

Part Number D301708X012

October 2021

IEC 62591 Wireless Interface Instruction Manual (for ROC800-Series and FloBoss™ 107)



Device Safety Considerations

- **Reading these Instructions**

Before operating the device, read these instructions carefully and understand their safety implications. In some situations, improperly using this device may result in damage or injury. Keep this manual in a convenient location for future reference. Note that these instructions may not cover all details or variations in equipment or cover every possible situation regarding installation, operation, or maintenance. Should problems arise that are not covered sufficiently in the text, immediately contact Customer Support for further information.

- **Protecting Operating Processes**

A failure of this device – for whatever reason -- may leave an operating process without appropriate protection and could result in possible damage to property or injury to persons. To protect against this, you should review the need for additional backup equipment or provide alternate means of protection (such as alarm devices, output limiting, fail-safe valves, relief valves, emergency shutoffs, emergency switches, etc.). Contact Remote Automation Solutions for additional information.

- **Returning Equipment**

If you need to return any equipment to Remote Automation Solutions, it is your responsibility to ensure that the equipment has been cleaned to safe levels, as defined and/or determined by applicable federal, state and/or local law regulations or codes. You also agree to indemnify Remote Automation Solutions and hold Remote Automation Solutions harmless from any liability or damage which Remote Automation Solutions may incur or suffer due to your failure to ensure device cleanliness.

- **Grounding Equipment**

Ground metal enclosures and exposed metal parts of electrical instruments in accordance with OSHA rules and regulations as specified in *Design Safety Standards for Electrical Systems*, 29 CFR, Part 1910, Subpart S, dated: April 16, 1981 (OSHA rulings are in agreement with the National Electrical Code). You must also ground mechanical or pneumatic instruments that include electrically operated devices such as lights, switches, relays, alarms, or chart drives.

Important: Complying with the codes and regulations of authorities having jurisdiction is essential to ensuring personnel safety. The guidelines and recommendations in this manual are intended to meet or exceed applicable codes and regulations. If differences occur between this manual and the codes and regulations of authorities having jurisdiction, those codes and regulations must take precedence.

- **Protecting from Electrostatic Discharge (ESD)**

This device contains sensitive electronic components which be damaged by exposure to an ESD voltage. Depending on the magnitude and duration of the ESD, it can result in erratic operation or complete failure of the equipment. Ensure that you correctly care for and handle ESD-sensitive components.

System Training

A well-trained workforce is critical to the success of your operation. Knowing how to correctly install, configure, program, calibrate, and trouble-shoot your Emerson equipment provides your engineers and technicians with the skills and confidence to optimize your investment. Remote Automation Solutions offers a variety of ways for your personnel to acquire essential system expertise. Our full-time professional instructors can conduct classroom training at several of our corporate offices, at your site, or even at your regional Emerson office. You can also receive the same quality training via our live, interactive Emerson Virtual Classroom and save on travel costs. For our complete schedule and further information, contact the Remote Automation Solutions Training Department at 800-338-8158 or email us at education@emerson.com.

Ethernet Connectivity

This automation device is intended to be used in an Ethernet network which **does not** have public access. The inclusion of this device in a publicly accessible Ethernet-based network is **not recommended**.

System Training

A well-trained workforce is critical to the success of your operation. Knowing how to correctly install, configure, program, calibrate, and trouble-shoot your Emerson equipment provides your engineers and technicians with the skills and confidence to optimize your investment. Remote Automation Solutions offers a variety of ways for your personnel to acquire essential system expertise. Our full-time professional instructors can conduct classroom training at several of our corporate offices, at your site, or even at your regional Emerson office. You can also receive the same quality training via our live, interactive Emerson Virtual Classroom and save on travel costs. For our complete schedule and further information, contact the Remote Automation Solutions Training Department at 800-338-8158 or email us at education@emerson.com.

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Chapter 1 – General Information

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1.1 Overview

This manual covers both the hardware – the IEC 62591 Wireless Interface module for the Series 2 ROC800 RTU, the IEC 62591 Wireless Interface module for the FloBoss™ 107 flow computer, and the Emerson™ Wireless 781S Smart Antenna (“781S”) – and the Field Tools software you need to configure and commission the hardware components.

Note: The IEC 62591 Wireless Interface uses open source software. Refer to [Open Source Software Listing document](#) (included in the same .zip file as this manual) for a complete listing of all components. Source code is available upon request by contacting Remote Automation Solutions’ Technical Support.

This chapter details the structure of this manual and provides an overview of the IEC 62591 Wireless Interface and its components.

The International Electrotechnical Commission’s 62591 standard (commonly called *WirelessHART*®) is a global IEC-approved standard that specifies an interoperable self-organizing mesh technology in which field devices form wireless networks that dynamically mitigate obstacles in the process environment. This architecture creates a cost-effective automation alternative that does not require wiring and other supporting infrastructure.

Remote Automation Solutions IEC 62591 implementation consists of an IEC 62591 Wireless Interface module installed in a Series 2 ROC800 or an FB107 device. The module is wired to a field-installed 781S. The wiring powers the 781S and transmits signals between the 781S and a number of field-installed *WirelessHART* devices. (*Figure 1-1* shows a ROC809/FB107, a 781S, and several *WirelessHART* devices.) The ROC800 implementation supports up to 60 devices at a 4-second communications rate, while the FB107 implementation supports up to 20 devices at a 2-second communications rate. Refer to the product data sheets for each device for additional device/communication rate values.

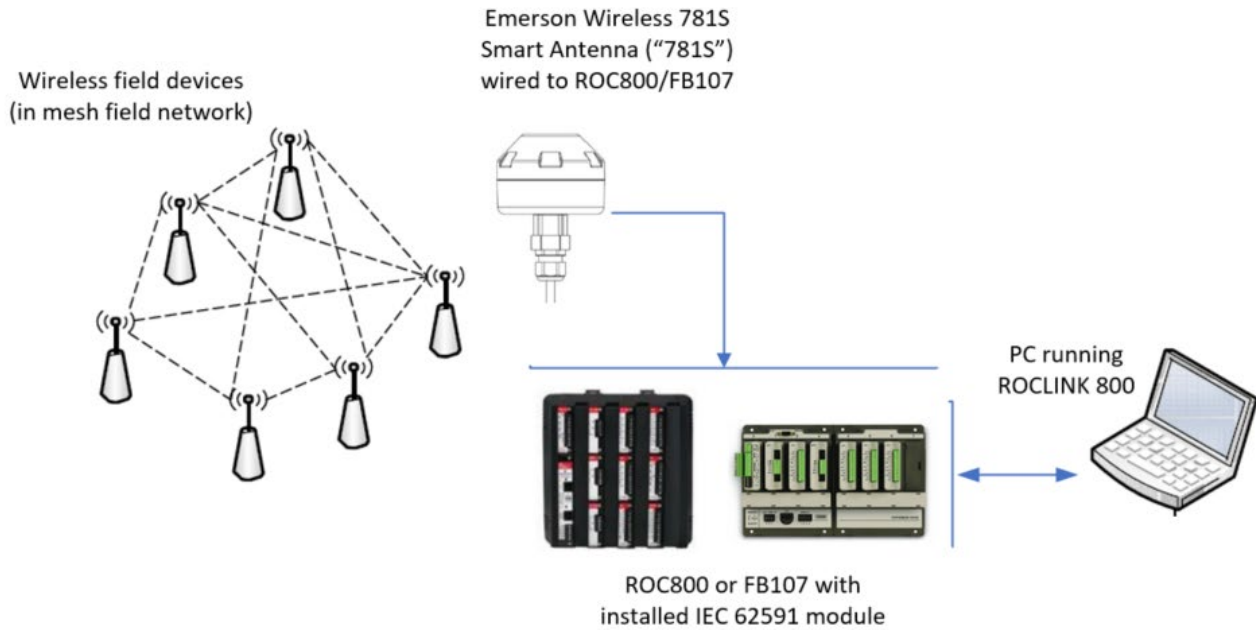


Figure 1-1. IEC 62591 Field Installation

1.2 Scope of Manual

This manual contains the following chapters:

Chapter 1 General Information	Provides an overview of the hardware for the IEC 62591 Wireless Interface.
Chapter 2 Installation	Provides information on installing the IEC 62591 Wireless Interface modules, installing the 781S, and wiring the 781S to the module.
Chapter 3 Configuring and Commissioning	Provides information using ROCLINK 800 to configure and commission the Wireless Interface.
Chapter 4 Troubleshooting	Provides information on diagnosing and correcting problems for the IEC 62591 Wireless Interface.

1.3 Hardware

The IEC 62591 Wireless Interface has two basic components: the IEC 62591 Wireless Interface module (“module”) and the 781S.

1.3.1 IEC 62591 Wireless Interface Module

Functionally, there is no difference between the module for the FB107 and the module for the ROC800. Each module uses the same printed circuit board (PCB) but has a slightly different plastic casing. See *Figure 1-2*; the ROC800 module is on the left and the FB107 module is on the right.

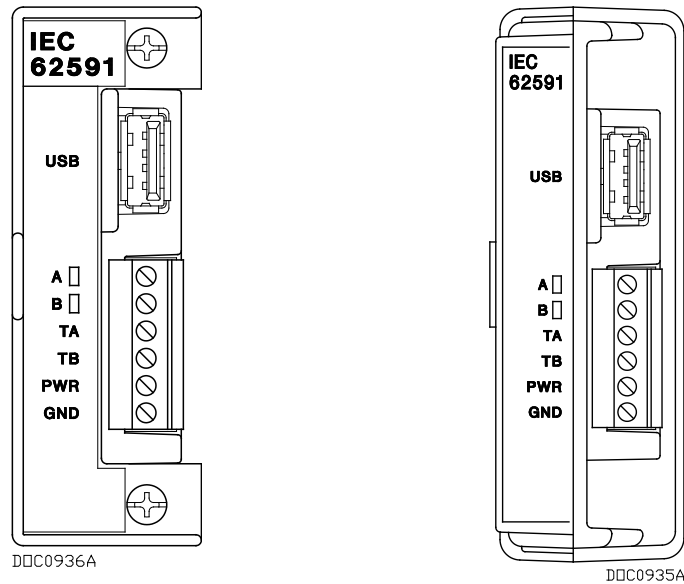


Figure 1-2. IEC 62591 Wireless Interface Module

You can place the module in any available slot on the ROC800 and in any available slot on the FB107. However, each ROC800 or FB107 can support only **one** IEC 62591 Wireless Interface module.

Note: For information on installing modules in the FB107, refer to the *FloBoss™ 107 Flow Manager Instruction Manual* (Part D301232X012). For information on installing modules in the ROC800, refer to the *ROC800-Series Remote Operations Controller Instruction Manual* (Part D301217X012).

USB Port The module's USB port supports firmware upgrades and provides debug information for product support. For further information, refer to *Chapter 3, Configuration and Commissioning*.

Caution Do not use the USB connector unless the area is known to be non-hazardous.

1.3.2 Emerson Wireless 781S Smart Antenna

The second component in the Wireless Interface is the 781S (see *Figure 1-3*). You install the 781S away from the controller in the optimal location for best network performance. A 4-wire connection between the module and the 781S provides the 24 Vdc power the 781S requires and transmits communication signals sent to the 781S from the various *WirelessHART* field devices.



Figure 1-3. Emerson Wireless 781S Smart Antenna

For instructions on installing the 781S in the field, refer to *Chapter 2, Installation*.

1.3.3 WirelessHART Field Devices

The two components of Remote Automation Solutions' IEC 62591 Wireless Interface provide you with the ability to manage signals from a network of *WirelessHART* field devices. The physical configuration of the IEC 62591 Wireless Interface is based on the controller (FB107 or ROC800) and the total number of field devices. A ROC800 implementation supports up to 60 devices, while a FB107 implementation supports up to 20 devices.

Remote Automation Solutions supports transmitters that conform to the *WirelessHART* protocol. For a current list of the transmitters Remote Automation Solutions has tested with the IEC 62591 Interface, refer to the following product data sheets (available at www.EmersonProcess.com/RemoteAutomation):

- *FloBoss™ 107 IEC 62591 Interface* (part D301713X012)
- *ROC800-Series IEC 62591 Interface* (part D301712X012)

1.4 Configuration/Commissioning Software (Field Tools)

Field Tools is a comprehensive software solution that folds several Remote Automation Solutions configuration software tools – ROCLINK™, ControlWave Designer, and TechView, among others – into one point-of-access tool. Field Tools simplifies the process of configuring both wired and wireless HART devices.

Once you have installed the IEC 62591 modules and wired them to the 781S, you use Field Tools to configure and then commission (“activate”) the entire network. Refer to *Chapter 3, Configuring and Commissioning*, for specific instructions.

1.5 Additional Technical Information

Refer to the following technical documentation (available at www.Emerson.com) for additional technical and most-current information:

Table 1-1. Additional Technical Information

Name	Part Number
ROC800-Series IEC 62591 Interface Product Data Sheet	D301712X012
FloBoss™ IEC 62591 Interface Product Data Sheet	D301713X012
FloBoss™ 107 Flow Manager Instruction Manual	D301232X012
ROC800-Series Remote Operations Controller Instruction Manual	D301217X012

Chapter 2 – Installation

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This chapter describes installing the IEC 62591 module in either a ROC800 or FB107, installing the Emerson Wireless 781S Smart Antenna (“781S”), and connecting the 781S to the IEC 62591 Wireless Interface module.

Note: This chapter covers the physical installation process. To configure and commission the IEC 62591 Wireless Interface, refer to *Chapter 3, Configuring and Commissioning*.



Caution

Module initialization can take up to five minutes. During this time, module configuration is not possible and the USB port on the module is not recognized. Attempting configuration before initialization is complete may cause errors on your network. The module is initialized when the Status field on the Network tab includes the word Online. If network errors persist after module initialization, power cycle your device and try again.

2.1 Installing the IEC 62591 Module

You install the IEC 62591 Wireless Interface module in a Series 2 ROC800 or an FB107 as you would any other module. However, you can install only **one** IEC 62591 module in either device.

ROC800 To install a module in the Series 2 ROC800:



Caution

If any processes require backup, arrange for that before removing power from the device.


1. Remove power from the device.
2. Remove the wire channel cover.

Note: Leaving the wire channel cover in place can prevent the module from correctly connecting to the socket on the backplane.


3. Perform one of the following:
 - If a module is currently in the slot, unscrew the captive screws and remove that module. Store it in an anti-static bag.
 - If the slot is currently empty, remove and store the module cover.
4. Insert the module through the module slot in the front of the ROC800 or EXP housing. Make sure that the label on the front of the module faces right side up (see *Figure 1-2*). Gently slide the module in place until it contacts properly with the connectors on the backplane.

Note: If the module stops and does not go any farther, **do not** force the module. Remove the module and see if the pins are bent. If the pins are bent, gently straighten the pins and re-insert the module. The back of the module must connect fully with the connectors on the backplane.

5. Tighten the captive screws on the front of the module.
6. Wire the module to the 781S (refer to *Wiring the Modules and 781S Link* section in this chapter).
7. Replace the wire channel cover.

 **Caution** Never connect the sheath surrounding shielded wiring to a signal ground terminal or to the common terminal of an I/O module. Doing so makes the module susceptible to static discharge, which can permanently damage the module. Connect the shielded wiring sheath only to a suitable earth ground.

FB107 To install a module in the FB107:

 **Caution** If any processes require backup, arrange for that before removing power from the device.

1. Remove power from the device.
2. Perform one of the following:
 - If a module is currently in the desired slot, remove the module and store it in an anti-static bag.
 - If the slot is currently empty, remove and store the module cover.

Note: When you install an IEC 62591 module in the FB107's slot 2, the firmware redirects the COM2 communications port on the CPU to the module installed in slot 2. To prevent this from occurring, install the module in slot 3 through slot 7.

3. Close the module cover (the piece with ridged edges) against the body of the module. This enables the locking mechanism to secure the module in the slot.
4. Insert the module in the slot on the base unit or expansion rack, making sure that the module faces the correct direction (see *Figure I-2*). Gently slide the module into place until it contacts properly with the connectors on the backplane.

Note: If the module stops and does not go any farther, **do not** force the module. Remove the module and see if the pins are bent. If the pins are bent, gently straighten the pins and re-insert the module. The back of the module must connect fully with the connectors on the backplane.

5. Wire the module to the 781S (refer to *Wiring the Modules and 781S* section in this chapter).

**Caution**

Never connect the sheath surrounding shielded wiring to a signal ground terminal or to the common terminal of an I/O module. Doing so makes the module susceptible to static discharge, which can permanently damage the module. Connect the shielded wiring sheath only to a suitable earth ground.

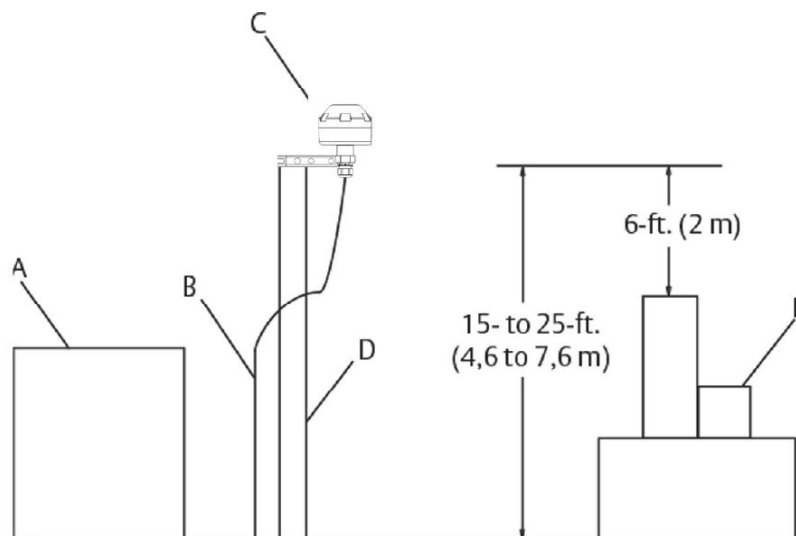
6. Proceed to *Installing the 781S*.

2.2 Installing the Wireless 781S Smart Antenna

This section covers where and how to install the 781S.

2.2.1 Optimizing the Location

Mount the 781S in a location that provides convenient access to the host system network (wireless I/O devices) and the network of wireless field devices. Find a location where the 781S has optimal wireless performance. Ideally, this is 4.6 to 7.6 m (15-25 ft) above the ground or 2 m (6 ft) above obstructions or major infrastructures. See *Figure 2-1*.



- A** Control room
- B** RS-485 cable
- C** Emerson Wireless 781S Smart Antenna
- D** Mast or pipe
- E** Infrastructure

Figure 2-1. Mounting the 781S

2.2.2 Positioning the 781S

Position the 781S vertically approximately 3 ft. (1 m) from any large structure, building, or conductive surfaces to allow clear communication with other devices. If you are installing multiple antennas, ensure that each antenna has at least 3 feet of horizontal separation from any other. See *Figure 2-1*.

2.2.3 Mounting the 781S

You typically mount the 781S on a pipe or mast using the clamps provided in the kit (see *Figure 2-2*).

1. Insert the U-bolt around a 2-in. pipe or mast, through the saddle, through the L-shaped bracket, and through the washer plate.
2. Use a ½-in. socket-head wrench to fasten the nuts to the U-bolt.
3. Secure the antenna to the L-shaped bracket with a 5/16-in. threaded bolt.
4. Use a 5/16 in. wrench to tighten the nuts to the housing.

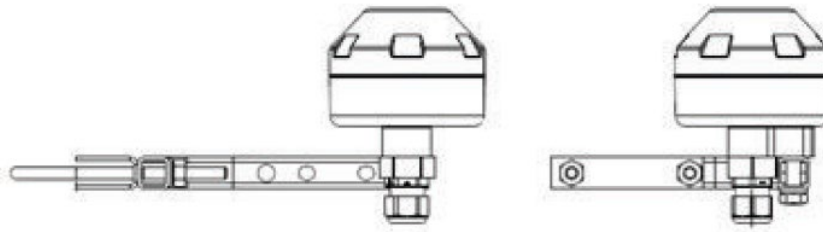


Figure 2-2. 781S Mounting

2.2.4 Grounding the 781S

For further information on grounding the 781S, refer to the documentation that accompanied the device (*Emerson Wireless 781S Smart Antenna Quick Start Guide*, part 00825-0700-4410, Rev AB).

2.3 Wiring the Module and 781S

Note: Although its housing is permanently sealed, the 781S is prewired and only needs to be connected to the module. Ensure that wiring between the IEC 62591 module and the 781S meets all appropriate local requirements (use of conduit, etc.).

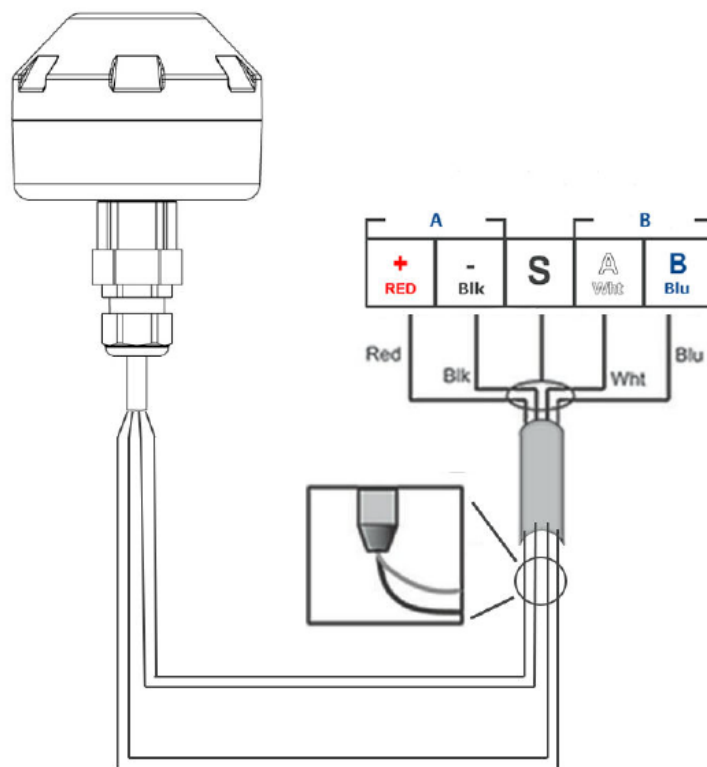
This section assumes you have already successfully installed the IEC 62591 module in either a ROC800 or a FB107 **and** installed the 781S in its permanent field location.

Communications between the IEC 62591 module and the 781S occur through an RS-485 connection. Remote Automation Solutions recommends that you use shielded, twisted-pair cable for I/O signal wiring. The twisted-pair minimizes signal errors caused by electromagnetic interference (EMI), Radio Frequency Interference (RFI), and transients. The removable terminal blocks on the module accept wire sizes 16 to 22 AWG.

2.3.1 Wiring the 781S

1. Power down the IEC 62591 module (if it is currently powered).
2. Connect the positive power lead to the “+” power terminal and the negative power lead to the “-” power terminal.
3. Connect the data + lead to the “A (+)” terminal and the data – lead to the “B (-)” terminal (see *Figure 2-3*).
4. Connect the grounding wire to the modules and seal any unused conduit connectors.

If you are connecting multiple antennas, repeat this process for terminal connection 2.



- A. Power output
- B. RS-485 comm

Figure 2-3. 781S Power and Data Wiring

2.3.2 Wiring the IEC 62591 Module to the 781S

Note: Although its housing is permanently sealed, the 781S is prewired and only needs to be connected to the module. Examine the two leads coming out of the 781S and identify which are the communication (RS-485) leads (white and blue) and the power leads (red and black).

Since the ROC800 and FB107 modules use the same PCB, you wire the modules to the 781S in the same way. *Figure 2-4* shows wiring for the FB107 IEC 62591 module; *Figure 2-5* shows wiring for the ROC800 IEC 62591 module.

Note: The wire loop between connectors 1 and 3 and between connectors 2 and 4 provides termination for the RS-485 connections between the 781S and the module.

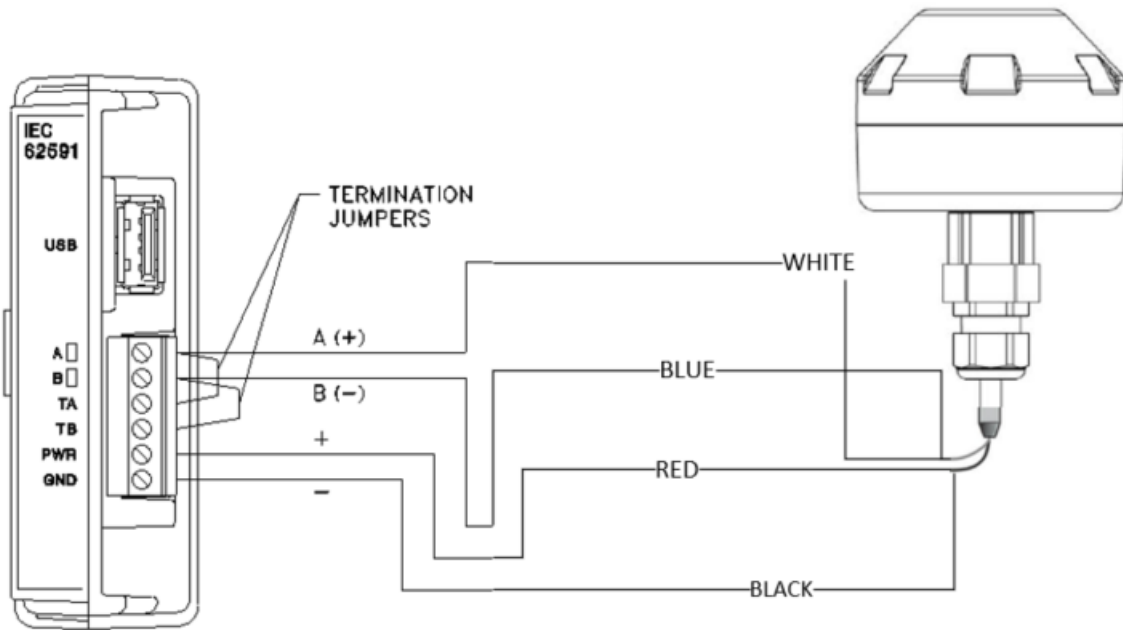


Figure 2-4. FB107 IEC 62591 Module Power and Data Wiring to 781S

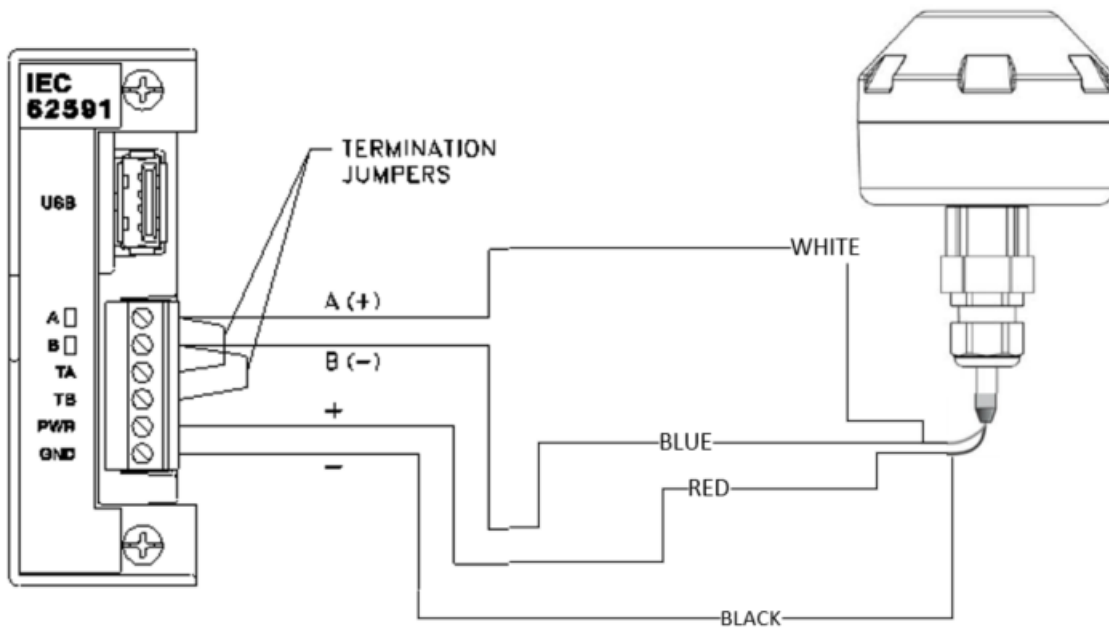


Figure 2-5. ROC800 IEC 62591 Module Power and Data Wiring to 781S

2.4 Preparing for Configuration and Commissioning

Once you have completed the wiring between the 781S and the ROC800 or FB107, re-attach the wire covers (on the ROC800) and apply power to the ROC800 or FB107.

Proceed to *Chapter 3*.

Chapter 3 – Configuration and Commissioning

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After you have wired the Emerson Wireless 781S Smart Antenna (“781S”) to the IEC 62591 module and applied power to the module, you use the AMS Device Configurator to configure transmitters for the wireless network. You then use ROCLINK 800 to activate (or “commission”) each *WirelessHART* device into the entire network.

Note: Refer to the *AMS Device Manager Installation Guide* (part AW7030M01V131EN) for complete instructions on using the AMS Device Configurator to configure the *WirelessHART* devices with the long tag name, Network ID, and Join Key.

Keep in mind that for **each** device configuration and commissioning is a two-step process:

1. Configure each device using the AMS Device Configurator and a HART modem (or you can use a hand-held configuration device such as the Emerson 375 or 475 Field Communicator). During this step you individually add network information (Network ID, Join Key, and long tag name) to the field-based wireless device.
2. Use ROCLINK 800 to configure the network by commissioning the device as a working part of the network.

Note: The commissioning process assumes that you have already placed and powered up several *WirelessHART* devices in the field.

3.1 Overview

As indicated previously, a wireless interface network consists of wireless devices (up to 60 in a ROC800-based network or up to 20 in an FB107-based network), a 781S, and an IEC 62591 module installed in an FB107 or a ROC800. Use a PC running ROCLINK 800 for the configuration and commissioning tasks described in this chapter.

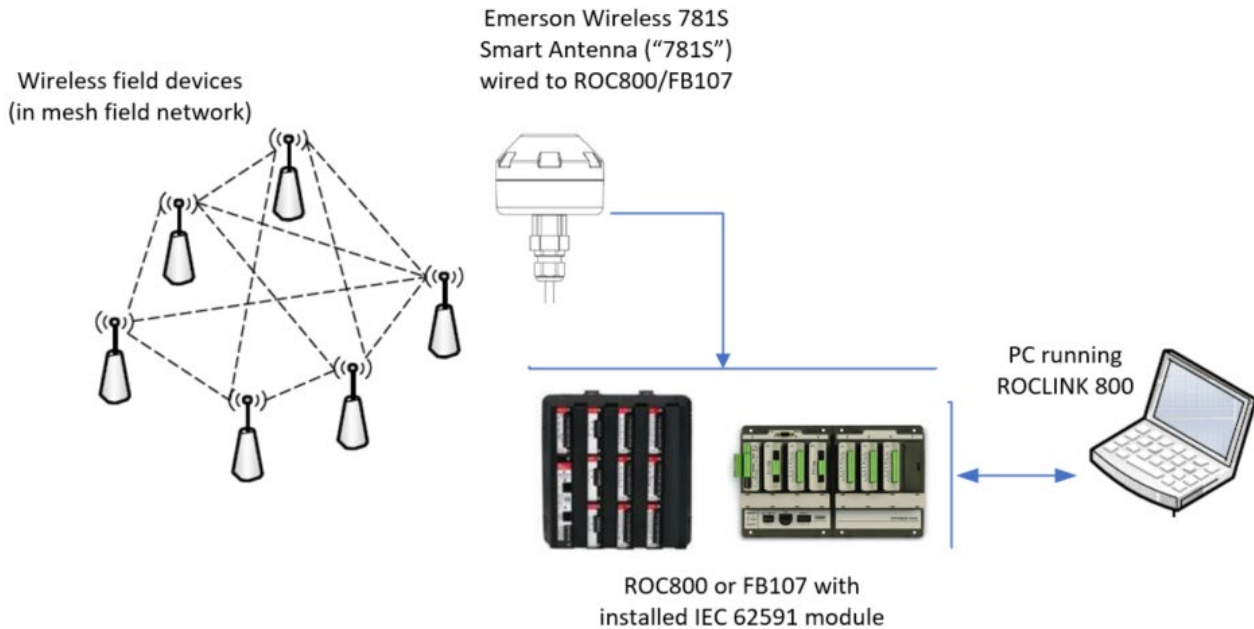


Figure 3-1. IEC 62591 Wireless Interface

3.1.1 Configuring Devices and Planning the Network

Before you can use a *WirelessHART* device, you must first configure it. For this task (which is outside the scope of this manual) you may use a hand-held field communicator (such as Emerson's 375 or 475 Field Communicator) or the AMS Device Configurator. Ideally, you configure individual devices at a workbench in a protected environment, although you can field-configure a device you might add to the network. During the configuration, you identify the Network ID to which the device eventually belongs and provide the network-specific Join Key (see *Network ID and Join Key*).

During configuration, you also give the wireless device a 32-character tag based on its use or location (such as *PUMP1TEMPORARY*, *PUMP2WESTPRESSURE*, or *WELL02NORTHLEVEL*). The serial number for the device provides further identifiers the configuration software uses. We also suggest you use all capital letters for the tags, which correlates to the way the system stores this information.

Notes:

- Tag names cannot exceed 32 characters, and tag names must be unique to the wireless network.
- Use upper-case (capital) letters for tags names; this corresponds to how the program internally stores tag names.

The individual devices should fit into a general organizational plan for your fields. By identifying logical groups and pre-assigning devices to those groups, you can eliminate guesswork during commissioning, efficiently define networks, and more quickly begin to acquire data.

Note: An important restriction in planning networks is to know that a network can have only **one** Network ID, **one** Join Key, **one** 781S, and **one** controller (a ROC800 supporting up to 60 devices or a FB107 supporting up to 20 devices).

3.1.2 Network ID and Join Key

A Network ID defines one logical grouping of *Wireless*HART devices, all of which send their information to one 781S. (You define a device's Network ID when you first configure the device using a 375 or 475 Field Communicator or the AMS Device Configurator.)

Note: A Network ID **cannot** be all zeros (such as 00000).

The Join Key is the password that allows a device to access its defined network. During configuration, you also provide the device with its network-specific Join Key. During configuration and commissioning, ROCLINK 800 uses the Network ID and Join Key to create the network (see *Figure 3-3*).

3.1.3 Rosemount THUM Adapter

Note: Each THUM adapter supports only one **wired** HART device.

Rosemount's THUM Adapter provides wireless connectivity to a wired HART device. If you have already commissioned a wired HART device into your network and want to connect it to a THUM adapter, you must first decommission the device, attach the THUM adapter, and then re-commission the device. For further information about THUM adapters, refer to:

- *Emerson™ Wireless 775 THUM™ Adapter Reference Manual*, 00809-0100-4075
- *Emerson™ Wireless 775 THUM™ Adapter Quick Installation Guide*, 00825-0100-4075

The Quick Installation Guide is packed in the box with the THUM; the Reference Manual is available through the Emerson website (www.Emerson.com).

3.2 IEC 62591 Module Interface (FB107)

The FB107 automatically recognizes the IEC62691 module when you install it and adds it to the graphical interface. When you click on the module, ROCLINK 800 displays the main IEC 62591 screen below the image of the FB107:

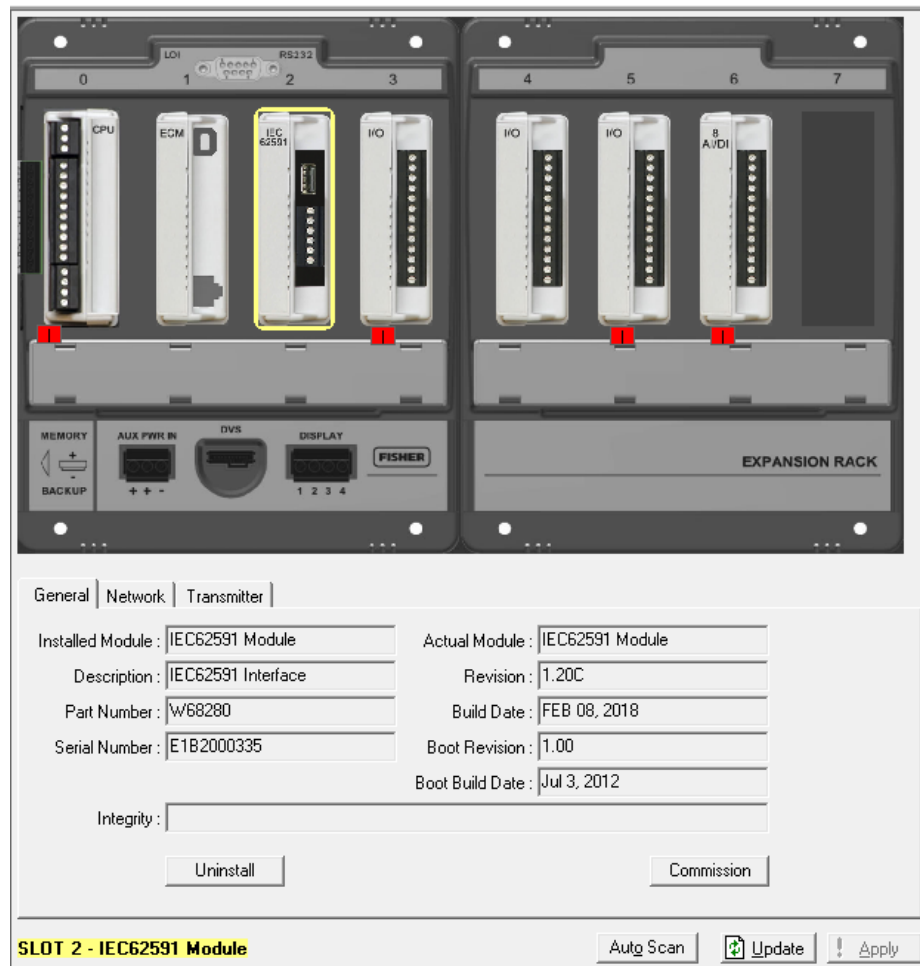


Figure 3-2. FB107 Graphic Interface with IEC 62591 Module

The module screen has three tabs:

Tab	Description
General	Provides read-only statistical information about the IEC 62591 module.
Network	Defines the Join Key and Network ID for the network. These values must correspond to the Network ID and Join Key in the devices.
Transmitter	Lists all transmitters defined in the network. Click on a defined device to access the Transmitter screen, which displays statistics and information for that transmitter.

In addition to several display-only fields, the General screen has these fields:

Field	Description
Integrity	Displays any integrity problems with the wireless network. Note: If a transmitter has a problem, this field turns red and displays a message identifying the transmitter at fault (here, the transmitter in logical position 2).
Uninstall	Click to uninstall the IEC 62591 module and restore factory defaults. Since the FB107 automatically recognizes installed modules, it immediately redisplayes the module in the graphic interface. Note: Click this button to reset all values for the module back to factory default. You must redefine all values for your network.
Commission	Click to access the Commission screen, which displays all devices the 781S has identified for the network.

To commission the network, select the **Network** tab. The Network screen displays:

The screenshot shows a software interface with three tabs: 'General', 'Network', and 'Transmitter'. The 'Network' tab is active. It contains the following fields and controls:

- Network ID: 6969
- Join Key (hex): 12345678 12345678 12345678 12345678
- Status: On-line, Active Advertising Enabled
- Enable Active Advertising button
- Bottom bar: SLOT 2 - IEC62591 Module (highlighted in yellow), Auto Scan, Update, and Apply buttons.

Figure 3-3. Network screen



Caution

Configure all devices belonging to a site to use the same Network ID and Join Key. To avoid network errors, configure all devices in adjacent networks to use a different Network ID and Join Key.

Note: The values initially shown in the Network ID and Join Key fields in *Figure 3-3* are **default values**. You must change these to your network-specific ID and join keys **and** save the configuration to flash memory. This prevents the default values from overwriting your network-specific values during a cold start.

Complete the Network ID and Join Key fields with the Network ID and Join Key you have defined for the transmitters.

Field	Description
Network ID	<p>Enter a five-character Network ID. Valid values are 1 to 36863.</p> <p>Each IEC62591 Module / RTU can only have a single Network ID. The "grouping" should be related to the control/monitoring network for a given RTU.</p> <p>For example if two RTUs are installed at a site, each grouping should be the set of meter runs each RTU controls.</p> <p>Note: A Network ID cannot be all zeros (such as 00000).</p>
Join Key (hex)	<p>Enter a valid Join Key to permit the device to access its defined network.</p> <p>A Join Key is a 128-byte value expressed as four 32-bit portions. As shown in the example, you can use zeros for the first three parts of the Join Key.</p>
Status	<p>This read-only field shows the current status of the connection between the network and ROCLINK 800.</p>
Enable Active Advertising	<p>Click to enable active advertising, in which the IEC 62591 module continuously broadcasts network information. This enables new devices to quickly join the network. Active advertising broadcasts network information continuously for approximately 30 minutes.</p> <p>Additionally, active advertising occurs automatically when:</p> <ul style="list-style-type: none"> ▪ You first power up or restart the IEC 62591 module; or ▪ A device leaves the network (which allows communications to re-establish).

Click **Apply**. As the 781S processes your request to add the device to the network, the value displayed in the Status field changes:

- **Initializing.** The module is in the boot-up sequence. The module sends info (Part Number, firmware version, etc.) to the RTU. During this time, the module is not yet communicating with the RTU. Once the code starts up (usually after 30-60 seconds), the module switches from **Initializing** to **Configuring Network**.

- **Configuring Network.** The code is running and the module is attempting to pull configuration info from the RTU. If the **Initializing** status is taking too long, it means that either
 - the board is not completely booting up, or
 - the application code is not correctly loading. As a result, the sequence cannot complete.
- **Detecting radio.** The 781S recognizes the network.
- **On-Line.** When the Status field shows **On-line**, you can begin commissioning devices for the network.

Select the **General** tab and click **Commission**. The IEC 62591 Module screen displays.

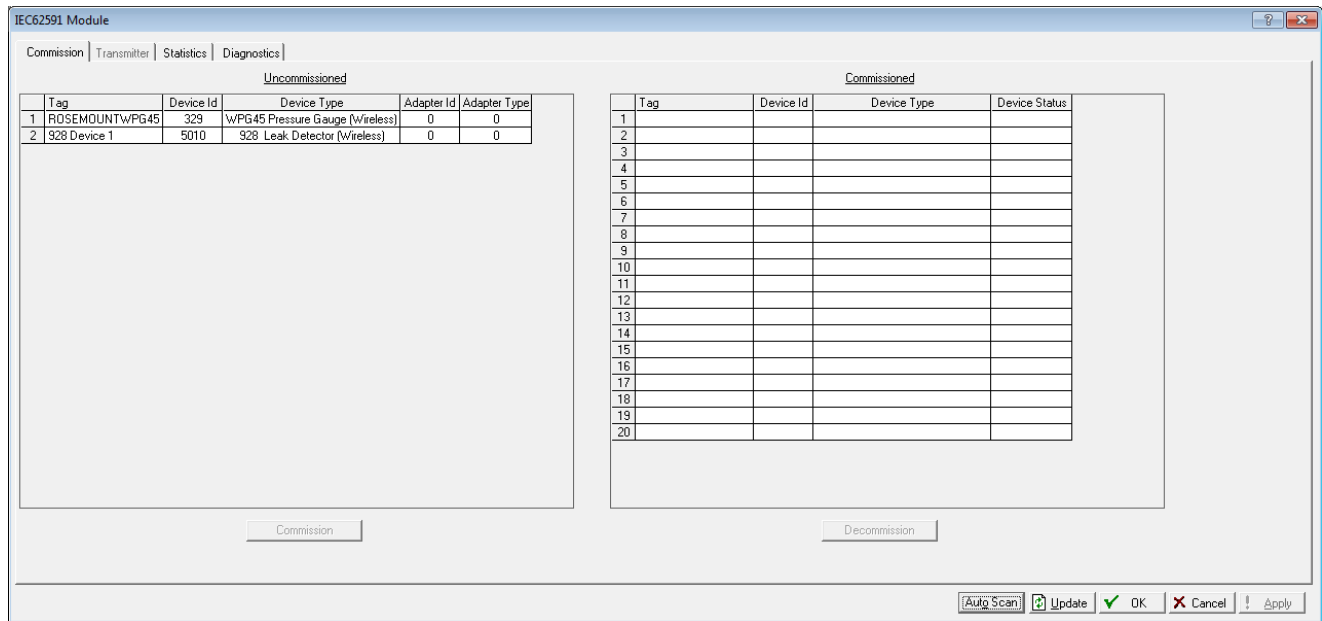


Figure 3-4. IEC 62591Module

The screen has four tabs:

Tab	Description
Commission	Auto-detects available uncommissioned devices and enables you to add them to the defined network.
Transmitter	Accesses both read-only statistics and modifiable parameters for a specific device associated with the network. Note: You must first commission a device before you can access this tab.
Statistics	Provides read-only statistics the 781S has accumulated for the network. Click Reset Statistics to reset these values at any time.
Diagnostics	Describes how to use the module's USB port to generate log information for resolving issues.

The following sections discuss how to use these tabs to manage your network.

3.2.1 Commissioning Devices

You use the Commission tab to individually or collectively commission devices.

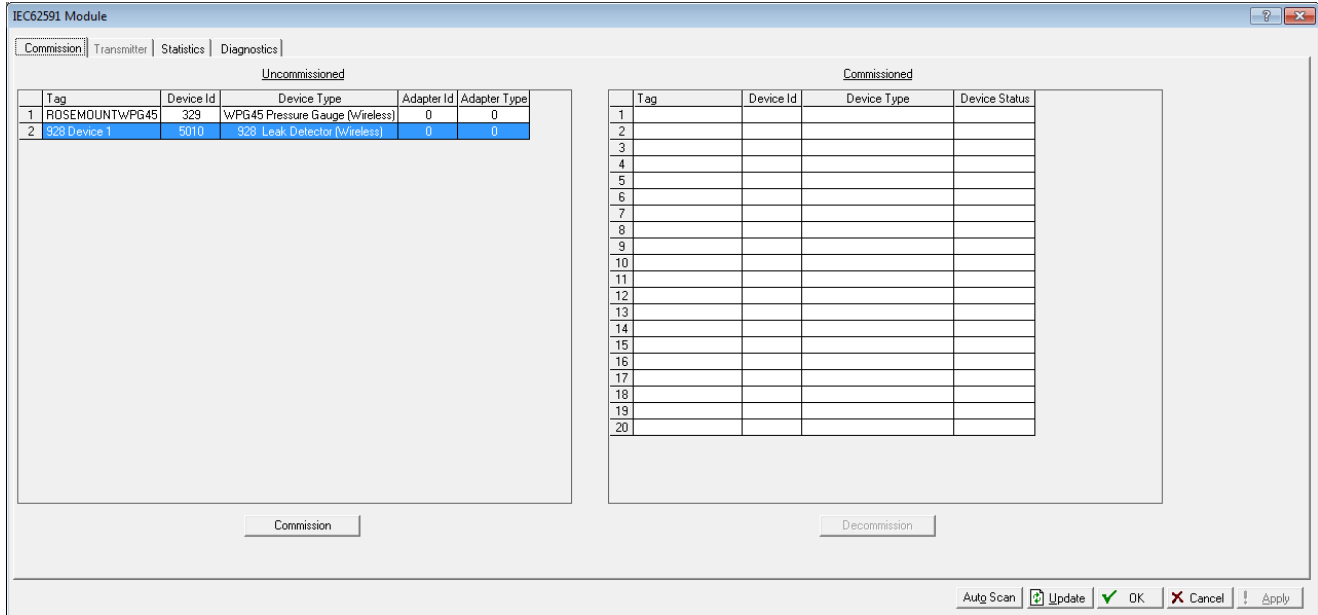


Figure 3-5. Commission tab

This screen has two lists, **Uncommissioned** and **Commissioned**. When the Status field on the Network screen displays **On-line**, the 781S automatically begins adding devices to the Uncommissioned list. To commission a device, you move it to the Commissioned list in either of two ways:

- Select the device (see [Figure 3-5](#)) and click **Commission**. ROCLINK 800 places the device in the **first available** empty row on the Commissioned list.

Notes:

- To select several devices, press **Ctrl** and left-click each additional device. Click **Commission** when you have finished selecting devices.
- When commissioning a HART device connected to an Emerson Wireless 775 THUM Adapter, the system detects **both** the HART device and the THUM Adapter and places them both in the Uncommissioned list. Commission the device as normal. Commission the THUM Adapter **only** if you need the Adapter's process data.
- Select the device and “drag” it to a position on the Commissioned list.

- The device does not disappear from the Uncommissioned List until communication issues have been resolved.

The number of rows on the Commission screen correlates to the number of wireless devices your controller supports. Each row represents a specific *logical* position. If, during commissioning, you want the controller to store information from a specific wireless device in a specific *logical* position, you can commission that device to that logical by selecting that device and “dragging” it to the appropriate position on the Commissioned list.

Note: Once you commission a device to a particular logical, you **cannot** drag it another logical position. You must **first** decommission the device and then re-commission it to the new logical position.

After a few minutes, the device moves from the Uncommissioned to the Commissioned list:

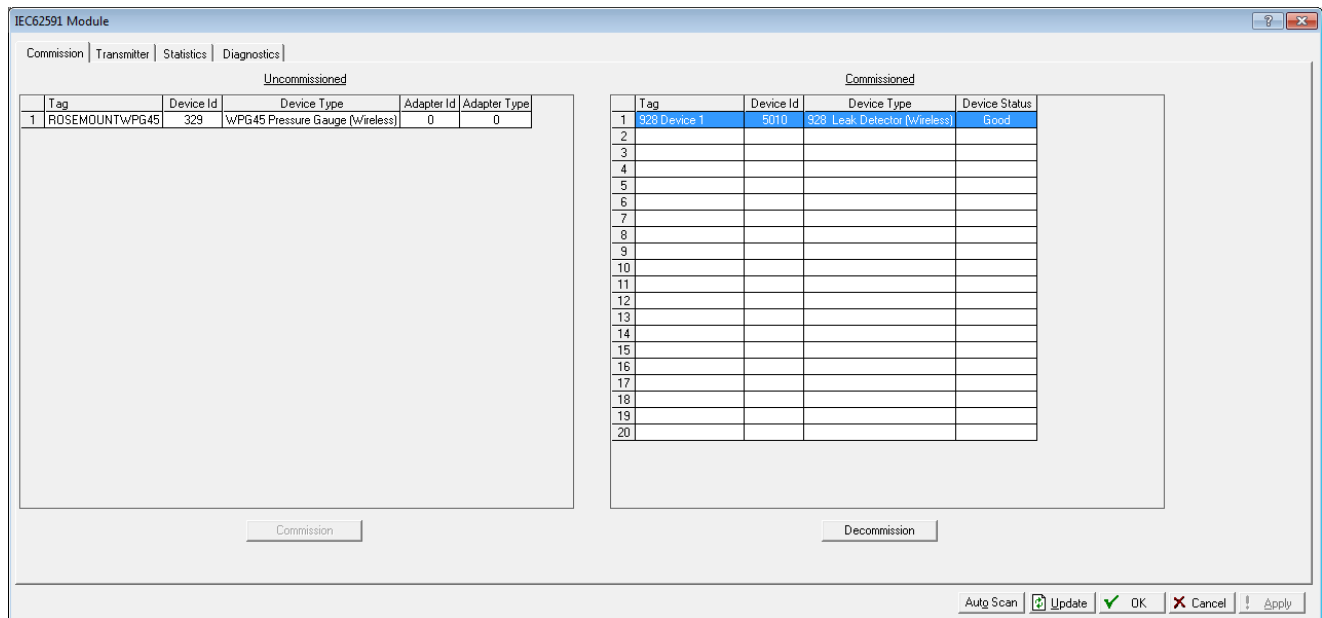


Figure 3-6. Commissioned Device

Another indicator that the device has been successfully commissioned is the activation of the **Transmitter** tab.

Note: If you change the tag for a transmitter using either a hand-held 375/475 device or the AMS Device Configurator, the new tag may not display until the device appears on the Commissioned list.

Decommissioning a Device

If you decide to remove a device from your network, use this screen to decommission the device. Select the device and drag it to the Uncommissioned list.

Note: Remember to adjust or redefine any TLPs you have designated to accumulate the information for the decommissioned device's logical position.

Replacing a Device

If a particular wireless device in your network stops working, you can easily replace it with a similar device.

Note: Using this option **does not** require you to adjust or redefine any TLPs you have designated to accumulate the information for the decommissioned device's logical position. The new device assumes all parameters you have defined for the old device.

First, configure the device for the network, assigning it the appropriate Network ID and Join Key. Install the device in the field. Start ROCLINK 800, select the IEC 62591 module, and display the Commission tab. When the replacement device appears on the Uncommissioned list, select it and drag it **on top of** the non-working device. This tells ROCLINK 800 that you want this new device to assume all the defined characteristics of the old device.

ROCLINK 800 displays a verification dialog to prevent you from accidentally replacing a device:

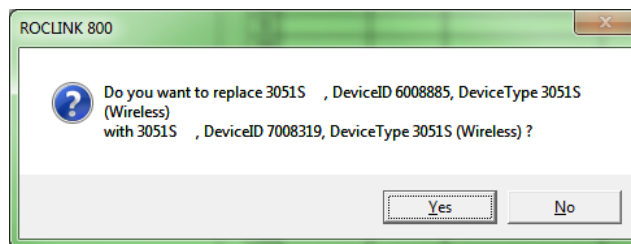


Figure 3-7. Device Replacement Verification Dialog

Click **Yes** to complete the replacement. ROCLINK commissions the new device and automatically decommissions the old device, moving it to the Uncommissioned list.

3.2.2 Managing Device Information

Once you have commissioned a device, the Transmitter tab can provide you with a variety of information on that device. Select the **Transmitter** tab to display the Transmitter screen:

Note: When viewing a transmitter connected to a THUM adaptor, **only** the process variables are returned to the IEC62591 module.

Figure 3-8. Transmitter screen

Notes:

- You can also double-click a commissioned device on the Commission screen to immediately access the Transmitter screen for that device.
- If you use ROCLINK to change transmitter values when the transmitter is busy with other communications tasks, the transmitter may fail to update and reverts to previous values. If this occurs, you can use ROCLINK to re-attempt the update when the transmitter is not busy with other communications tasks. Alternately, avoid this issue entirely by using a 475 Field Communicator to change transmitter values.

Field	Description
Transmitter	Displays the 40-character alphanumeric tag associated with the transmitter. The system adds the logical position (here, 2 -) to the tag. Click ▼ to display all devices currently defined for this network.
Tag	Defines a 40-character alphanumeric identifier for the transmitter (such as <i>Tank2Level</i> or <i>Pump1NorthTemporary</i>).
Message	Provides an optional 40-character message associated with the transmitter. Use this field for explanatory or warning messages (such as <i>Not to exceed 300 psi</i>).
Descriptor	Provides an optional 20-character alphanumeric descriptor for the transmitter (such as <i>Casing press</i>).
Configuration Change Counter	This read-only field shows the number of times the configuration of the transmitter has been changed, as reported by the transmitter itself.

Field	Description
Transmitter Information	<p>This section displays read-only information reported by the transmitter, including serial number, manufacturer ID, type of device, battery life, and other data.</p> <p>Note: Battery life is calculated by the transmitter. Refer to the transmitter's manufacturer for further details.</p>
Comm Status	<p>This read-only field shows the status of the communications channel.</p>
Device Status	<p>This read-only field shows the Field Device Status code to indicate the current communication and operating state of the transmitter. For any value other than 0, the field turns red.</p> <p>Note: Hover your mouse over this field to view the meaning of the response code. Response codes are manufacturer-defined. Refer to the documentation provided with the transmitter or to the manufacturer's website for a complete list of response codes, their meanings, and their resolutions.</p>
Commission Status	<p>This read-only field shows the current status of the device in the commissioning process. Valid values are:</p> <ul style="list-style-type: none"> 0 = Idle (not used) 1 = Configuring Burst Command 2 = Configuring Burst Variables 3 = Configuring Burst Rate 4 = Enabling Bursting 5 = Bursting (field highlighted in green) 6 = Data Stale (field highlighted in yellow) 7 = Communication Failure (field highlighted in red) 8 = Disabling Bursting
Poll Mode	<p>Indicates the mode the transmitter uses to acquire information. The default is Normal, based on the value in the Burst Rate field. Select Update and click Apply to immediately perform an on-demand polling and refresh all fields on this screen. The mode reverts to Normal at the next Burst Rate interval.</p>
Process Variables on Reset	<p>Sets the process variables to use after a failure. Valid values are Retain Last Value (use the last known values for the process variables) or Use Failsafe Value (use the values entered in the PV Failsafe, SV Failsafe, TV Failsafe, and QV Failsafe fields).</p>

Field	Description
Process Variables	<p data-bbox="854 205 1469 352">Displays the value, health, and status for the primary (PV), secondary (SV), tertiary (TV), and quaternary (QV) dynamic variables. For each variable, two status fields display to the right of the Value field.</p> <p data-bbox="854 390 1469 632">The upper status field is the Process Data Status, indicating the overall status of the process variable. Possible values for this field are Good, Manual/Fixed, Poor Accuracy, and Bad. The lower status field is the Limit Status, indicating if the process variable is responding to changes. Possible values for this field are Constant, High Limited, Low Limited, and Not Limited.</p> <p data-bbox="854 674 1469 972">The module returns four additional bits, but these are not displayed through ROCLINK. Bit 3 indicates the More Device Variable Status Available. Bits 2 through 0 indicate the Device Family Specific Status. Use TLPs to retrieve these additional bits for the PV Status (177,x,60), SV Status (177,x,61), TV Status (177,x,62), and QV Status (177,x,63). For more information, refer to the Command Summary Specification (HCF_SPEC-99), available from the HART Communication Foundation.</p>
Enable Fault Detection	<p data-bbox="854 989 1469 1115">Check to enable fault detection on the process variables. If enabled and the system detects a fault, the system marks the field in red and displays NaN (not a number).</p> <p data-bbox="854 1121 1469 1209">Note: You enable fault detection individually for each process variable. This field applies only to the FB107.</p>
Dynamic Variables	<p data-bbox="854 1226 1469 1283">Defines the slot assignment and associated value for up to four slot-based variables.</p> <p data-bbox="854 1297 1469 1539">Each wireless transmitter contains up to 250 slots able to store variable information (such as temperature, pressure, scaling factors, altitude, flow, and so on). Each transmitter manufacturer defines which slots contain what information. Refer to the documentation provided with the transmitter or to the manufacturer's website for a complete list of slot assignments.</p> <p data-bbox="854 1549 1469 1732">Note: <i>WirelessHART</i> conventions require that all manufacturers reserve slots 246 through 249 for the dynamic variables PV, SV, TV, and FV, respectively. Slot 250 is also reserved as permanently unassigned and does not accumulate values.</p>

Field	Description
Discrete Variables	<p>Sets the configuration and shows the status of connected discrete devices that support discrete variables. The IEC 62591 module can control a maximum of four discrete variables that display in a list in the Discrete Variables field. Refer to the documentation for your specific discrete device for a list of available set points and possible statuses.</p> <p>An example of a discrete device that supports discrete variables is a discrete valve. You can configure the set point of the discrete valve as being Open or Closed. These set points are shown as radio buttons in the Discrete Variables list. The status of the device in relation to the configured set point is displayed in the Discrete Variables list to the left of the set point. In the discrete valve example, the status might show Closed, Open, Closing, or Opening.</p> <p>Note: Click Update to manually refresh the Status field.</p>
Bursting	Displays the Min Update Time, Max Update Time, Trigger Mode, Trigger Level, Dev Var Classif, Unit Code and HART Command Execution Status.
Min Update Time	Sets the time interval (in seconds) at which the HART device communicates.
Max Update Time	Sets the maximum amount of time (in seconds) without an update before the HART device automatically publishes an update.
Trigger Mode	<p>Sets what conditions cause the HART device to publish an update at the interval set in the Min Update time field. Possible options are:</p> <p>Continuous Constantly publishes updates at the Min Update Time.</p> <p>Windowed Publishes updates at the interval set in the Min Update Time field when the source deviates from the last communicated source value by more than the value set in the Trigger Level field. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p> <p>Rising Publishes updates at the interval set in the Min Update Time field when the source value rises above the value set in the Trigger Level field. Updates are published at the Min Update Time until the value falls below the threshold. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p>

Field	Description
	<p>Falling Publishes updates at the interval set in the Min Update Time field when the source value falls below the value set in the Trigger Level field. Updates are published at the Min Update Time until the value rises above the threshold. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p> <p>On-Change Publishes updates at the interval set in the Min Update Time field when any value changes. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p>
Trigger Level	<p>Sets additional data the system needs based on your selection in the Trigger Mode field.</p> <p>If you select Windowed in the Trigger Mode field, sets a deadband value that the source value must rise above or fall below the last communicated source value to trigger the change in update frequency.</p> <p>If you select Rising in the Trigger Mode field, sets a value that the source value must rise above to trigger the change in update frequency.</p> <p>If you select Falling in the Trigger Mode field, sets a value that the source value must fall below to trigger the change in update frequency.</p> <p>Note: This field displays only if you select Windowed, Raising, or Falling in the Trigger Mode field.</p>
Dev Var Classif	<p>This read-only field shows the device variable classification code that is read at the time of device discovery.</p> <p>Note: Refer to HART Communication Foundation document number <i>HCF Spec 183</i> for a list of possible values and their meaning.</p>
Unit Code	<p>The device engineering unit code that is read at the time of device discovery.</p> <p>Note: Refer to HART Communication Foundation document number <i>HCF_Spec 183</i> for a list of possible values and their meaning.</p>

Field	Description
HART Command Execution Status	<p>This read-only field shows an indicator when the IEC 62591 module sends a HART command to the sensor, and that command is unsuccessful. Each bit of the indicator represents the following HART command:</p> <p>Bit 0 Command 103 Message 0</p> <p>Bit 1 Command 103 Message 1</p> <p>Bit 2 Command 104 Message 0</p> <p>Bit 3 Command 104 Message 1</p> <p>Bit 4 Command 107 Message 0</p> <p>Bit 5 Command 107 Message 1</p> <p>Bit 6 Command 108 Message 0</p> <p>Bit 7 Command 108 Message 1</p> <p>Bit 8 Command 109 Message 0</p> <p>Bit 9 Command 109 Message 1</p> <p>Bit 10 Command 117</p> <p>Bit 11 Command 118</p> <p>Bit 12 Spare</p> <p>Bit 13 Spare</p> <p>Bit 14 Spare</p> <p>Bit 15 Spare</p> <p>Note: This field shows the status of important commands for Bursting and Events.</p> <ul style="list-style-type: none"> ▪ Bursting <ul style="list-style-type: none"> ○ Command 103 Write Burst Period – Writes Min and Max burst update periods ○ Command 104 Write Burst Triggers – Sets burst trigger mode ○ Command 107 Write Burst Device Variables - Burst device variables returned by device on command 9 or 33 in burst mode ○ Command 108 Write Burst mode command number ○ Command 109 Burst Mode Control – Sets bursting ON/OFF ▪ Event Notification <ul style="list-style-type: none"> ○ Command 117 Write Event notification timing – Sets Event notification retry time, Maximum update time, Event De-bounce interval ○ Command 118 Event notification control - Enable/ Disable event notification
Events	<p>Displays the Publish Time, Max Publish Time, Debounce Interval, Cur Event Time, Event Summary, Control Code and Events Pending</p>

Field	Description
Min Publish Time	<p>Sets the time interval (in seconds) at which the HART device publishes its events. This value must be less than or equal to the value you set in the Maximum Update Time field.</p> <p>Note: This feature is not currently supported.</p>
Max Publish Time	<p>Sets the maximum amount of time (in seconds) without publishing its events before the HART device is forced to publish its events. This field applies only if you select Windowed, Raising, Falling, or On-Change in the Trigger Mode field.</p> <p>Note: This feature is not currently supported.</p>
Debounce Interval	<p>This read-only field shows the amount of time (in seconds) that an event must persist before the HART device sends a notification.</p> <p>Note: This feature is not currently supported.</p>
Cur Event Time	<p>This read-only field shows the time of the current event as returned from the HART device (the number of seconds that have passed since the start of the day) and the system's interpretation of that value.</p> <p>Note: This feature is not currently supported.</p>
Event Summary	<p>This read-only field shows any unacknowledged pending events.</p> <p>Note: This feature is not currently supported.</p>
Control Code	<p>This read-only field shows the Event Notification Control Code returned from the HART device. Possible values are:</p> <ul style="list-style-type: none"> ▪ Off ▪ Token Pass DLL ▪ TDMA DLL ▪ Both TDMA and Token DLLs <p>Note: This feature is not currently supported.</p>
Events Pending	<p>This read-only field displays a list of events on the HART device that have not been acknowledged. Possible values are:</p> <ul style="list-style-type: none"> ▪ Configuration Changed Event ▪ Device Status Event ▪ More Status Available Event <p>Note: This feature is not currently supported.</p>
Reset Events	<p>Select this button to acknowledge all pending events on the HART device.</p> <p>Note: This feature is not currently supported.</p>

Click **Apply** to save any changes you may make to the values on this screen.

Note: You can also double-click a commissioned device on the Commission screen to immediately access the Transmitter screen for that device.

3.2.3 Viewing Network Statistics

The network accumulates a variety of statistical information you can review to assess system health. This content is returned from the transmitters and is updated every ten seconds. Select the **Statistics** tab to view this information.

Note: Refer to the transmitter's manufacturer for more information about the fields on this tab.

Field	Value
Bytes Transmitted	1291151
Bytes Received	896352
Bytes Discarded	1
Messages Transmitted	175970
Messages Received	175970
Message Nacks Transmitted	0
Message Nacks Received	0
Message Retries Received	0
Session Initiates Received	5
Session Restarts Transmitted	0
Set Time Messages Transmitted	33
Set Time Messages Received	33
Reset APM Messages Transmitted	6
Reset APM Messages Received	6
Tunnel Messages Transmitted	1535
Tunnel Messages Received	308
Other HART Messages Transmitted	532
Other HART Messages Received	533
Radio Messages Transmitted	308
Radio Messages Received	1546

Figure 3-9. Statistics screen

Field	Description
Bytes Transmitted	This read-only field shows the number of data bytes the IEC62591 module has sent to the 781S.

Field	Description
Bytes Received	This read-only field shows the number of data bytes the IEC62591 module has received from the 781S.
Bytes Discarded	This read-only field shows the number of bytes discarded by the IEC62591 module. Discarded bytes are usually erroneous and due to noise on the bus.
Messages Transmitted	This read-only field shows the number of messages the IEC62591 module has sent to the 781S.
Messages Received	This read-only field shows the number of messages IEC62591 module has received from the 781S.
Message Nacks Transmitted	This read-only field shows the number of NACKs the IEC62591 module has sent to the 781S. A NACK is typically sent when a received message contains an error and a re-transmission request is sent. A high number of NACKs is often an indication of a poor link connection.
Message Nacks Received	Reserved
Message Retries Received	This read-only field shows the number of retry requests the IEC62591 module has received from the 781S. A retry request is sent by the 781S when it does not receive an acknowledgement from the IEC62591 module. A high number of retries is often an indication of a poor link connection.
Session Initiates Received	This read-only field shows the number of Session Initiates the IEC62591 module has received from the 781S. A Session Initiate is sent by the 781S when it wants to start and/or restart communications with the IEC62591 module (for example, after the 781S (first powers up).
Session Restarts Transmitted	This read-only field shows the number of Session Restart requests the IEC62591 module has sent to the 781S. A Session Restart request is sent by the IEC62591 module to request a bus restart of the communications with the 781S (for example, after the IEC62591 module first powers up).
Set Time Messages Transmitted	This read-only field shows the number of Set Time messages the IEC62591 module has sent to the 781S. A Set Time message is part of the time management process used to keep the <i>WirelessHART</i> network time up to date.
Set Time Messages Received	This read-only field shows the number of Set Time messages the IEC62591 module has received from the 781S.

Field	Description
Reset APM Messages Transmitted	This read-only field shows the number of Reset APM messages the IEC62591 module has sent to the 781S. A Reset APM message is part of the wireless management process used to restart the <i>WirelessHART</i> radio on the 781S.
Reset APM Messages Received	This read-only field shows the number of Reset APM messages the IEC62591 module has received from the 781S.
Tunnel Messages Transmitted	This read-only field shows the number of Tunnel messages the IEC62591 module has sent to the 781S. A Tunnel message is part of the wireless management process used to send information across the <i>WirelessHART</i> network.
Tunnel Messages Received	This read-only field shows the number of Tunnel messages the IEC62591 module has received from the 781S.
Other HART Messages Transmitted	This read-only field shows the number of 781S-specific messages the IEC62591 module has sent to the 781S. These messages are sent to retrieve data from the 781S.
Other HART Messages Received	This read-only field shows the number of 781S-specific messages the IEC62591 module has received from the 781S.
Radio Messages Transmitted	This read-only field shows the number of <i>WirelessHART</i> network messages the IEC62591 module has sent to the 781S.
Radio Messages Received	This read-only field shows the number of <i>WirelessHART</i> network messages the IEC62591 module has received from the 781S.
Reset Statistics	Click to reset all values on this tab.

3.2.4 Retrieving a Diagnostic Log

The IEC 62591 module has a USB port which you can use to retrieve a diagnostic log to assist in troubleshooting. Select the **Diagnostics** tab to display the Diagnostics screen:

Note: It may take up to three minutes after initial installation or after updating module firmware before the IEC 62591 module recognizes a drive plugged into the module's USB port.

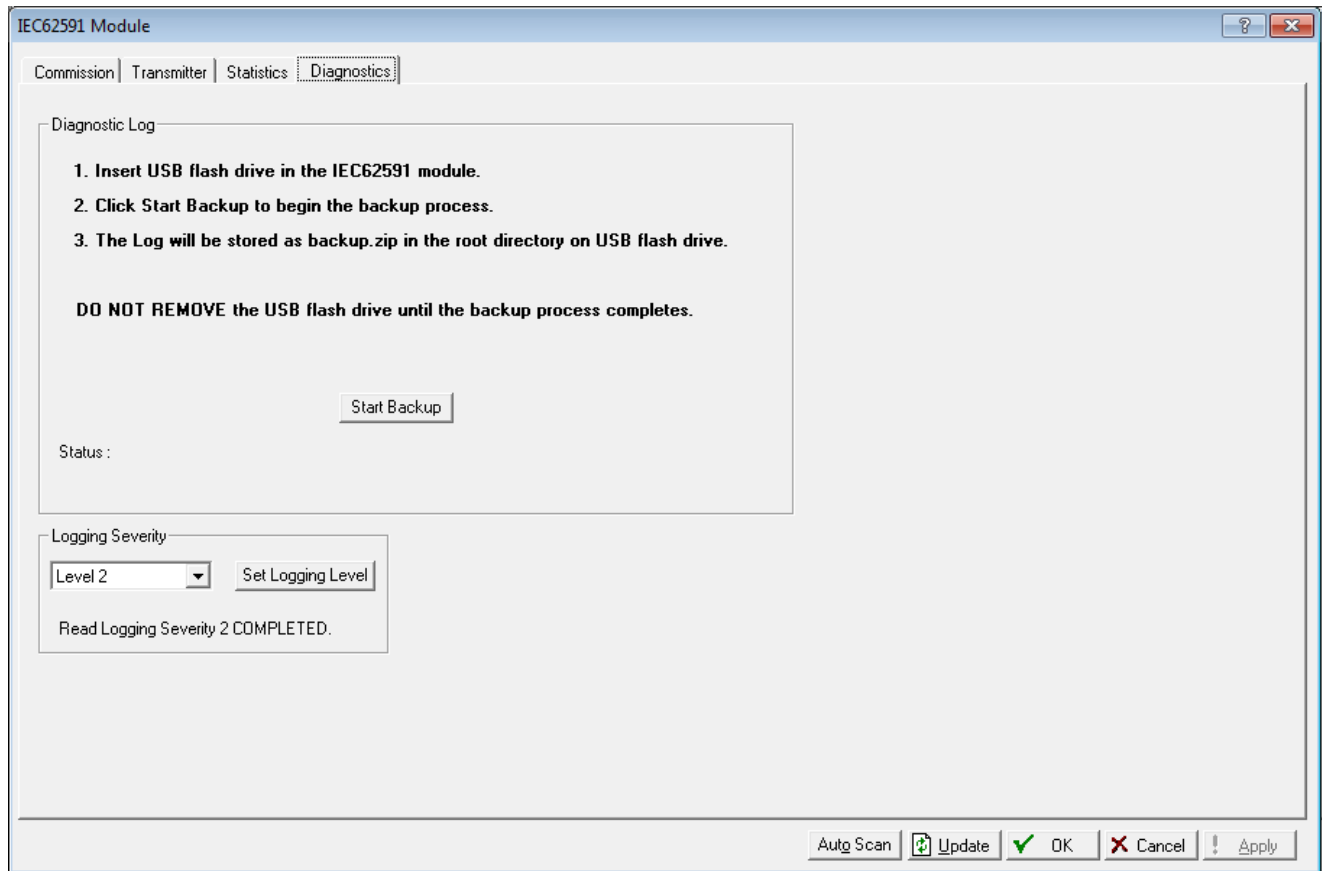


Figure 3-10. Diagnostics screen

The screen provides basic information to create and process the diagnostic log. However, Technical Support personnel can use the Logging Severity frame to more thoroughly identify problems in your system.

Field	Description
Set Logging Level	Click to set the severity of logs. The system validates your selection by displaying the message <i>Set Logging Severity X COMPLETED</i> , where X represents the severity you have selected.

3.2.5 Displaying Commissioned Transmitters

From the main IEC 62591 module screen, you can display and quickly access transmitter-specific information. Select the **Transmitter** tab to display the Transmitter screen.

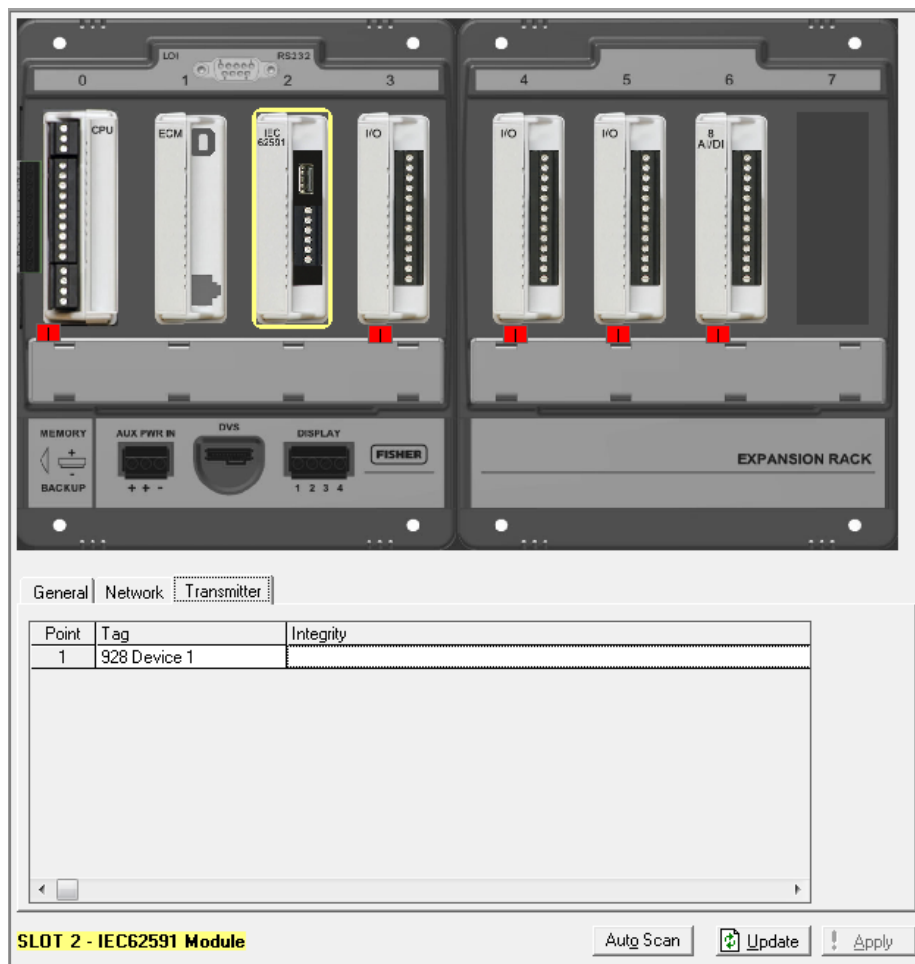


Figure 3-11. Transmitter screen

This screen shows the logical point to which you have installed the device, the device's 23-character alphanumeric (long) tag, and any integrity issues for that device (as shown for the device assigned to point 2). Double-click a device to display the Transmitter screen (see [Figure 3-7](#)) for that device.

3.3 IEC 62591 Module Interface (ROC800)

To access the screens you use to configure and commission the network:
 Start ROCLINK 800 and click the IEC62591 Module on the graphical interface. The IEC62591 Module screen displays:

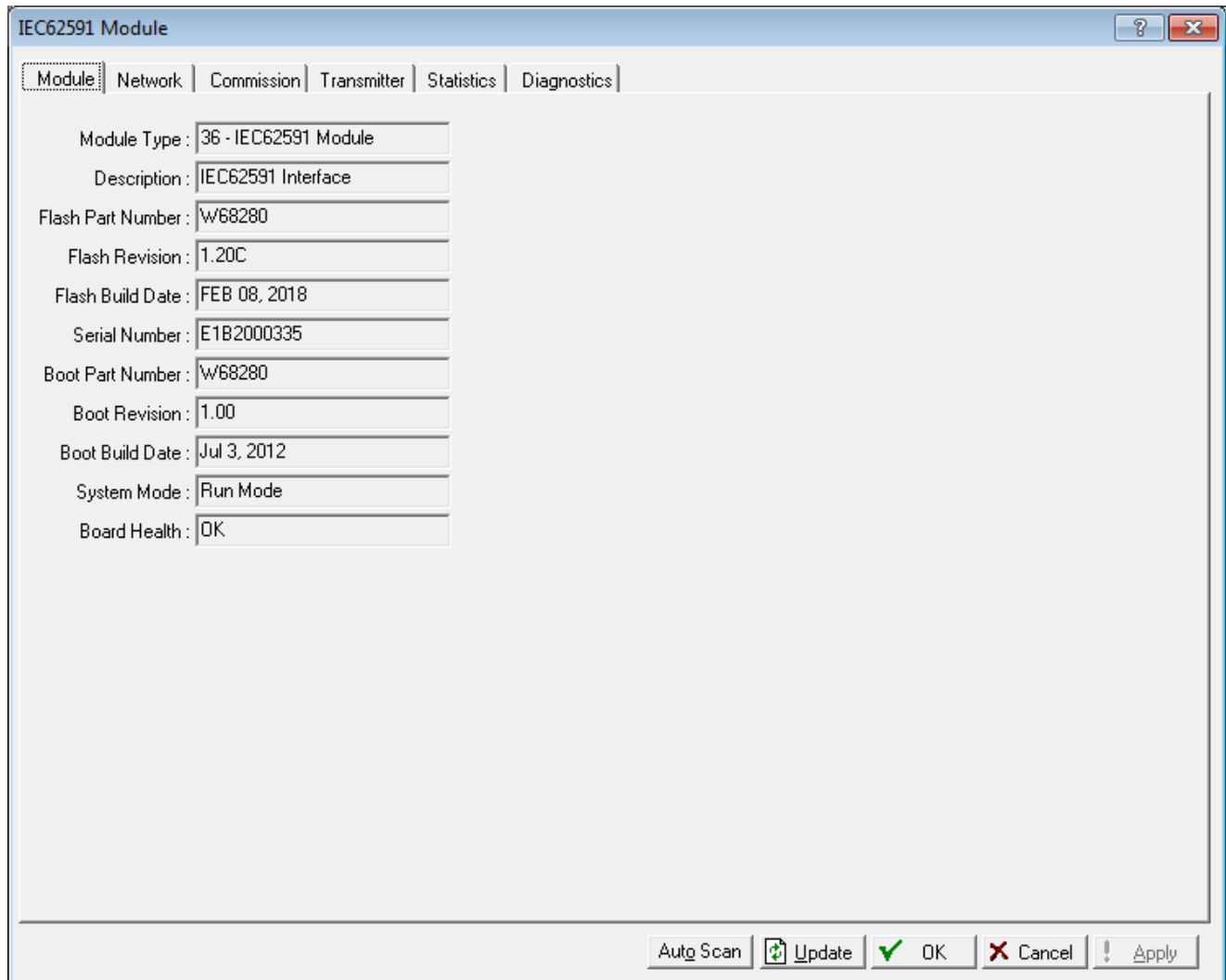


Figure 3-12. IEC 62591Module

The module has six tabs:

Tab	Description
Module	Provides read-only statistical information about the IEC 62591 module, such as serial number and part numbers.
Network	Defines the Join Key and Network ID for the network. These values must correspond to the Network ID and Join Key in the devices.
Commission	Auto-detects available uncommissioned devices and enables you to add them to the defined network.
Transmitter	Accesses both read-only statistics and modifiable parameters for a specific device associated with the network.
Statistics	Provides read-only statistics the 781S has accumulated for the network. Click Reset Statistics to reset these values at any time.

Tab	Description
Diagnostics	Describes how to use the module's USB port to generate log information for resolving issues.

The following sections discuss how to use these tabs to manage your network.

3.3.1 Accessing the Network

Use this screen to identify the Network ID and Join Key for the devices in your network. When you select the **Network** tab, you must complete two fields:

The screenshot shows a software window titled "IEC62591 Module" with a tabbed interface. The "Network" tab is selected. The window contains the following fields and controls:

- Module: Network | Commission | Transmitter | Statistics | Diagnostics
- Network ID:
- Join Key (hex):
- Status:
-
- Bottom toolbar:

Figure 3-13. Network tab

Field	Description
Network ID	<p>Enter a five-character Network ID. Valid values are 1 to 36863.</p> <p>Should be noted that each IEC62591 Module / RTU can only have a single Network ID. The "grouping" should be related to the control/monitoring network for a given RTU. For example, if two RTUs are installed at a site, each grouping should be the set of meter runs each RTU controls.</p> <p>Note: A Network ID cannot be all zeros (such as 00000).</p>
Join Key (hex)	<p>Enter a valid Join Key to permit the device to access its defined network.</p> <p>A Join Key is a 128-byte value expressed as four 32-bit portions. As shown in the example, you can use zeros for the first three parts of the Join Key.</p>
Status	<p>This read-only field shows the current status of the connection between the network and ROCLINK 800.</p>
Enable Active Advertising	<p>Click to enable active advertising, in which the IEC 62591 module continuously broadcasts network information. This enables new devices to quickly join the network. Active advertising broadcasts network information continuously for approximately 30 minutes.</p> <p>Additionally, active advertising occurs automatically when:</p> <ul style="list-style-type: none"> ▪ You first power up or restart the IEC 62591 module or ▪ A device leaves the network (which allows communications to re-establish).

Click **Apply**. As the 781S processes your request to add the device to the network, the value displayed in the Status field changes:

- **Initializing.** The module is in the boot-up sequence. The module sends info (Part Number, firmware version, etc.) to the RTU. During this time, the module is not yet communicating with the RTU. Once the code starts up (usually after 30-60 seconds), the module switches from **Initializing** to **Configuring Network**.
- **Configuring Network.** The code is running and the module is attempting to pull configuration info from the RTU. If the **Initializing** status is taking too long, it means that either
 - the board is not completely booting up, or
 - the application code is not correctly loading. As a result, the sequence cannot complete.
- **Detecting radio.** The 781S recognizes the network.

- **On-Line.** When the Status field shows **On-line**, you can begin commissioning devices for the network.

Proceed to *Commissioning Devices*.

3.3.2 Commissioning Devices

When you select the **Commission** tab, ROCLINK 800 displays the Commission screen (see *Figure 3-16*). You use this screen to individually or collectively commission devices.

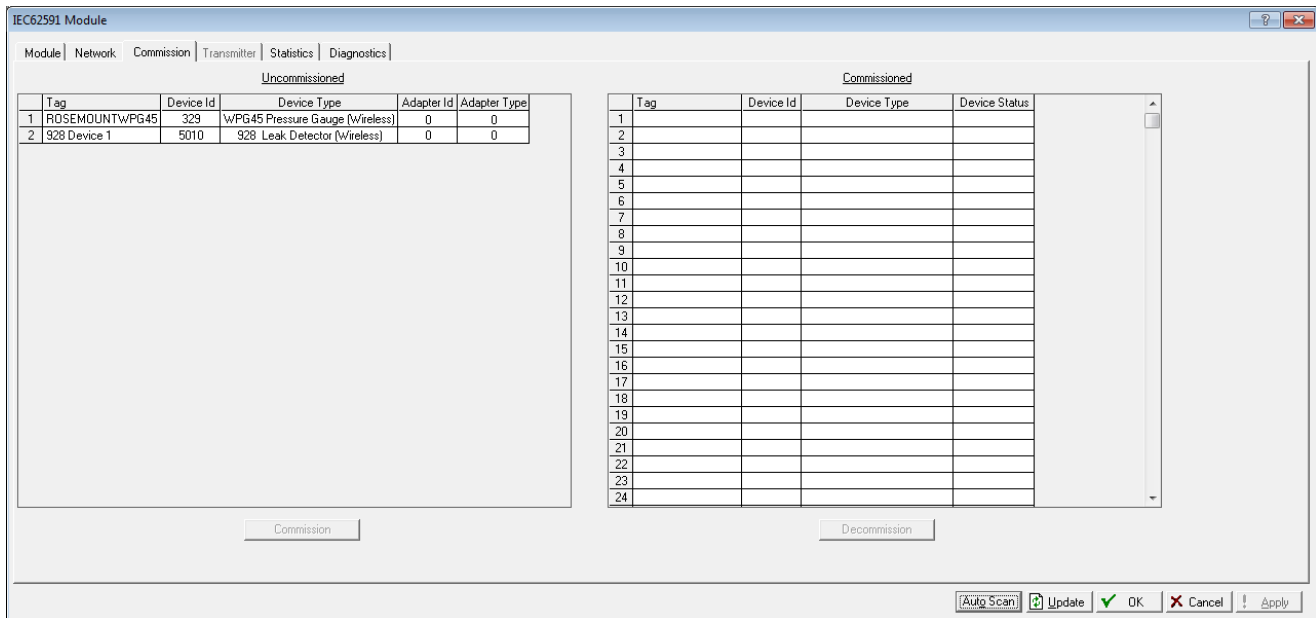


Figure 3-14. Commission tab

This screen has two lists, **Uncommissioned** and **Commissioned**. When the Status field on the Network screen displays *On-line*, ROCLINK 800 automatically begins adding devices to the Uncommissioned list. To commission a device, you move it to the Commissioned list in either of two ways:

- Select the device and click **Commission**. ROCLINK 800 places the device in the **first available** empty position.

Notes:

- To select several devices, press **Ctrl** and left-click each additional device. Click **Commission** when you have finished selecting devices.
- When commissioning a HART device connected to an Emerson Wireless 775 THUM Adapter, the system detects **both** the HART device and the THUM Adapter and places them both in the Uncommissioned list. Commission the device as normal. Commission the THUM Adapter **only** if you need the Adapter's process data.

- Select the device and “drag” it to a position on the Commissioned list.

The number of rows on the Commission screen correlates to the number of wireless devices your controller supports. Each row represents a specific *logical* position. If, during commissioning, you want the controller to store information from a specific wireless device in a specific logical position, you can commission that device to that logical by selecting that device and “dragging” it to the appropriate position on the Commissioned list.

Note: Once you commission a device to a particular logical, you **cannot** drag it another logical position. You must **first** decommission the device and then recommission it to the new logical position.

When you select a device in the Uncommissioned column, the **Commission** button activates:

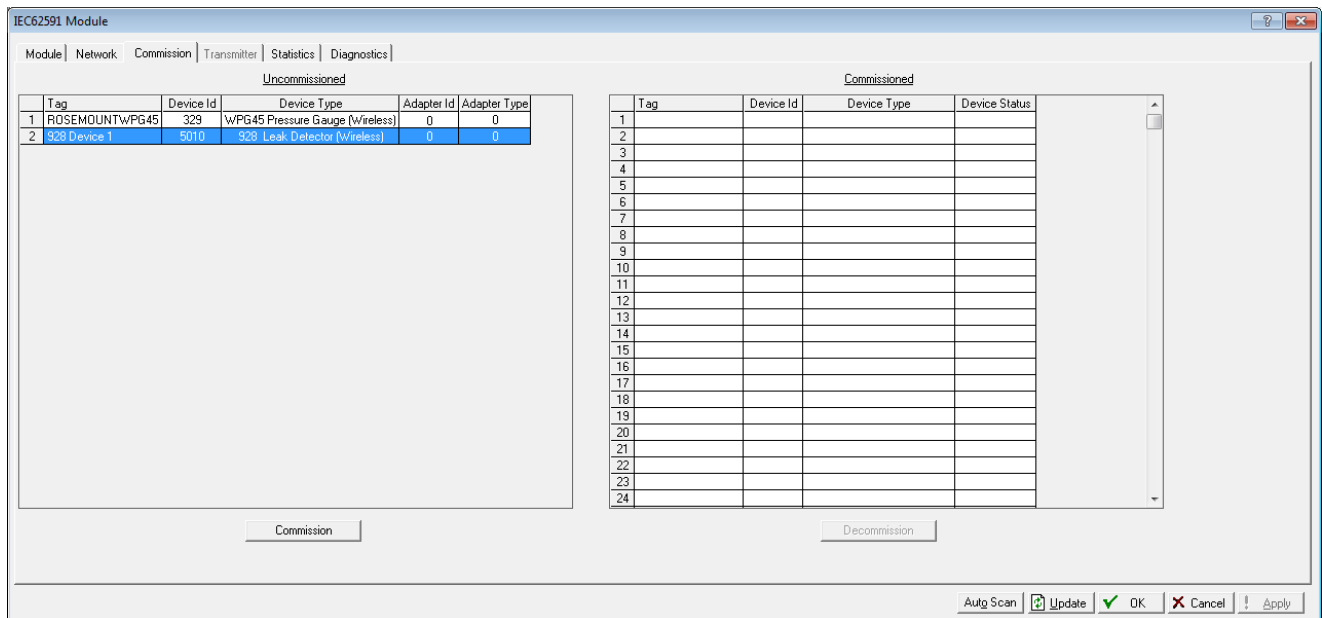


Figure 3-15. Active Commission button

Note: To select more than one device, press the **Ctrl** key and left-click each additional device.

Click **Commission**. After a few minutes, the device moves from the Uncommissioned to the Commissioned list:

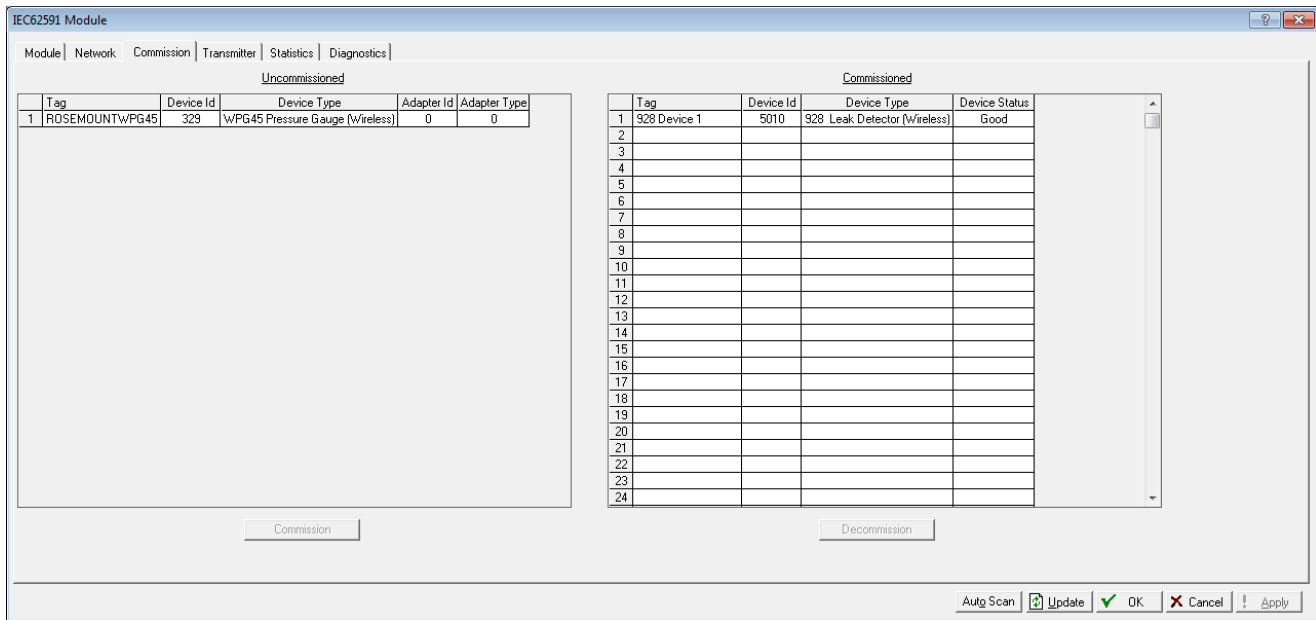


Figure 3-16. Commissioned Device

Another indicator that the device has been successfully commissioned is the activation of the **Transmitter** tab.

Note: If you change the tag for a transmitter using either a hand-held 375/475 device or AMS Device Configurator, the new tag may not display until the device appears on the Commissioned list.

Decommissioning a Device

If you decide to remove a device from your network, use this screen to decommission the device. Select the device and drag it to the Uncommissioned list.

Note: Remember to adjust or redefine any TLPs you have designated to accumulate the information for the decommissioned device's logical position.

Replacing a Device

If a particular wireless device in your network stops working, you can easily replace it with a similar device.

Note: Using this option **does not** require you to adjust or redefine any TLPs you have designated to accumulate the information for the decommissioned device's logical position. The new device assumes all parameters you have defined for the old device.

First, configure the device for the network, assigning it the appropriate Network ID and Join Key. Install the device in the field. Start ROCLINK 800, select the IEC 62591 module, and display the Commission tab. When the replacement device appears on the Uncommissioned list, select it and drag it **on top of** the non-working

device. This tells ROCLINK 800 that you want this new device to assume all the defined characteristics of the old device.

ROCLINK 800 displays a verification dialog to prevent you from accidentally replacing a device:

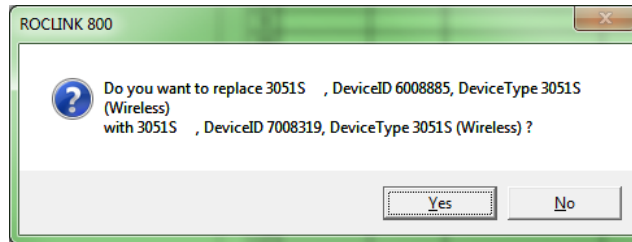


Figure 3-17. Device Replacement Verification Dialog

Click **Yes** to complete the replacement. ROCLINK commissions the new device and automatically decommissions the old device, moving it to the Uncommissioned list.

3.3.3 Managing Device Information

Once you have commissioned a device, the Transmitter tab can provide you with a variety of information on that device. Selecting the **Transmitter** tab displays the Transmitter screen:

Note: When viewing a transmitter connected to a THUM adaptor, **only** the process variables are returned to the IEC62591 module.

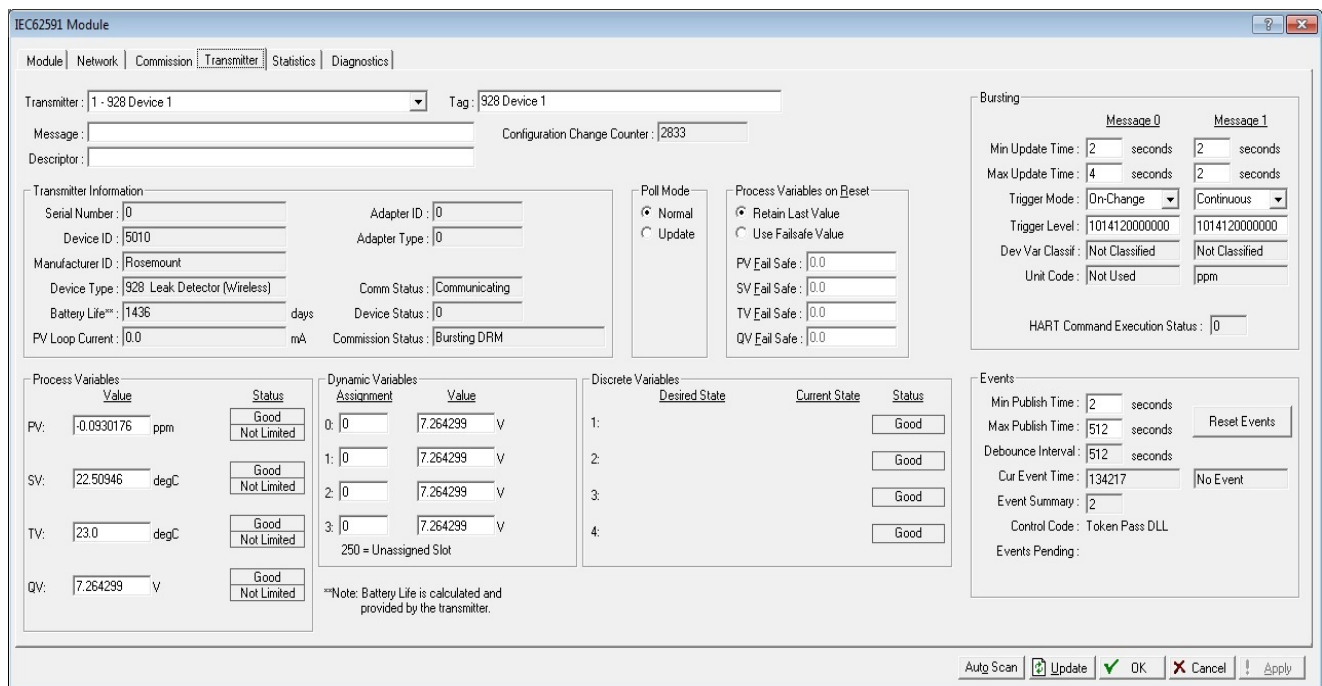


Figure 3-18. Transmitter tab

Notes:

- You can also double-click a commissioned device on the Commission screen to immediately access the Transmitter screen for that device.
- If you use ROCLINK to change transmitter values when the transmitter is busy with other communications tasks, the transmitter may fail to update and reverts to previous values. If this occurs, you can use ROCLINK to re-attempt the update when the transmitter is not busy with other communications tasks. Alternately, avoid this issue entirely by using a 475 Field Communicator to change transmitter values.

Field	Description
Transmitter	Displays the 40-character alphanumeric tag associated with the transmitter. The system adds the logical position (here, 1 -) to the tag. Click ▼ to display all devices currently defined for this network.
Tag	Defines a 40-character alphanumeric identifier for the transmitter (such as <i>Tank2Level</i> or <i>Pump1Temporary</i>).
Message	Provides an optional 40-character alphanumeric message associated with the transmitter. Use this field for explanatory or warning messages (such as <i>Not to exceed 300 psi</i>).
Descriptor	Provides an optional 20-character alphanumeric description of transmitter (such as <i>Casing press</i>).
Configuration Change Counter	This read-only field shows the number of times the configuration of the transmitter has been changed, as reported by the transmitter itself.
Transmitter Information	<p>This section displays read-only information reported by the transmitter, including serial number, manufacturer ID, type of device, battery life, and other data.</p> <p>Note: Battery life is calculated by the transmitter. Refer to the transmitter's manufacturer for further details.</p>
Comm Status	This read-only field shows the status of the communications channel.
Device Status	<p>This read-only field shows the Field Device Status code to indicate the current communication and operating state of the transmitter. For any value other than 0, the field turns red.</p> <p>Note: Hover your mouse over this field to view the meaning of the response code. Response codes are manufacturer-defined. Refer to the documentation provided with the transmitter or to the manufacturer's website for a complete list of response codes, their meanings, and their resolutions.</p>

Field	Description
Adapter ID	Indicates the THUM adapter ID, attached to the device.
Adapter Type	Indicates the THUM adapter type, attached to the device.
Commission Status	<p>Indicates the current status of the device in the commissioning process. Valid values are:</p> <ul style="list-style-type: none"> 0 = Logical Not Used (Idle) 1 = Configuring Burst Command 2 = Configuring Burst Variables 3 = Configuring Burst Rate 4 = Enabling Bursting 5 = Bursting (field highlighted in green) 6 = Data Stale (field highlighted in yellow) 7 = Communication Failure (field highlighted in red) 8 = Disabling Bursting 9 = Delayed Response 10 = Commissioning Failed
Poll Mode	<p>Indicates the mode the transmitter uses to acquire information. The default is Normal, based on the value in the Burst Rate field. Select Update and click Apply to immediately perform an on-demand polling and refresh all fields on this screen. The mode reverts to Normal at the next Burst Rate interval.</p>
Process Variables on Reset	<p>Sets the process variables to use after a failure. Valid values are Retain Last Value (use the last known values for the process variables) or Use Failsafe Value (use the values entered in the PV Failsafe, SV Failsafe, TV Failsafe, and QV Failsafe fields).</p>
Process Variables	<p>Displays the values for the primary (PV), secondary (SV), tertiary (TV), and quaternary (QV) process variables.</p>
Dynamic Variables	<p>Defines the slot assignment and associated value for up to four slot-based variables.</p> <p>Each wireless transmitter contains up to 250 slots able to store variable information (such as temperature, pressure, scaling factors, altitude, flow, and so on). Each transmitter manufacturer defines which slots contain what information. Refer to the documentation provided with the transmitter or to the manufacturer's website for a complete list of slot assignments.</p> <p>Note: <i>WirelessHART</i> conventions require that all manufacturers reserve slots 246 through 249 for the dynamic variables PV, SV, TV, and FV, respectively. Slot 250 is also reserved as permanently unassigned and does not accumulate values.</p>

Field	Description
Discrete Variables	<p>Sets the configuration and shows the status of connected discrete devices that support discrete variables. The IEC 62591 module can control a maximum of four discrete variables that display in a list in the Discrete Variables field. Refer to the documentation for your specific discrete device for a list of available set points and possible statuses.</p> <p>An example of a discrete device that supports discrete variables is a discrete valve. You can configure the set point of the discrete valve as being Open or Closed. These set points are shown as radio buttons in the Discrete Variables list. The status of the device in relation to the configured set point is displayed in the Discrete Variables list to the left of the set point. In the discrete valve example, the status might show Closed, Open, Closing, or Opening.</p> <p>Note: Click Update to manually refresh the Status field.</p>
Process Variables	<p>Displays the Min Update Time, Max Update Time, Trigger Mode, Trigger Level, Dev Var Classif, Unit Code and HART Command Execution Status.</p>
Dynamic Variables	<p>Sets the time interval (in seconds) at which the HART device communicates.</p>
Max Update Time	<p>Sets the maximum amount of time (in seconds) without an update before the HART device automatically publishes an update.</p>
Trigger Mode	<p>Sets what conditions cause the HART device to publish an update at the interval set in the Min Update time field. Possible options are:</p> <p>Continuous Constantly publishes updates at the Min Update Time.</p> <p>Windowed Publishes updates at the interval set in the Min Update Time field when the source deviates from the last communicated source value by more than the value set in the Trigger Level field. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p> <p>Rising Publishes updates at the interval set in the Min Update Time field when the source value rises above the value set in the Trigger Level field. Updates are published at the Min Update Time until the value falls below the threshold. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p>

Field	Description
	<p>Falling Publishes updates at the interval set in the Min Update Time field when the source value falls below the value set in the Trigger Level field. Updates are published at the Min Update Time until the value rises above the threshold. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p> <p>On-Change Publishes updates at the interval set in the Min Update Time field when any value changes. If this condition is not met, updates are published at the interval set in the Max Update Time field.</p>
<p>Trigger Level</p>	<p>Sets additional data the system needs based on your selection in the Trigger Mode field.</p> <p>If you select Windowed in the Trigger Mode field, sets a deadband value that the source value must rise above or fall below the last communicated source value to trigger the change in update frequency.</p> <p>If you select Rising in the Trigger Mode field, sets a value that the source value must rise above to trigger the change in update frequency.</p> <p>If you select Falling in the Trigger Mode field, sets a value that the source value must fall below to trigger the change in update frequency.</p> <p>Note: This field displays only if you select Windowed, Raising, or Falling in the Trigger Mode field.</p>
<p>Dev Var Classif</p>	<p>This read-only field shows the device variable classification code that is read at the time of device discovery.</p> <p>Note: Refer to HART Communication Foundation document number <i>HCF Spec 183</i> for a list of possible values and their meaning.</p>
<p>Unit Code</p>	<p>The device engineering unit code that is read at the time of device discovery.</p> <p>Note: Refer to HART Communication Foundation document number <i>HCF_Spec 183</i> for a list of possible values and their meaning.</p>

Field	Description
HART Command Execution Status	<p>This read-only field shows an indicator when the IEC 62591 module sends a HART command to the sensor, and that command is unsuccessful. Each bit of the indicator represents the following HART command:</p> <p>Bit 0 Command 103 Message 0</p> <p>Bit 1 Command 103 Message 1</p> <p>Bit 2 Command 104 Message 0</p> <p>Bit 3 Command 104 Message 1</p> <p>Bit 4 Command 107 Message 0</p> <p>Bit 5 Command 107 Message 1</p> <p>Bit 6 Command 108 Message 0</p> <p>Bit 7 Command 108 Message 1</p> <p>Bit 8 Command 109 Message 0</p> <p>Bit 9 Command 109 Message 1</p> <p>Bit 10 Command 117</p> <p>Bit 11 Command 118</p> <p>Bit 12 Spare</p> <p>Bit 13 Spare</p> <p>Bit 14 Spare</p> <p>Bit 15 Spare</p> <p>Note: This field shows the status of important commands for Bursting and Events.</p> <ul style="list-style-type: none"> ▪ Bursting <ul style="list-style-type: none"> ○ Command 103 Write Burst Period – Writes Min and Max burst update periods ○ Command 104 Write Burst Triggers – Sets burst trigger mode ○ Command 107 Write Burst Device Variables - Burst device variables returned by device on command 9 or 33 in burst mode ○ Command 108 Write Burst mode command number ○ Command 109 Burst Mode Control – Sets bursting ON/OFF ▪ Event Notification <ul style="list-style-type: none"> ○ Command 117 Write Event notification timing – Sets Event notification retry time, Maximum update time, Event De-bounce interval ○ Command 118 Event notification control - Enable/ Disable event notification
Events	<p>Displays the Publish Time, Max Publish Time, Debounce Interval, Cur Event Time, Event Summary, Control Code and Events Pending</p>

Field	Description
Min Publish Time	<p>Sets the time interval (in seconds) at which the HART device publishes its events.</p> <p>Note: This value must be less than or equal to the value you set in the Maximum Update Time field.</p> <p>Note: This feature is not currently supported.</p>
Max Publish Time	<p>Sets the maximum amount of time (in seconds) without publishing its events before the HART device is forced to publish its events.</p> <p>Note: This field applies only if you select Windowed, Raising, Falling, or On-Change in the Trigger Mode field.</p> <p>Note: This feature is not currently supported.</p>
Debounce Interval	<p>This read-only field shows the amount of time (in seconds) that an event must persist before the HART device sends a notification.</p> <p>Note: This feature is not currently supported.</p>
Cur Event Time	<p>This read-only field shows the time of the current event as returned from the HART device (the number of seconds that have passed since the start of the day) and the system's interpretation of that value.</p> <p>Note: This feature is not currently supported.</p>
Event Summary	<p>This read-only field shows any unacknowledged pending events.</p> <p>Note: This feature is not currently supported.</p>
Control Code	<p>This read-only field shows the Event Notification Control Code returned from the HART device. Possible values are:</p> <ul style="list-style-type: none"> ▪ Off ▪ Token Pass DLL ▪ TDMA DLL ▪ Both TDMA and Token DLLs <p>Note: This feature is not currently supported.</p>
Events Pending	<p>This read-only field displays a list of events on the HART device that have not been acknowledged. Possible values are:</p> <ul style="list-style-type: none"> ▪ Configuration Changed Event ▪ Device Status Event ▪ More Status Available Event <p>Note: This feature is not currently supported.</p>
Reset Events	<p>Select this button to acknowledge all pending events on the HART device.</p> <p>Note: This feature is not currently supported.</p>

Click **Apply** to save any changes you may make to the values on this screen.

Note: You can also double-click a commissioned device on the Commission screen to immediately access the Transmitter screen for that device.

3.3.4 Viewing Network Statistics

The network accumulates a variety of statistical information you can review to assess system health. This content is returned from the transmitters and is updated every ten seconds. Select the **Statistics** tab to view this information.

Note: Refer to the transmitter's manufacturer for more information about the fields on this tab.

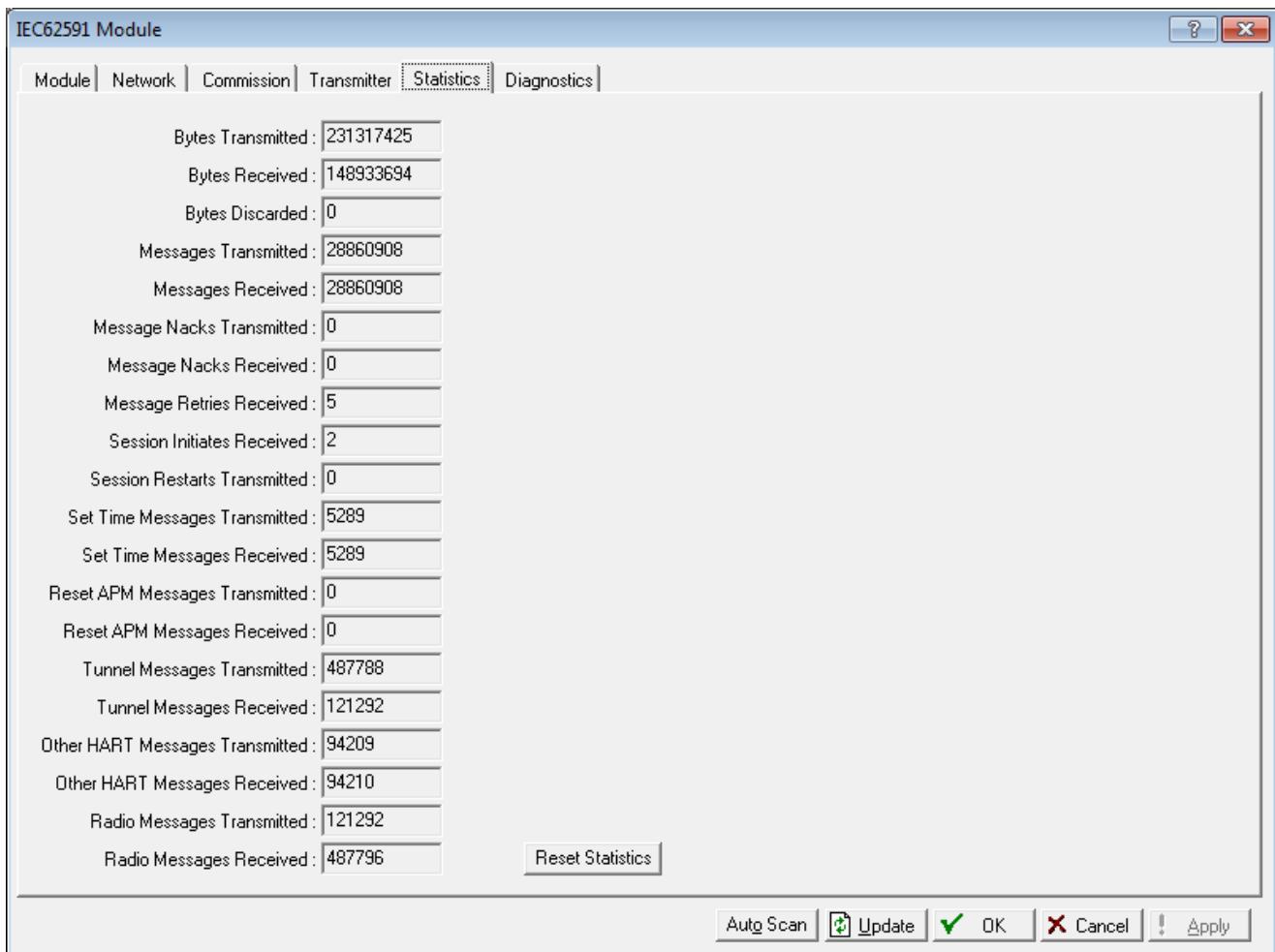


Figure 3-19. Statistics tab

Field	Description
Bytes Transmitted	This read-only field shows the number of data bytes the IEC62591 module has sent to the 781S.
Bytes Received	This read-only field shows the number of data bytes the IEC62591 module has received from the 781S.

Field	Description
Bytes Discarded	This read-only field shows the number of bytes discarded by the IEC62591 module. Discarded bytes are usually erroneous and due to noise on the bus.
Messages Transmitted	This read-only field shows the number of messages the IEC62591 module has sent to the 781S.
Messages Received	This read-only field shows the number of messages IEC62591 module has received from the 781S.
Message Nacks Transmitted	This read-only field shows the number of NACKs the IEC62591 module has sent to the 781S. A NACK is typically sent when a received message contains an error and a retransmission request is sent. A high number of NACKs is often an indication of a poor link connection.
Message Nacks Received	Reserved
Message Retries Received	This read-only field shows the number of retry requests the IEC62591 module has received from the 781S. A retry request is sent by the 781S when it does not receive an acknowledgement from the IEC62591 module. A high number of retries is often an indication of a poor link connection.
Session Initiates Received	This read-only field shows the number of Session Initiates the IEC62591 module has received from the 781S. A Session Initiate is sent by the 781S when it wants to start and/or restart communications with the IEC62591 module (for example, after the 781S (first powers up).
Session Restarts Transmitted	This read-only field shows the number of Session Restart requests the IEC62591 module has sent to the 781S. A Session Restart request is sent by the IEC62591 module to request a bus restart of the communications with the 781S (for example, after the IEC62591 module first powers up).
Set Time Messages Transmitted	This read-only field shows the number of Set Time messages the IEC62591 module has sent to the 781S. A Set Time message is part of the time management process used to keep the <i>WirelessHART</i> network time up to date.
Set Time Messages Received	This read-only field shows the number of Set Time messages the IEC62591 module has received from the 781S.
Reset APM Messages Transmitted	This read-only field shows the number of Reset APM messages the IEC62591 module has sent to the 781S. A Reset APM message is part of the wireless management process used to restart the <i>WirelessHART</i> radio on the 781S.
Reset APM Messages Received	This read-only field shows the number of Reset APM messages the IEC62591 module has received from the 781S.

Field	Description
Tunnel Messages Transmitted	This read-only field shows the number of Tunnel messages the IEC62591 module has sent to the 781S. A Tunnel message is part of the wireless management process used to send information across the <i>WirelessHART</i> network.
Tunnel Messages Received	This read-only field shows the number of Tunnel messages the IEC62591 module has received from the 781S.
Other HART Messages Transmitted	This read-only field shows the number of 781S specific messages the IEC62591 module has sent to the 781S. These messages are sent to retrieve data from the 781S.
Other HART Messages Received	This read-only field shows the number of 781S specific messages the IEC62591 module has received from the 781S.
Radio Messages Transmitted	This read-only field shows the number of <i>WirelessHART</i> network messages the IEC62591 module has sent to the 781S.
Radio Messages Received	This read-only field shows the number of <i>WirelessHART</i> network messages the IEC62591 module has received from the 781S.
Reset Statistics	Click to reset all values on this tab.

3.3.5 Retrieving a Diagnostic Log

The IEC 62591 module has a USB port which you can use to retrieve a diagnostic log to assist in troubleshooting. Select the **Diagnostics** table to display the Diagnostics screen:

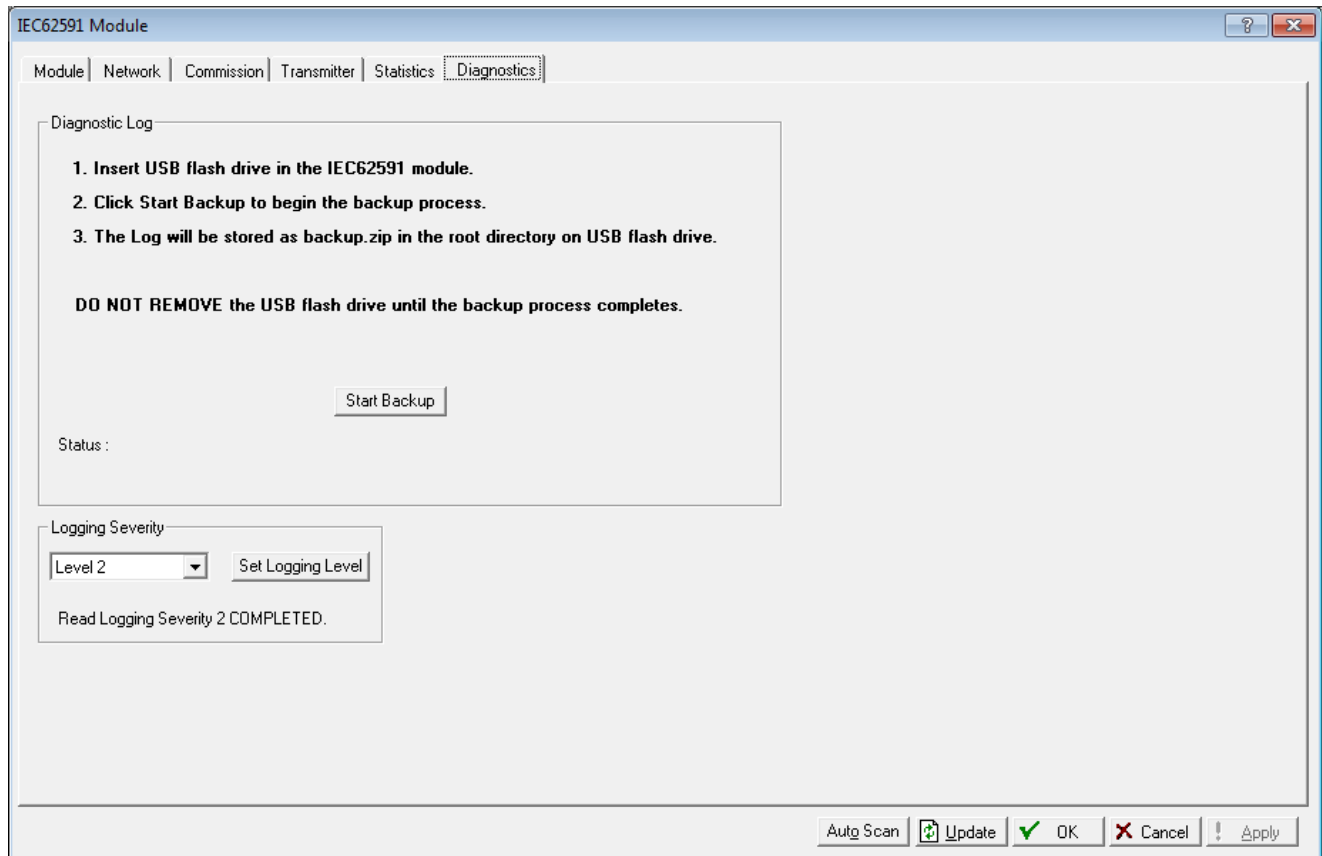


Figure 3-20. Diagnostics tab

The screen provides basic information to create and process the diagnostic log. However, Technical Support personnel can use the Logging Severity frame to more thoroughly identify problems with your system.

Field	Description
Logging Severity	Sets the amount of accumulated system activity data included on the diagnostic log. 1 is the least comprehensive setting and 9 is the most comprehensive setting. The default setting is 7 . Note: Use this field only under the direction of Technical Support personnel.
Set Logging Level	Click to set the severity of logs. The system validates your selection by displaying the message <i>Set Logging Severity X COMPLETED</i> , where X represents the severity you have selected.

3.4 Updating Module Firmware

You can also use the USB port on the IEC 62591 module to upgrade the firmware on the module.

Caution Do not use the USB port unless the area is known to be non-hazardous.

To access this option, select **Utilities > Update Firmware** on the ROCLINK 800 main menu bar. The Update Firmware screen displays.

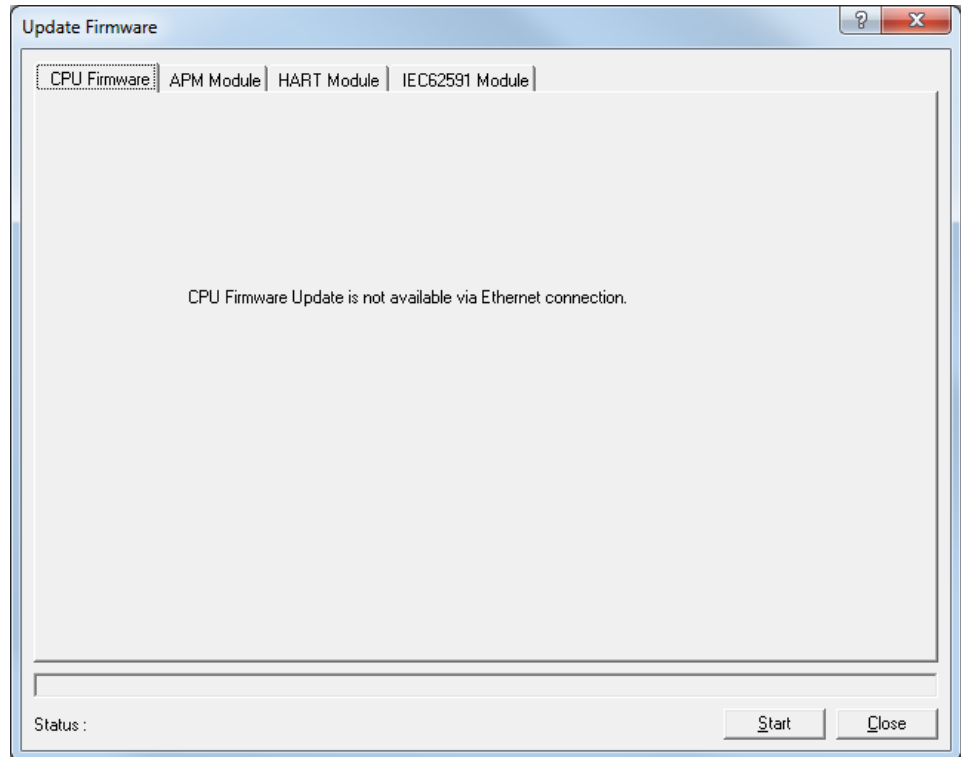


Figure 3-21. Update Firmware tab

Select the **IEC62591 Module** tab. The IEC 62591 Module screen displays:

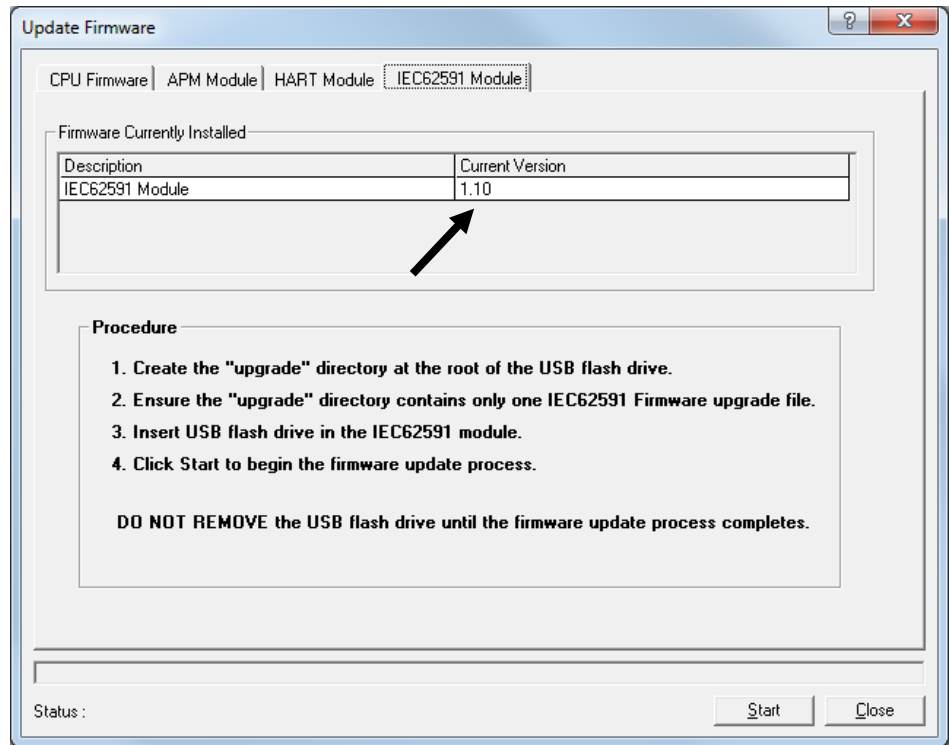


Figure 3-22. IEC 62591 Module Firmware Update screen

Follow the procedures on this screen to update the firmware in the IEC 62591 module.

Note: The value in the Current Version field changes when the firmware update completes.

3.4.1 Updating the IEC 62591 Module Firmware (ROC800/ FloBoss 107)

Follow the procedures on this screen to update the firmware in the IEC 62591 module.

1. Attach a USB drive (with at least 40Mb of free space) to the PC.

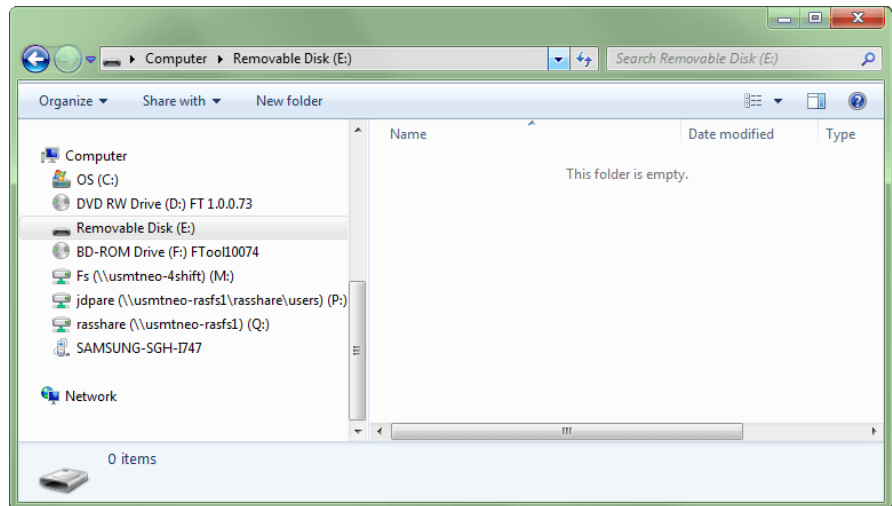


Figure 3-23. Attaching a USB drive

2. Create a folder named **upgrade** in the root directory.

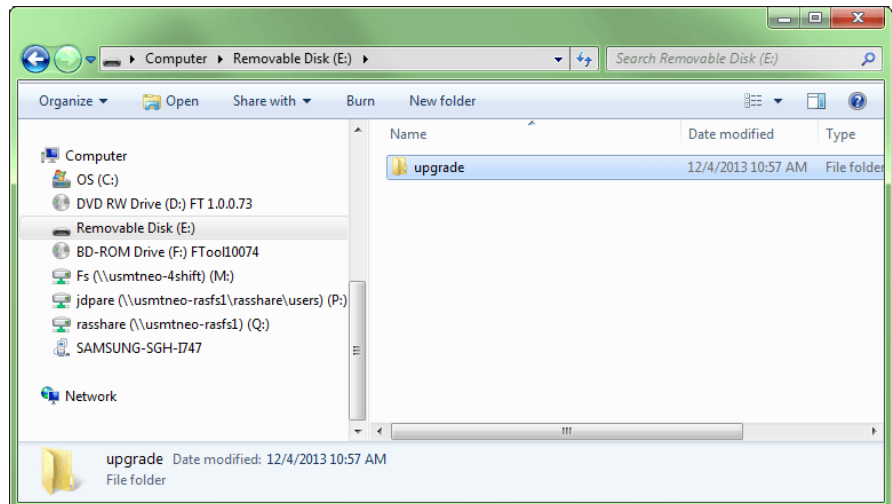


Figure 3-24. Creating the Upgrade Folder

3. Copy the upgrade file (here, *ras-wihart-1.10-release.zip*) to the Upgrade folder on the USB drive.

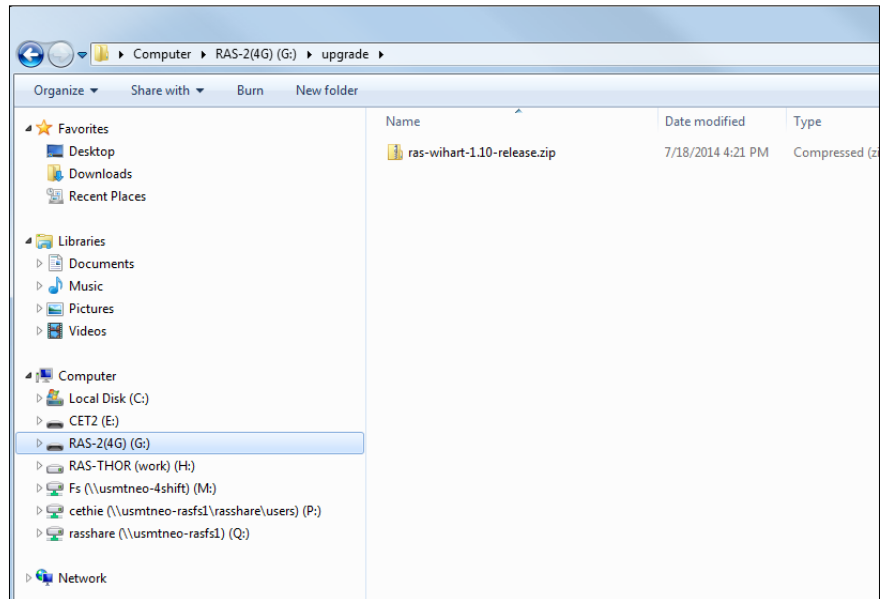


Figure 3-25. Copying the Upgrade File

4. Start ROCLINK.

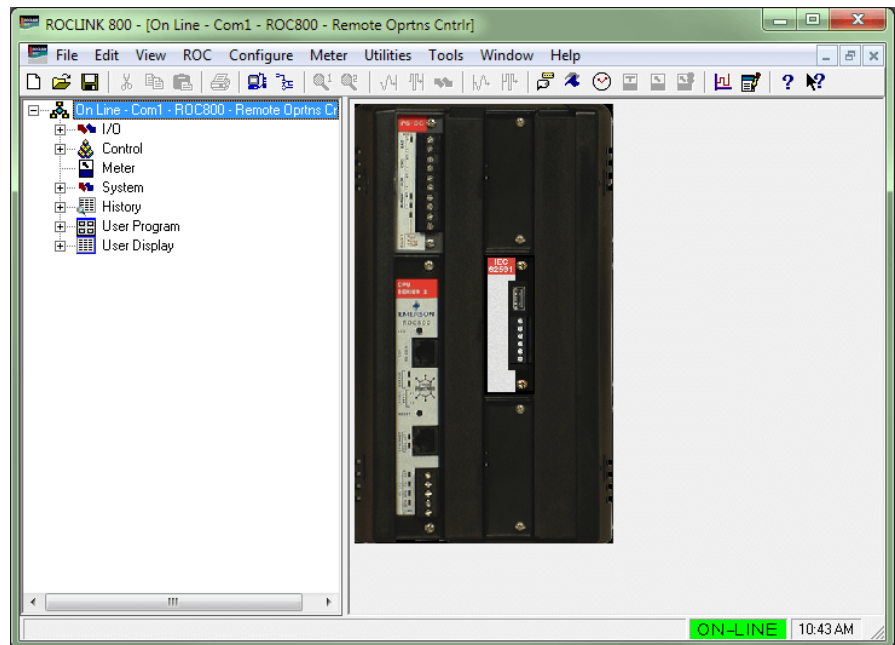


Figure 3-26. Starting ROCLINK

5. Click on the **IEC62591 Module** to verify that it is running. The System Mode field should display *Run Mode*.

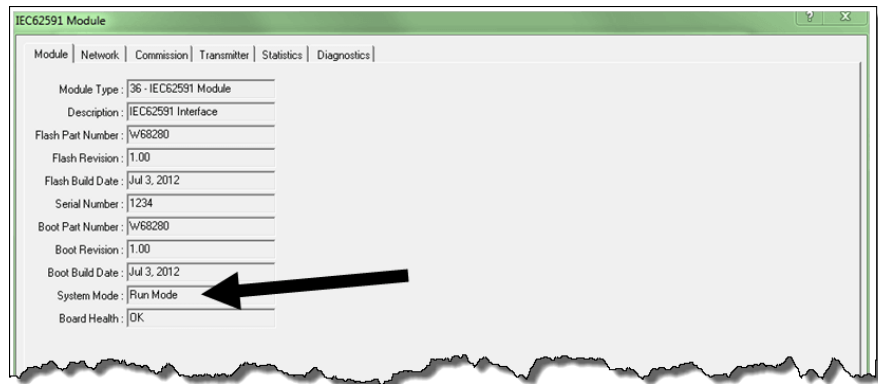


Figure 3-27. Verifying Run Mode

- Verify that the module is connected to the network and that the module is currently on-line.



Figure 3-28. Verifying Online Status

Remove the USB drive for your PC's USB port and attach it to the USB port on the IEC 62591 module.

- On the main ROCLINK screen select **Utilities > Update Firmware**.

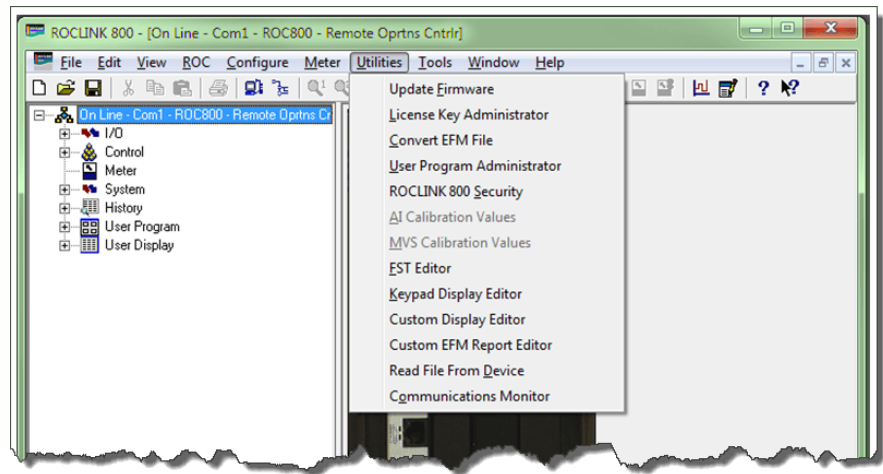


Figure 3-29. Selecting Utilities > Update Firmware

8. Select the **IEC62591 Module** tab and verify that the Current Version. Click **Start** to begin the update process.

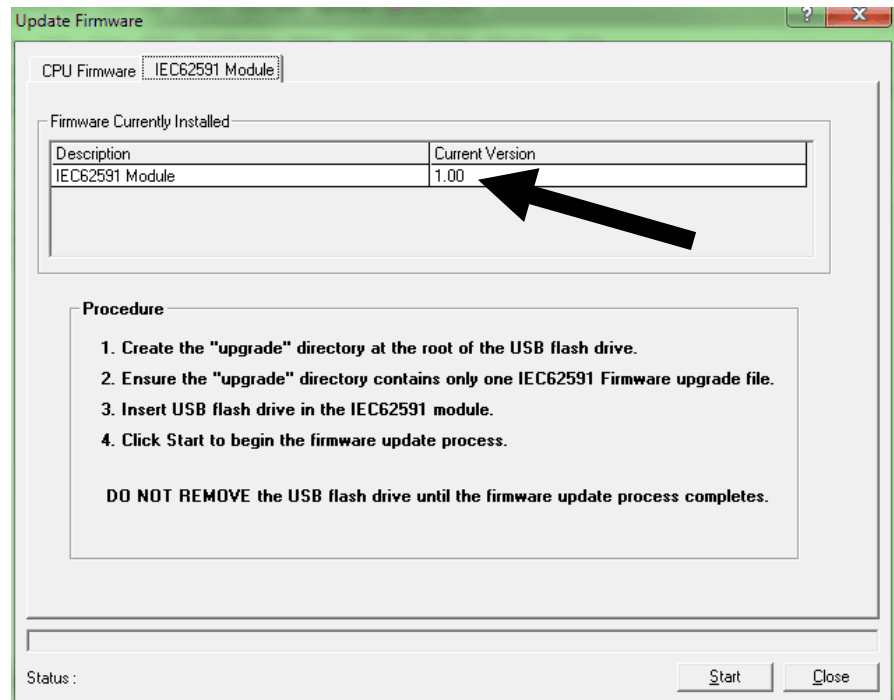


Figure 3-30. Verifying Current Version

9. When the dialog displays, click **Yes** to start the update process.

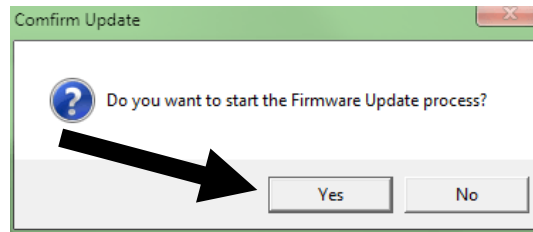


Figure 3-31. Starting the Firmware Update Process

10. ROCLINK begins the firmware update and displays status messages at the bottom of the screen.

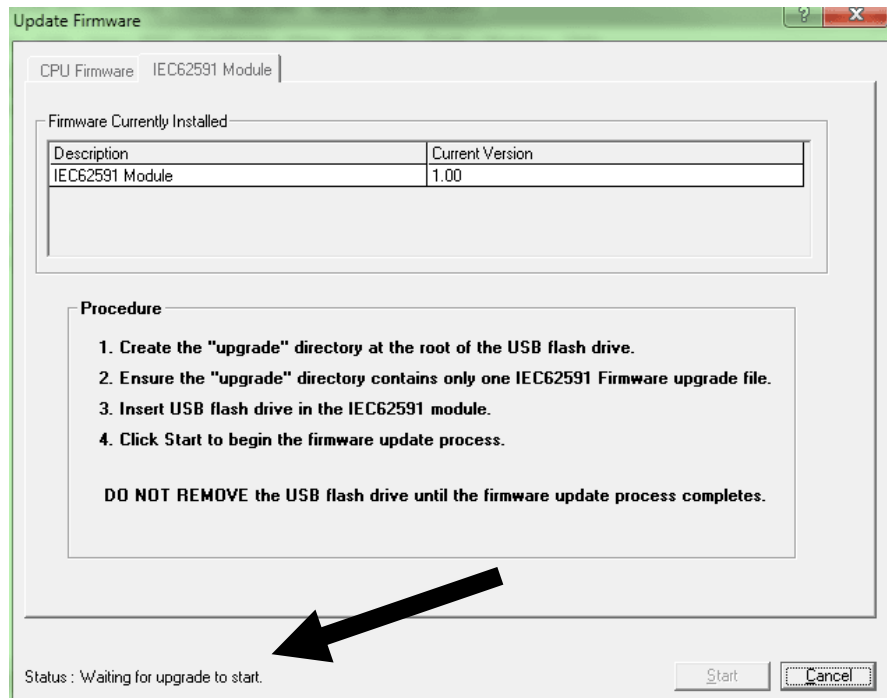


Figure 3-32. Status message: Waiting for upgrade to start

11. Once the update starts, it takes several minutes to complete. Status messages continue to display at the bottom of the screen.

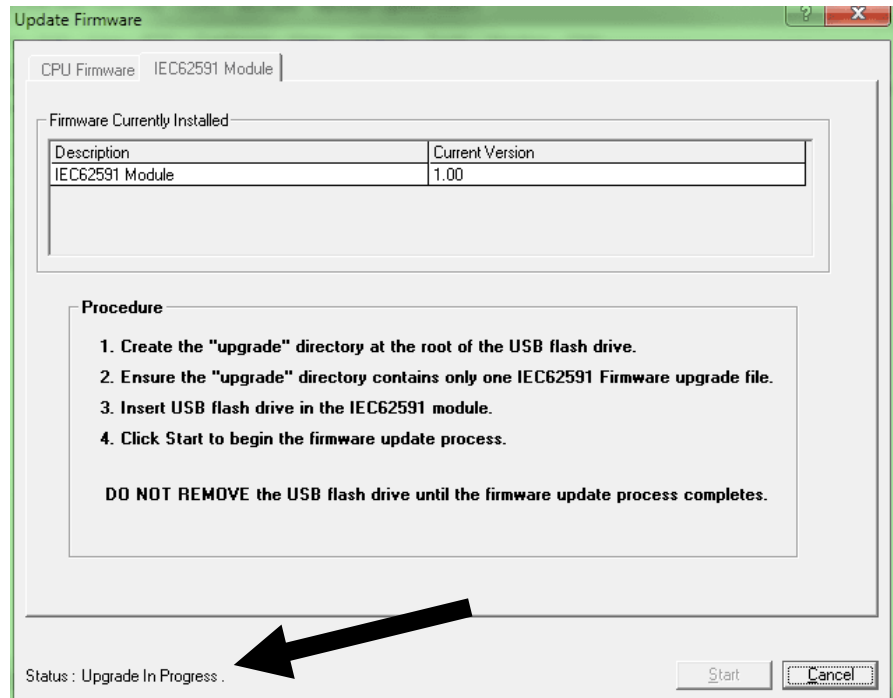


Figure 3-33. Status message: Upgrade in Progress

12. When the update completes, the program reboots the module.

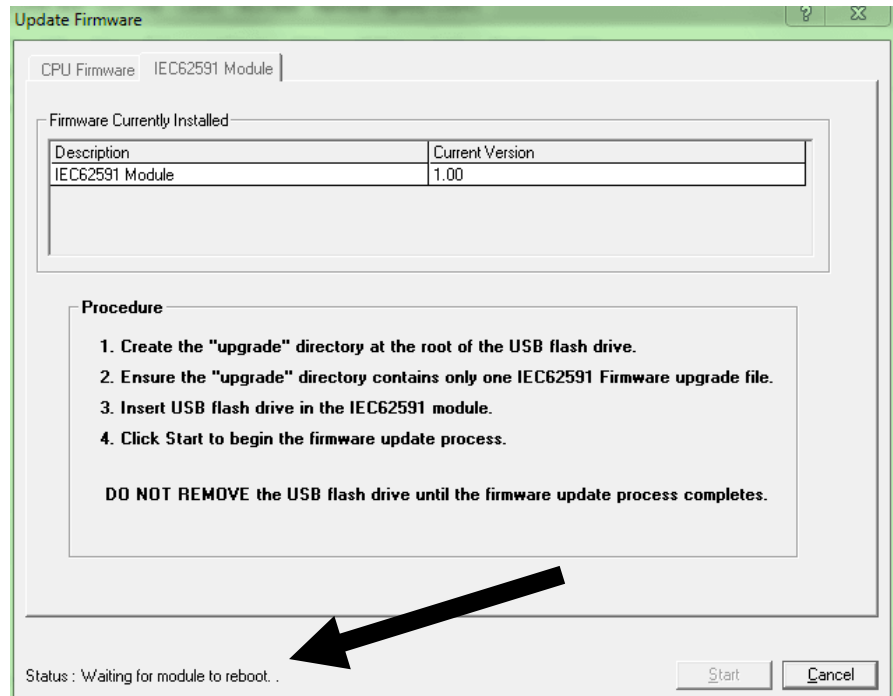


Figure 3-34. Status message: Waiting for module to reboot

13. When the firmware update finishes, a dialog displays. Click **OK** to continue.

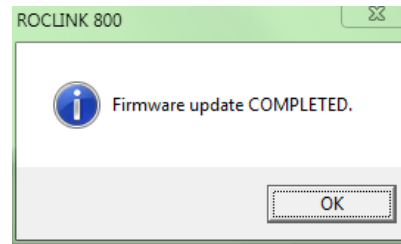


Figure 3-35. Firmware Update Completed Dialog

14. Verify that the version of firmware for the module is now updated.

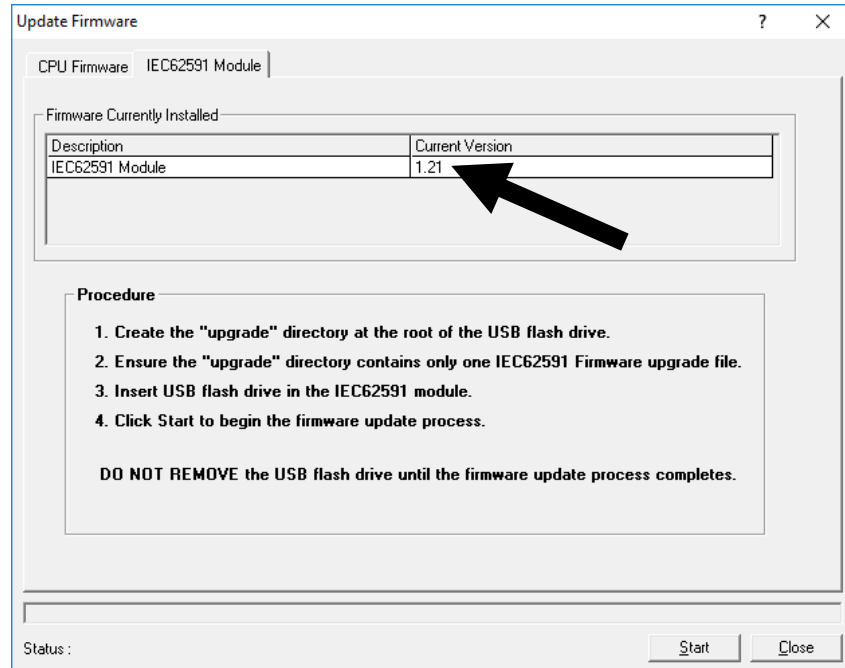


Figure 3-36. Verifying Version of Upgraded Firmware

15. The update process preserves the network settings for your module, but you should still verify that the settings are correct. Click **Cancel** to close the Update Firmware screen, click on the **IEC62591 Module** tab, and select the **Network** tab to review the network settings.

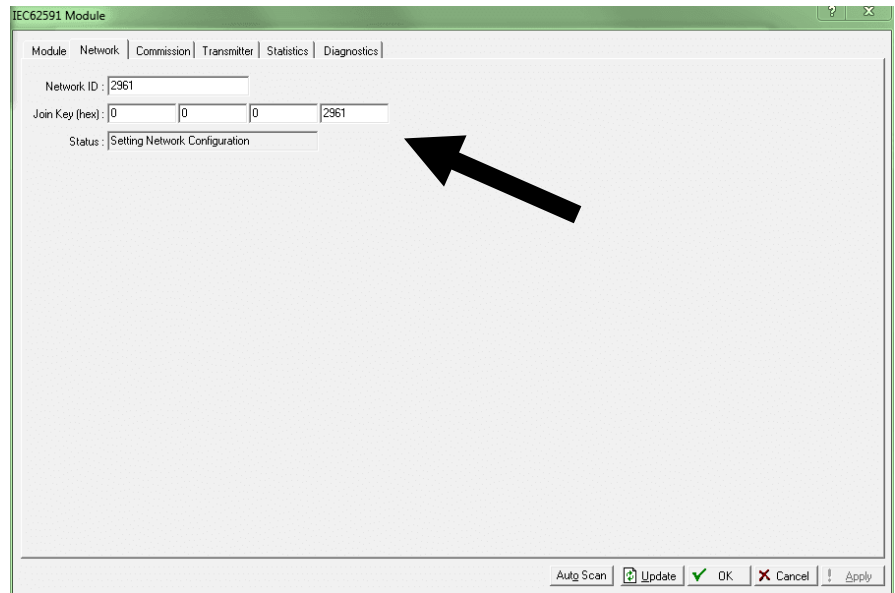


Figure 3-37. Verifying the Correct Settings

- 16.** The update is complete. Remove the USB drive from the port on the IEC 62591 module.

Chapter 4 – Troubleshooting

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This chapter provides general guidelines for troubleshooting the IEC62591 module and the Emerson Wireless 781S Smart Antenna (“781S”).

4.1 General Guidelines

Before you begin to troubleshoot the interface, you should observe the following guidelines:

- **Don’t overlook the obvious.** With all the activity involved in setting up a wireless network, it is easy to accidentally unplug an antenna or disconnect power from a device. Check those things first. (For a list of common problems, see the *Troubleshooting Checklist* at the end of this chapter.)
- **If something worked previously but has now stopped working, did you change something?** For example, if you re-downloaded the application and now it has stopped working, it’s possible that the change you made to the application might have caused a problem.
- **Adopt a systematic approach.** Don’t try to solve the problem by changing several different things at once. Change one thing, see if it causes an improvement, and make notes about what you did. Then you can try to make other changes. If you haphazardly begin swapping hardware modules, re-routing cables, and changing software parameters, you may end up in worse shape than when you started, or you may end up masking symptoms of an underlying problem.
- **Try to isolate the problem.** For example, if you can communicate with some wireless devices but not others, then concentrate on what’s different with the non-functional wireless devices, or their configuration parameters. If you can’t communicate with any wireless devices, you might not have correctly configured network parameters in the application, or there may be a problem at the 781S.

- **Use the hardware and software diagnostic tools provided with the product.** The IEC 62591 wireless application includes error codes which you can check; often these will identify configuration problems for you.
- **Collect and save as much relevant information as you can.** If possible, make notes concerning what steps you took leading up to the initial occurrence of the problem. Save printouts, screen captures, error codes, and so on so you can refer to them if you have to call for technical assistance.

4.2 Common Troubleshooting Techniques

Common troubleshooting techniques are given below:

4.2.1 Identifying which System Components are Working

The wireless interface has several different pieces of hardware and software. A failure in any one of them can cause problems, so you should consider all the different pieces to try to identify the source of your problem. For hardware you have:

- FB107/ROC800 controller with IEC 62591 module installed in a slot
- PC or laptop connecting the IEC 62591
- Cable between IEC 62591 module and 781S
- One or more wireless devices in the wireless network
- Field Communicator (optional)

For software you have:

- The IEC 62591 application running in ROCLINK 800
- IEC 62591 protocol software running in the 781S and in all the wireless devices

4.2.2 Conducting Basic Hardware Checks

- Ensure power is connected.
- Check that all modules are properly seated in slots.
- Ensure cable connections are good between the 781S and controller, and between the PC/laptop and the controller.
- Check status LEDs on the controller.
- Check for indications on the 781S. See its accompanying documentation (*Emerson Wireless 781S Smart Antenna Quick Start Guide*, part 00825-0700-4410, Rev AB) for details.

4.2.3 Looking for Possible Configuration Errors

- Does the IEC 62591 Wireless Interface support your wireless device(s)?
- Did you place the IEC62591 module in the proper slot as specified in the IEC 62591 application?
- Did you assign a unique Long Tag Name to each wireless device and specify the exact same long tag names in the IEC 62591 application?
- Did you assign a Network ID which must be the same in each wireless device in this network, and must also match the Network ID defined in the IEC 62591 application?
- Did you assign a Join Key which must be the same in each wireless device in this network, and must also match the Join Key defined in the IEC 62591 application?

4.2.4 Rebooting after a Power Loss

In the event of low power or complete power loss, if the IEC module fails to successfully reboot, the FB107 and/or ROC800 raise Communication Failure and Point Failure alarms, indicating that IEC 62591 communications are not functioning. To resolve the issue, remove and re-apply power to the RTU.

4.2.5 USB Flash Drive Not Recognized

Module initialization can take up to five minutes. During this time, the USB port on the module is not recognized. The module is initialized when the Status field on the Network tab includes the word **Online**. If a USB flash drive is not recognized after module initialization, power cycle your device and try again.

4.3 Errors from the IEC 62591 Transmitter Tab

You can use the *Transmitter Tab* in ROCLINK 800 to check if there are errors in configuration:

4.3.1 NaN value

The Transmitter tab shows a **NaN** (Not a Number) warning when the given parameter is currently in a failing state. To further investigate and resolve the issue, use Field Tools, the AMS Device Configurator, or a 475 hand-held.

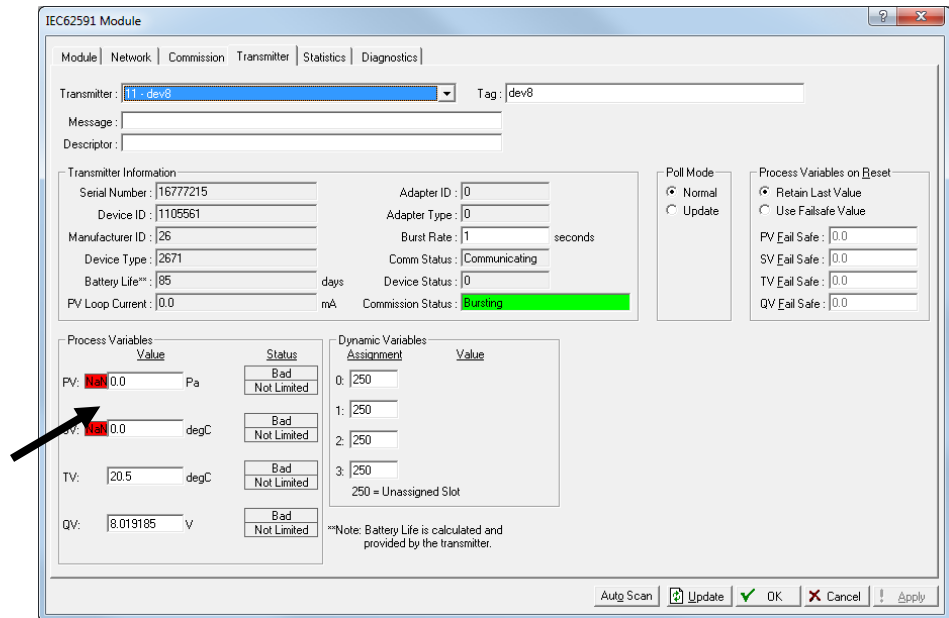


Figure 4-1. NaN Warning in Transmitter screen

When NaN is reported, the RTU supports a failsafe operation defined by the user (*Retain Last Value, Use Failsafe Value*).

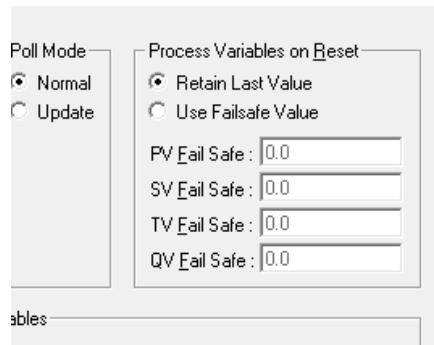


Figure 4-2. User-defined Failsafe Operation

4.3.2 Stale / Communication Failure

If the RTU reports a *Stale* or *Communication Failure* status in the *Communication Status* field, interrogate the transmitter using 475/AMS/Field Tools. The location of the transmitter's network diagnostics can be found the transmitter's manual.

Additionally, if the RTU reports a *Stale* status, assess the physical layout of the network. The *Stale* status can be triggered if there is any kind of physical anomaly in the network (tanker trucks between transmitter and RTU, transmitter between the end device and the RTU is powered down, etc.).

The RTU supports gathering *Diagnostic Logs* of the wireless network. You can extract these logs and send them to Technical Support for further analysis of the network issue.

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