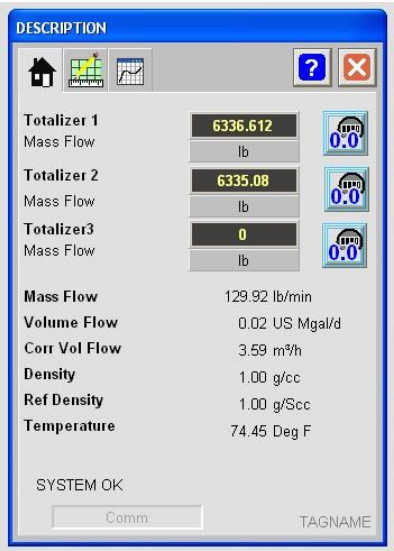


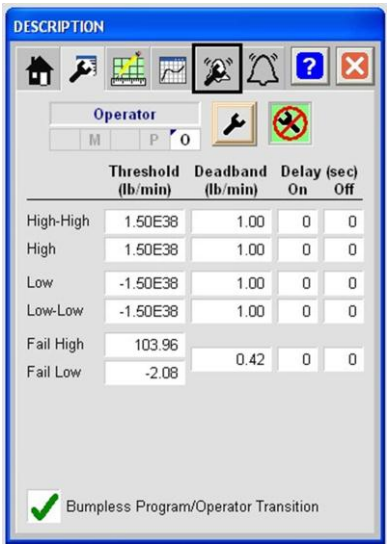
A unique global object and faceplate are available for each field instrument due to each instrument having specific extended diagnostics.

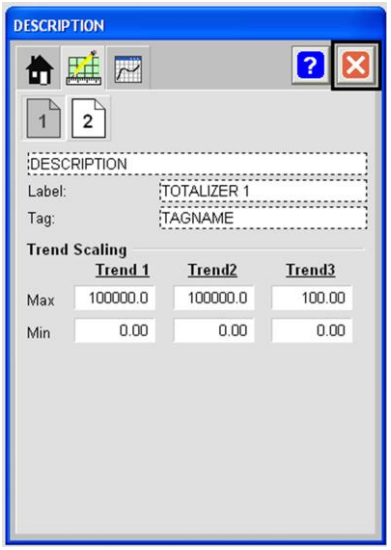
Faceplates

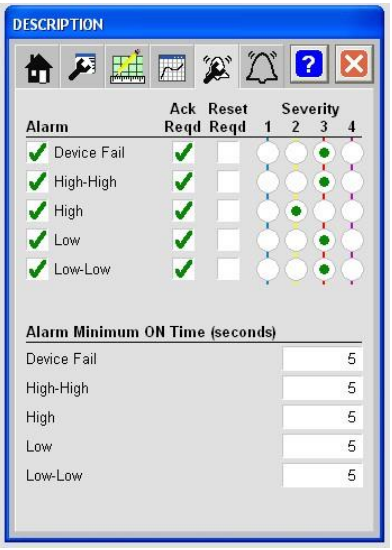
The FactoryTalk View SE generic display provides a graphical representation of the instrument based on the information contained within each Add-On Instruction. Navigation buttons at the top of the faceplate change the information displayed. Status displays show information using a bar graph, numeric values, and trend displays. Other displays show specific alarms and warning indications.

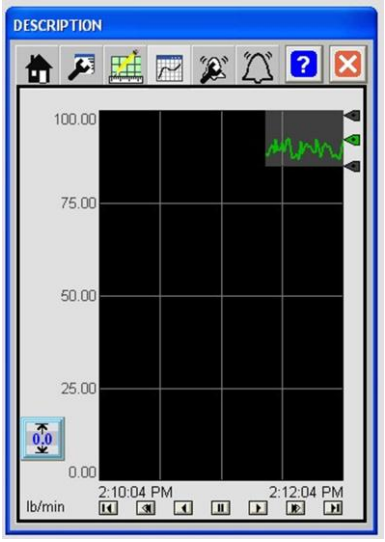
Some examples of predesigned faceplates are shown below.

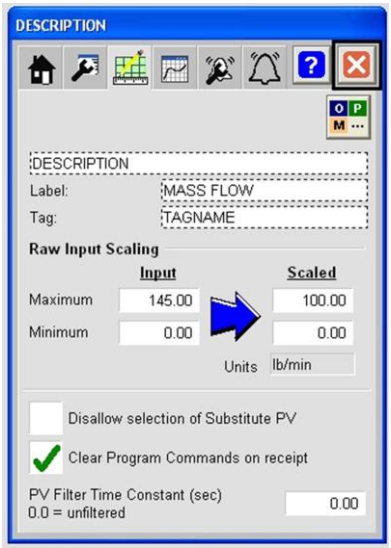












IMPORTANT A unique global object and faceplate are available for each field instrument due to the display of instrument-specific extended diagnostic information.

The faceplates provide the following information from the device:

- Process values
- PV fault status (communication fault)
- Device extended status

You can configure the faceplates to provide the following information:

- Tag name
- Description
- Engineering units
- Mode (such as operator or program)
- High-high, high, low, low-low alarms
- Over-range and under-range alarms
- Alarm delay
- Alarm hysteresis

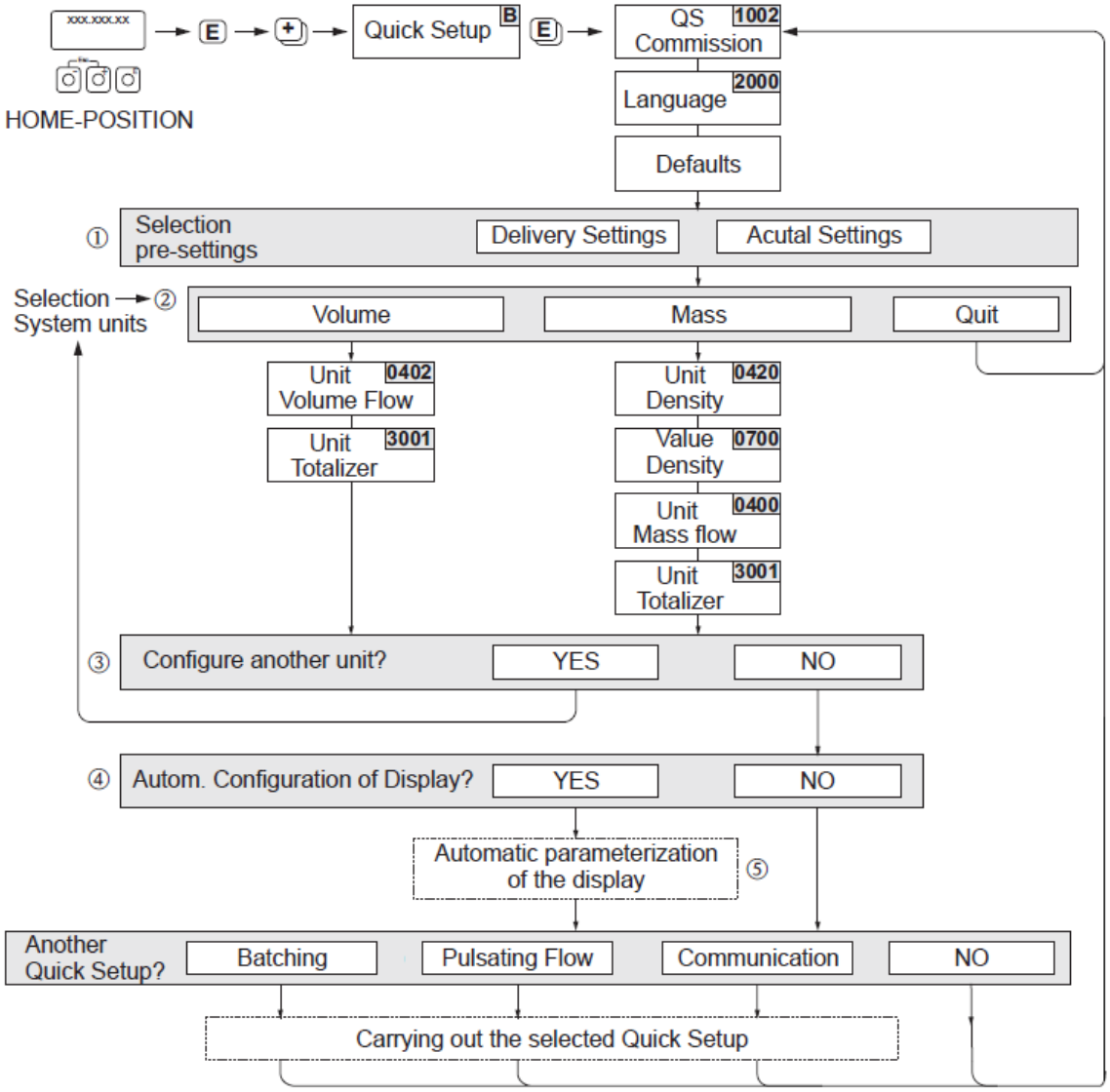
Configure the E+H Promag 53 Flowmeter (Optional Methods)

Optional methods for configuring the instrument, including the following:

- Quick setup menus on the local display
- Using the Webserver

Configure via Quick Setup Menus on Local Display (Optional)

On the local display of the field instrument, use the Quick Setup menus to configure instrument parameters.



For additional information see Additional Resources on page 47.

Configure via Webserver (Optional)

Overview of the Webserver Menus

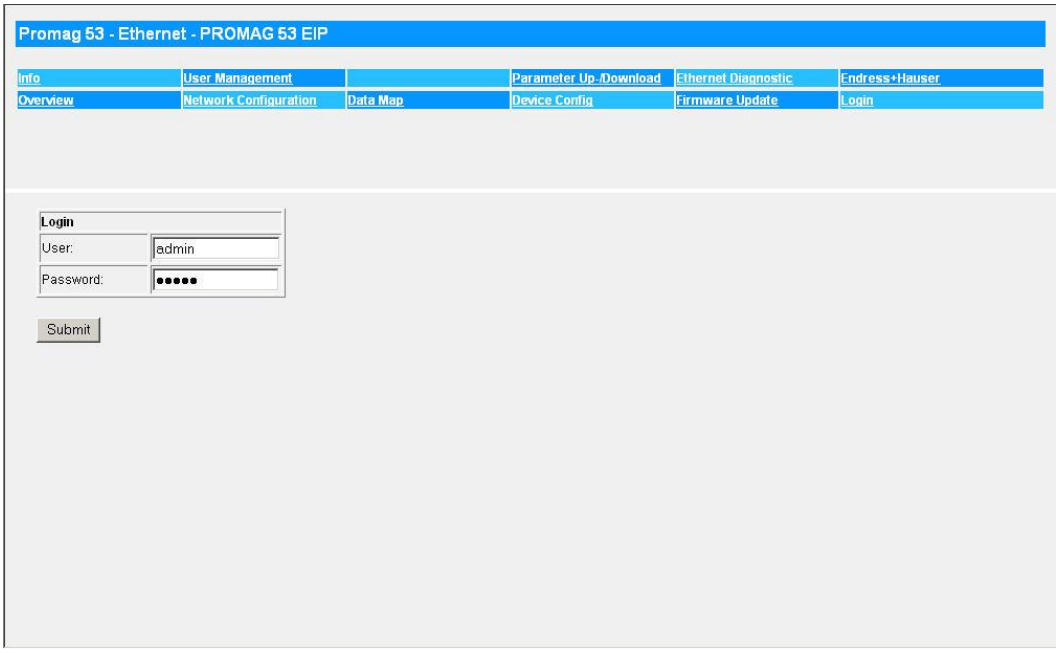
You can perform the following functions using the Webserver menus:

Menu	Description of Functions
Info	View the serial number of the device, Ethernet Hardware, and communication status.
User Management	Assign access authorization to the Webserver.
Parameter Up-/Download	Save a configuration parameter from the device or upload a configuration parameter to the device.
Ethernet Diagnostic	View the Ethernet diagnostics values.
Endress+Hauser	Access the Endress+Hauser homepage.
Overview	View information about the measuring device, the status, and measured values.
Network Configuration	Configure the device network.
Data Map	View or edit the input and output values for EtherNet/IP data transmission.
Device Config	View or configure the parameters of the measuring device.
Firmware Update	Update the firmware of the dual Ethernet module.
Login	Enable access to the Webserver.

The following sections describe each menu in more detail.

Access the Webserver

Select **Login** to enable access to the Webserver.



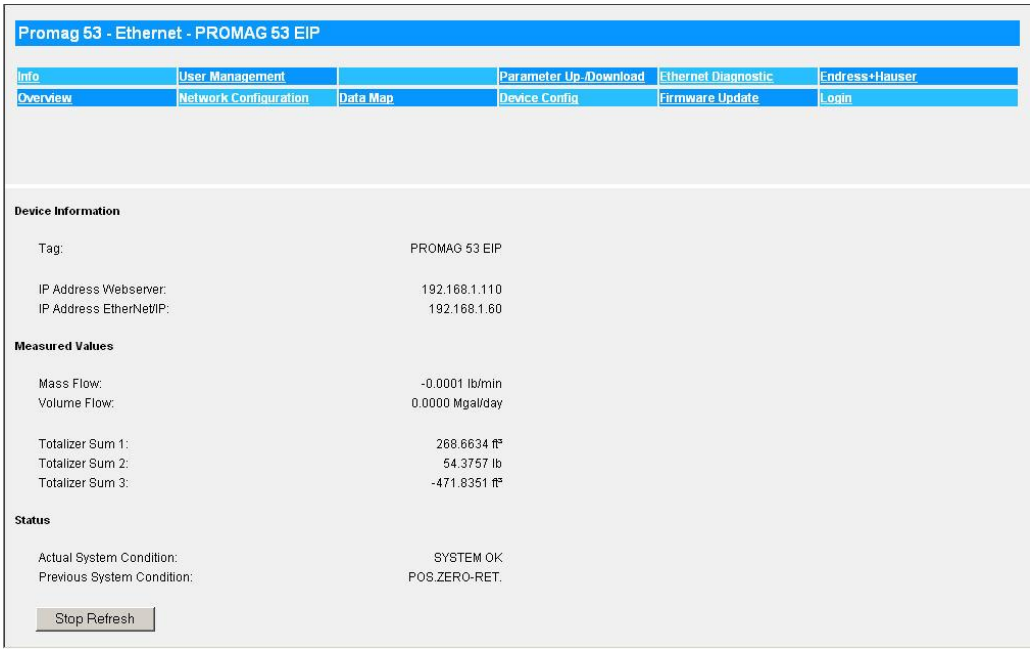
The configuration when delivered is as follows:

- User: admin
- Password: admin

IMPORTANT We recommend that you change the password for the administrator after configuring the user rights with the User Management Webserver menu, as described on page 38.

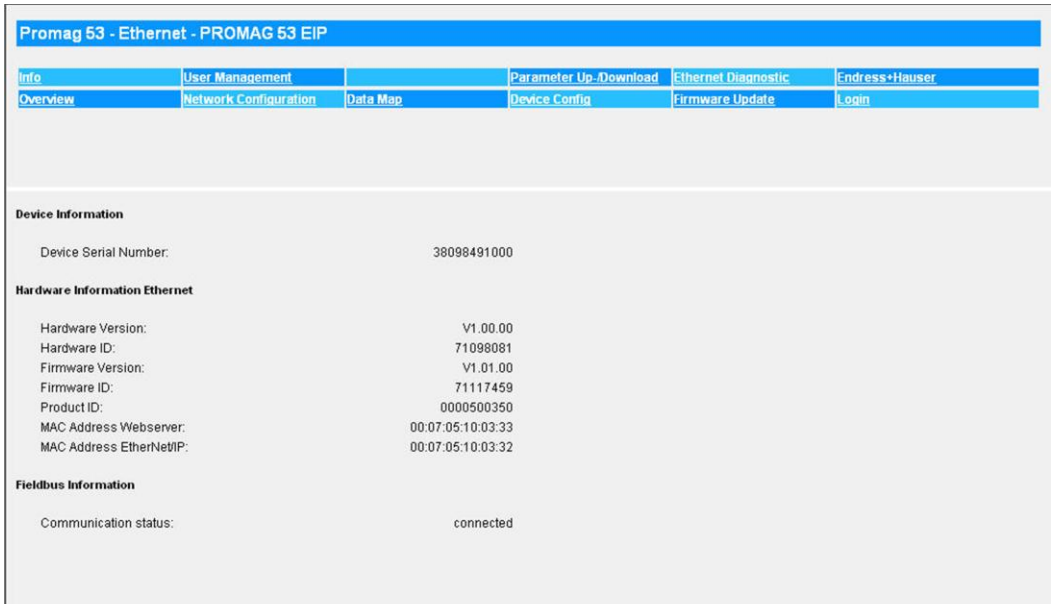
View an Overview of the Measuring Device

Select **Overview** to view information about the measuring device, the measured values, and the current system condition of the measuring device.



View Information

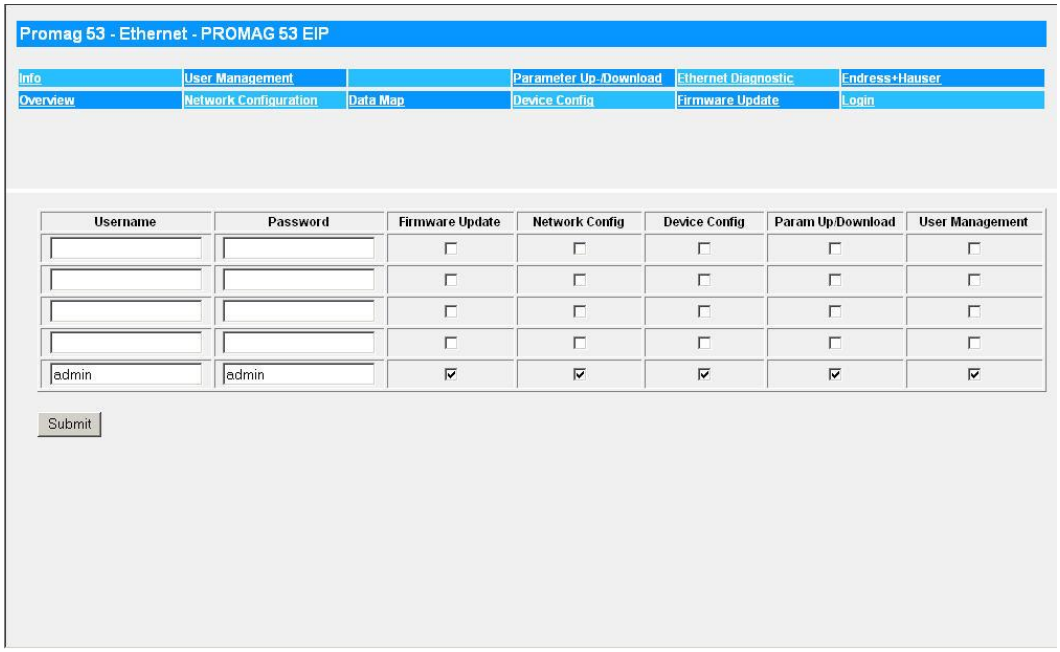
Select **Info** to view the serial number of the device, Ethernet hardware, and communication status, as shown below.



User Management

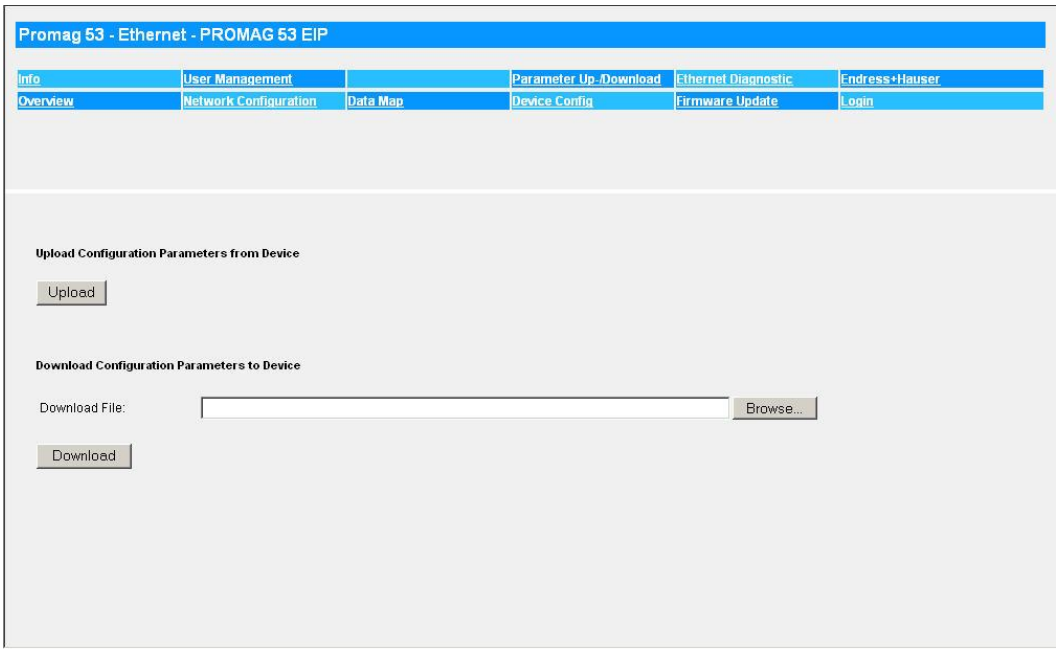
Select **User Management** to configure the access authorization for individual users or user groups and assign the user name and password.

To enable the appropriate menus for the users or user groups, select the individual categories, for example, **Firmware Update** or **Network Config**.



Upload or Download Configuration Parameters

Select **Parameter Up-/Download** to upload the configuration parameters from the device or download configuration parameters to the device.



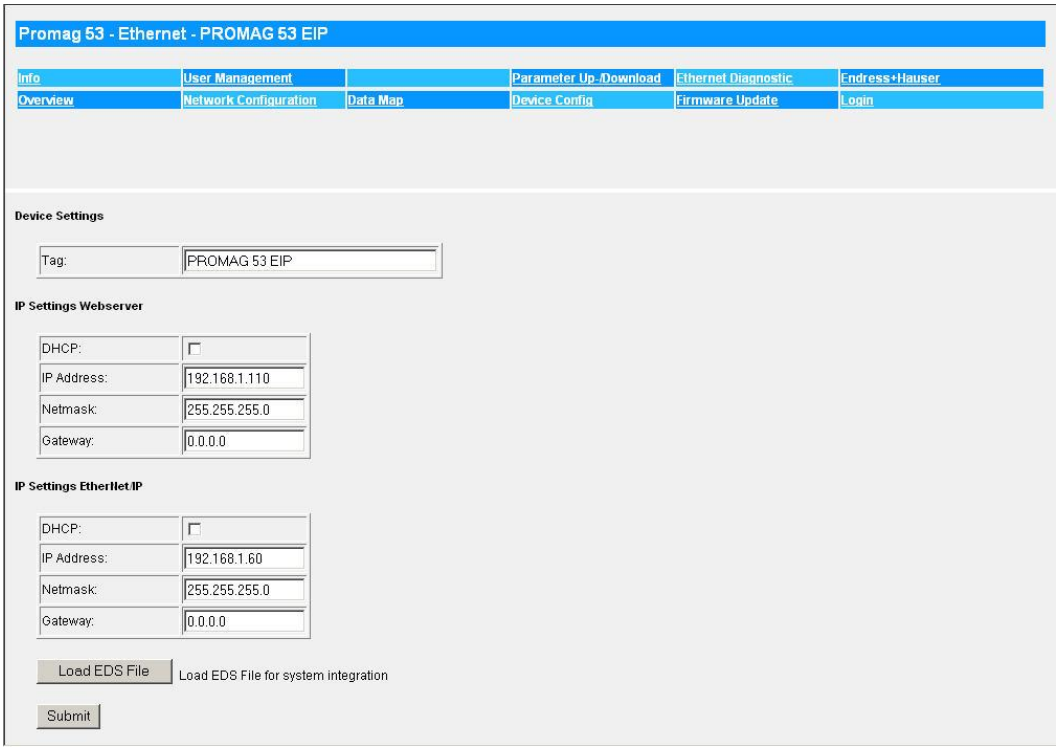
View Ethernet Diagnostic Values

Select **Ethernet Diagnostic** to view the Ethernet diagnostic values, as shown below:

Network Configuration

Select **Network Configuration** to perform the following functions:

- Assign a tag name to the measuring device.
- Activate the DHCP client function for the EtherNet/IP network and the Webserver.
- Configure the address, entering IP settings for the EtherNet/IP network and the Webserver.
- Upload the device-specific EDS (Electronic Data Sheet) file for integrating the measuring device into a network.



Data Map

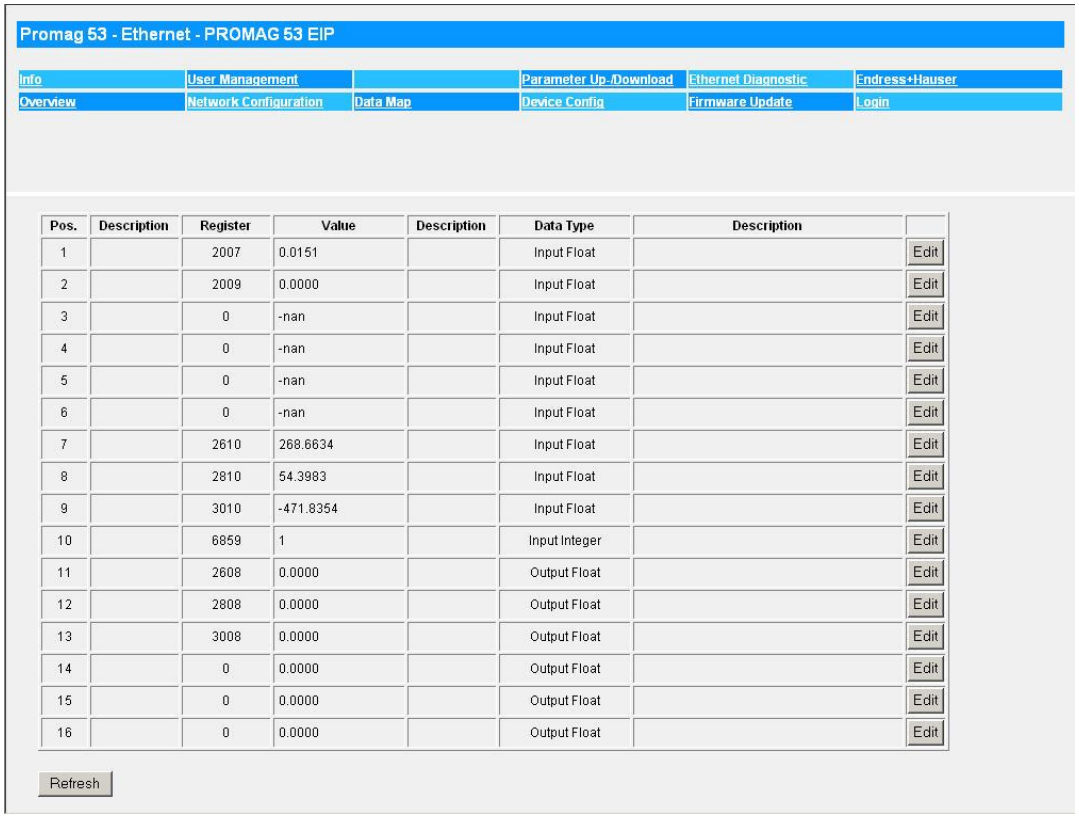
View the Data Map

Select **Data Map** to view the input and output values for EtherNet/IP data transmission and related information:

- Position number
- Description (1)
- Register number
- Current input and output values
- Description (2)
- Data type
- Description (3)

The Data Map is subdivided as follows:

- Positions 1 through 10 are input values sent by the measuring device to the controller
- Positions 11 through 16 are output values sent by the controller to the measuring device.

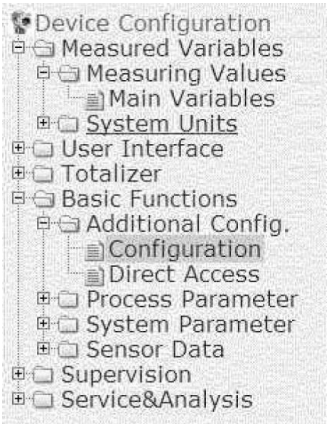


Configure the Data Map

The order and number of the input and output values can be adapted for EtherNet/IP data transmission.

IMPORTANT To configure the Data Map, write access to the related parameters must be enabled. See Additional Resources on page 47.

1. In the Webserver, select the **Device Config** menu.
2. In the Device Configuration menu, select **Basic Functions** > **Additional Config.** > **Configuration**.



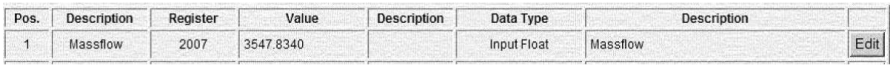
3. Scroll through the list until you reach the parameter, **SCAN LIST REG. 1**.

The parameters SCAN LIST REG. 1 through 16 correspond to Positions 1 through 16 in the Data Map.

For your reference, the Data Map is configured as follows when the measuring device leaves the factory:

Parameter in Additional Settings related register = position in the Data Map			Value Configuration When Delivered (an input or output value is assigned to the position in question)	
Parameter	**Register**	**Position in Data Map**	**Value = Register for**	**Input/Output Value**
SCAN LIST REG. 1	5001	Row 1	2007 = Mass flow	Input values
SCAN LIST REG. 2	5002	Row 2	2009 = Volume flow	
SCAN LIST REG. 3	5003	Row 3	–	
SCAN LIST REG. 4	5004	Row 4	–	
SCAN LIST REG. 5	5005	Row 5	–	
SCAN LIST REG. 6	5006	Row 6	–	
SCAN LIST REG. 7	5007	Row 7	2610 = Totalizer 1	
SCAN LIST REG. 8	5008	Row 8	2810 = Totalizer 2	
SCAN LIST REG. 9	5009	Row 9	3010 = Totalizer 3	
SCAN LIST REG. 10	5010	Row 10	6859 = Actual system condition	
SCAN LIST REG. 11	5011	Row 11	2608 = Reset totalizer 1	Output values
SCAN LIST REG. 12	5012	Row 12	2808 = Reset totalizer 2	
SCAN LIST REG. 13	5013	Row 13	3006 = Reset totalizer 3	
SCAN LIST REG. 14	5015	Row 14	0 = –	
SCAN LIST REG. 15	5016	Row 15	0 = –	
SCAN LIST REG. 16	5017	Row 16	0 = –	

The mass flow is displayed in the first row (Position 1) in the Data Map. This input value is the first value to be sent to the higher-order controller via EtherNet/IP data transmission.



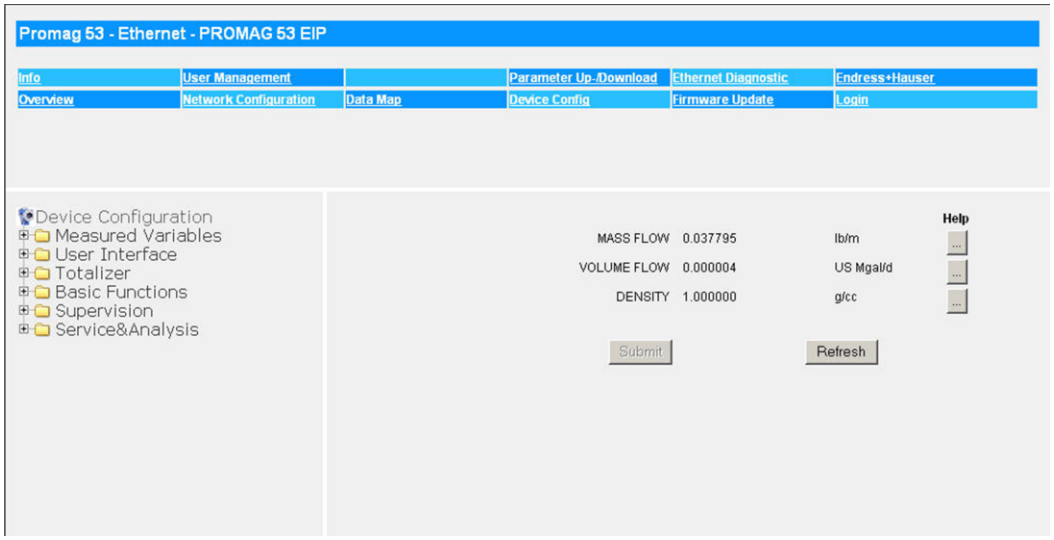
Pos.	Description	Register	Value	Description	Data Type	Description	
1	Massflow	2007	3547.8340		Input Float	Massflow	Edit

4. If you want to change the Data Map, you can configure it by entering the Register and Value. For more information, see Additional Resources on page 47.

Device Configuration

Select **Device Config** to perform the following tasks:

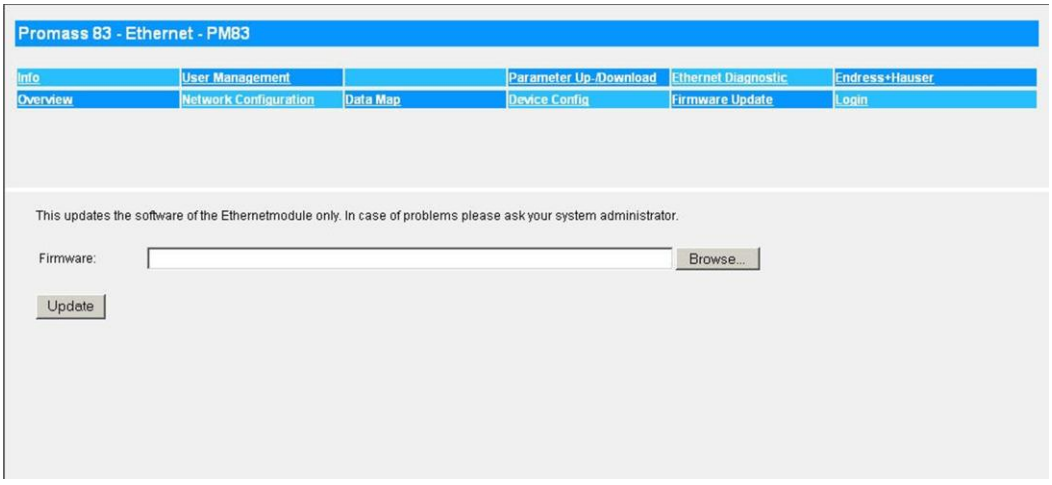
- Configure the parameters of the measuring device
- Show any system or process errors on the display
- Provide direct access to individual parameters of the measuring device



Firmware Update

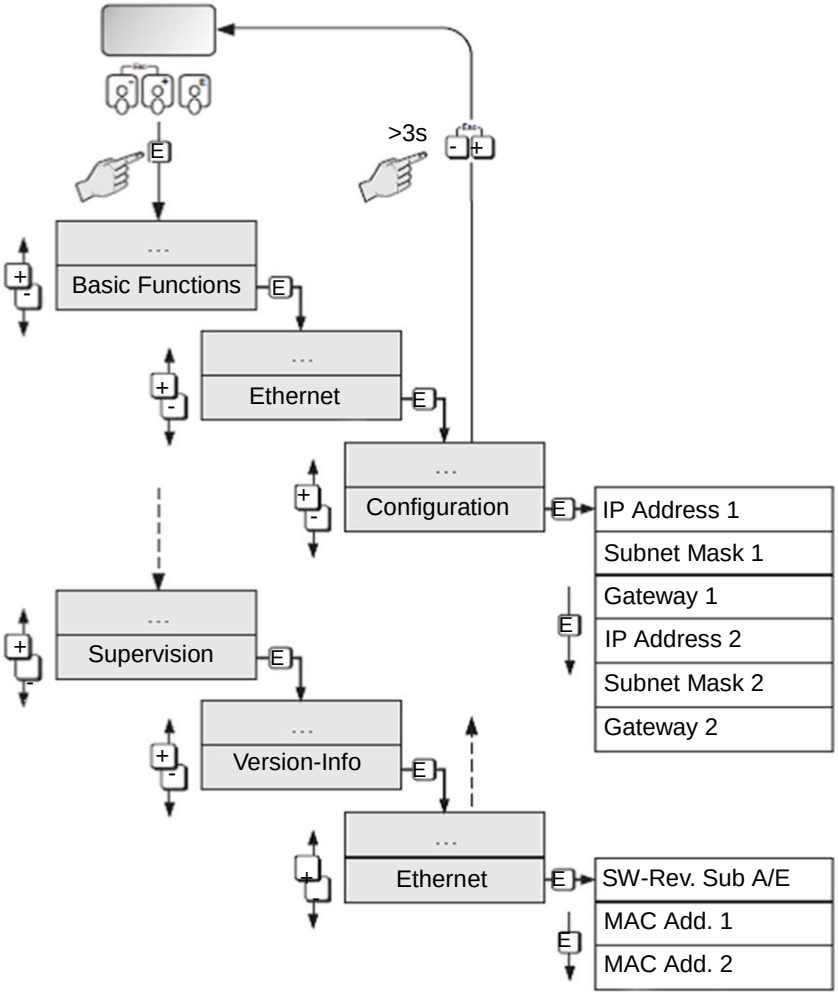
Select **Firmware Update** to update the firmware for the Ethernet module. The latest firmware file can be obtained at www.endress.com.

IMPORTANT The device software (amplifier, I/O module) is updated through the FXA193 service interface using the Flow Device FXA 193/291 DTM and the FieldCare plant asset management tool.



Appendix

View the IP Configuration Using the Promag 53 Local Display



Notes:

Additional Resources

Resource	Description
EtherNet/IP Field Instruments	
Proline Promag 50W, 53W Technical Information, publication T1046D/06/en	Specifications and details of the Promag 53E flowmeter
Proline Promag 53 Operating Instructions (Proline Promag 53 MODBUS RS485) publication BA117D	How to install, wire, configure, and operate a Promag 53 flowmeter
http://www.products.endress.com/ethernet-ip-eds	Download EDS and AOP files for field instrument
http://www.products.endress.com/flow	Information about Endress+Hauser flowmeters
Control System Components	
ControlLogix Controllers Installation Instructions, publication 1756-IN101	How to install and configure a ControlLogix controller.
ControlLogix Controllers User Manual, publication 1756-UM001	How to configure, operate, and maintain a ControlLogix controller.
ControlLogix Ethernet/IP Modules 1756-IN612B-EN-P	Installation Instructions, ControlLogix EtherNet/IP Communication Module
Operator Components	
FactoryTalk View Site Edition User's Guide, publication VIEWSE-UM006	How to design, develop, and deploy FactoryTalk View SE applications
Faceplates, Add-On Instructions, project files, etc. http://rockwellautomation.com/knowledge base (Login required. Please contact your sales representative.)	Download AOIs, Faceplates and Global Object graphics, and project files
Process Control Information	
Integrated Architecture for Process Control System Recommendations Manual, publication PROCES-RM001	Process system recommendations that organize Rockwell Automation products functionally as system elements, which can then be applied in proven, scalable configurations for continuous and batch control
http://www.rockwellautomation.com/process	Information about Rockwell Automation process control and Integration Documents
http://literature.rockwellautomation.com	Available Rockwell Automation publications, including Integration Documents
http://www.endress.com	Information about Endress+Hauser
http://www.endress.com/rockwell	Information about the partnership between Rockwell Automation and Endress+Hauser and the Integration Documents

Rockwell Automation Support

Rockwell Automation provides technical information on the Web to assist you in using its products. At http://support.rockwellautomation.com, you can find technical manuals, a knowledge base of FAQs, technical and application notes, sample code and links to software service packs, and a MySupport feature that you can customize to make the best use of these tools.

For an additional level of technical phone support for installation, configuration, and troubleshooting, we offer TechConnect support programs. For more information, contact your local distributor or Rockwell Automation representative, or visit http://support.rockwellautomation.com.

Endress+Hauser Support

Please refer to your local Endress+Hauser Sales Center for precise information regarding the service support available in your area or visit http://www.endress.com.

Installation Assistance

If you experience a problem within the first 24 hours of installation, please review the information that's contained in this manual. You can also contact a special Customer Support number for initial help in getting your product up and running.

United States	1.440.646.3434 Monday – Friday, 8 a.m. – 5 p.m. EST
Outside United States	Please contact your local Rockwell Automation representative for any technical support issues.

New Product Satisfaction Return

Rockwell Automation tests all of its products to ensure that they are fully operational when shipped from the manufacturing facility. However, if your product is not functioning and needs to be returned, follow these procedures.

United States	Contact your distributor. You must provide a Customer Support case number (call the phone number above to obtain one) to your distributor in order to complete the return process.
Outside United States	Please contact your local Rockwell Automation representative for the return procedure.

Endress+Hauser is trusted by more than 100,000 customers to make their processes safe, efficient and environmentally friendly. We offer a range of measurement products, including level, flow, pressure, temperature, analytical and complete engineered solutions designed to help customers acquire, transmit, control and record process information needed to manage operations in a safe, reliable and profitable manner.

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Rockwell Automation, Inc. (NYSE: ROK) is a leading global provider of industrial automation power, control and information solutions that help manufacturers achieve a competitive advantage in their businesses. The company brings together leading global brands in industrial automation which include Allen-Bradley controls and services and Rockwell Software factory management software.

www.rockwellautomation.com/solutions/process

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