FieldServer – EZ Gateway

M-Bus to Modbus & BACnet Start-up Guide

FS-EZX-MBUS-MOD-BAC



APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after March 2019.

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Technical Support

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1 ABOUT THE EZ GATEWAY

EZ Gateway is a high performance, cost effective Building and Industrial Automation multi-protocol gateway providing protocol translation between serial and Ethernet, devices and networks.

NOTE: For troubleshooting assistance refer to Appendix A, or any of the troubleshooting appendices in the related driver supplements. Check the Sierra Monitor website for technical support resources and documentation that may be of assistance.

The EZ Gateway is cloud ready and connects with Sierra Monitor's SMC Cloud. See **Section 5.3.3** for further information.

2 CERTIFICATION

2.1 BTL Mark – BACnet Testing Laboratory[1]

The BTL Mark on EZ Gateway is a symbol that indicates that a product has passed a series of rigorous tests conducted by an independent laboratory which verifies that the product correctly implements the BACnet features claimed in the listing. The mark is a symbol of a high-quality BACnet product.

Go to www.BACnetInternational.net for more information about the BACnet Testing Laboratory. Click here for the BACnet PIC Statement.

3 SUPPLIED EQUIPMENT

EZ Gateway

- Preloaded with the M-Bus, Modbus and BACnet drivers.
- All instruction manuals, driver manuals, support utilities are available on the USB drive provided in the optional accessory kit, or on the Sierra Monitor website.

Accessory kit (optional) (Part # FS-8915-36-QS) includes:

- 7-ft Cat-5 cable with RJ45 connectors at both ends
- Power Supply - 110/220V (p/n 69196)
- DIN rail mounting bracket
- Screwdriver for connecting to terminals
- USB flash drive loaded with:
  - M-Bus to Modbus & BACnet Start-up Guide
  - All FieldServer Driver Manuals
  - Support Utilities
  - Any additional folders related to special files configured for a specific EZ Gateway
  - Additional components as required - see driver manual supplement for details



[1] BACnet is a registered trademark of ASHRAE.

4 INSTALLING THE EZ GATEWAY

4.1 Mounting

The following mounting options are available:

- Product comes with tabs for wall or surface mount. These can be snapped off if not required.
- DIN rail mounting bracket - included in the accessory kit or ordered separately (part# FS-8915-35-QS).

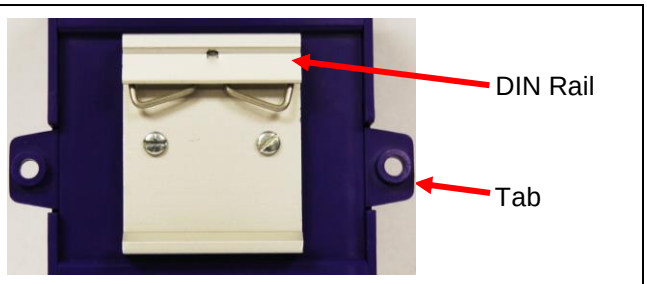


Figure 1: DIN Rail

WARNING: Install only as instructed, failure to follow the installation guidelines or using screws without the DIN rail mounting bracket could result in permanent damage to the product. If the FieldServer is removed from the DIN rail, use the original screws to reattach. Only screws supplied by SMC should be used in the holes found on the back of the unit when attaching the optional DIN rail bracket. USE OF ANY OTHER SCREWS MAY DAMAGE THE UNIT.

NOTE: For dimension details see Appendix B.3.

4.2 M-Bus Connection R2 Port

The EZ Gateway M-Bus to Modbus & BACnet is used to transfer data to and from devices using protocols. The M-Bus driver enables data access from M-Bus networks to other FieldServer protocols. Most M-Bus data-point types are supported, allowing communication to almost any kind of M-Bus device in an installation, such as utility meters, energy meters, flow meters, temperature & humidity sensors, etc. This allows BMS systems to access an M-Bus network using direct read the M-Bus points. The EZ Gateway is intended to act as a master (to read slave devices) or a slave (to emulate other single or multiple slave devices) to make the information available to other protocols.

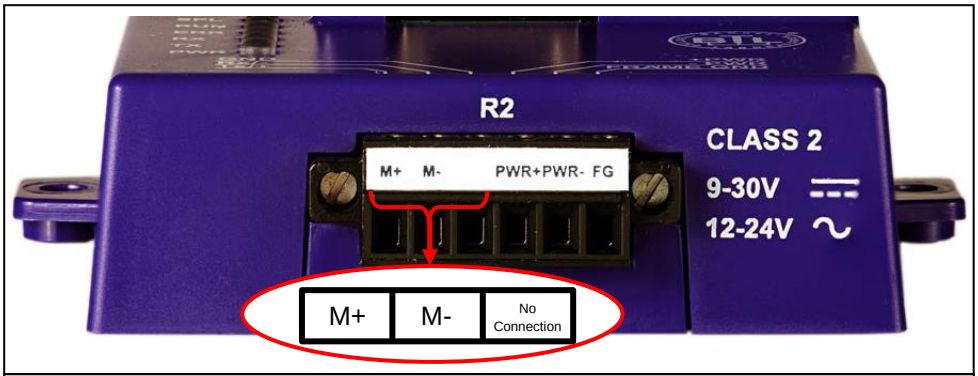


Figure 2: M-Bus Connection Port

The M-Bus connection consists of an M + and M- terminal. Most M-Bus devices are not polarity sensitive, but please verify the polarity before connecting any devices.

The following baud rates are supported on the R2 Port for M-Bus:
2400, 4800, 9600, 19200, 38400

4.2.1 RS-485 Connection R1 Port

Connect to the 3-pin connector as shown.

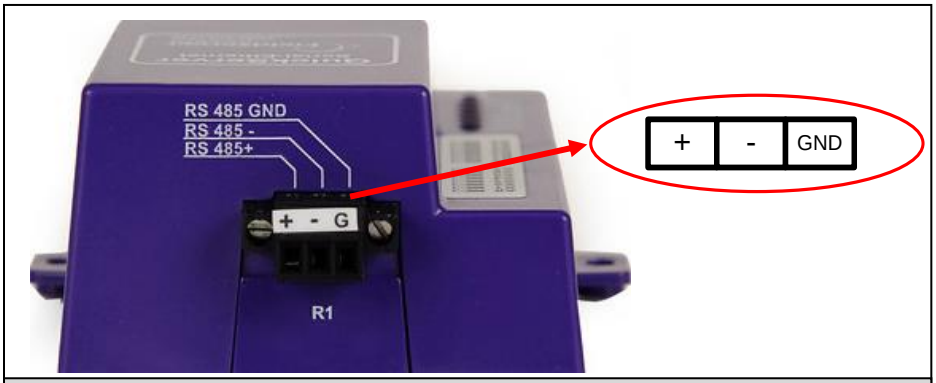


Figure 3: R1 Port connection

The following baud rates are supported on the R1 Port for Modbus RTU:
2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200

The following baud rates are supported on the R1 Port for BACnet MS/TP:
9600, 19200, 38400, 76800

4.3 R1 Port Small DIP Switches

Gently remove the FieldServer enclosure to access the small DIP switches for the R1 Port.

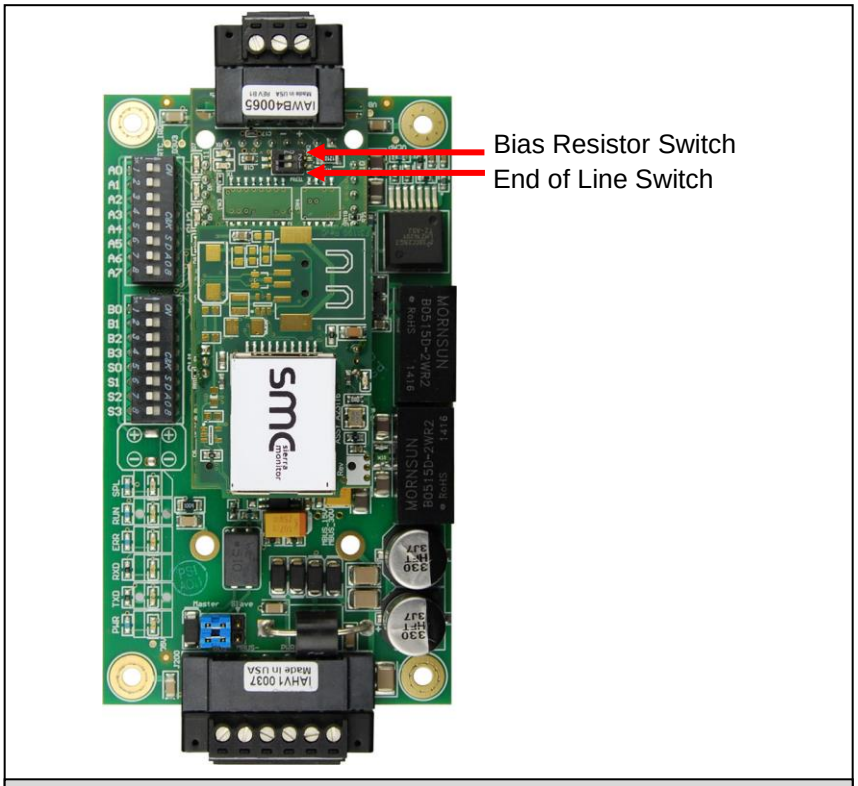


Figure 4: Bias Resistor DIP Switches & EOL

- If more than one RS-485 device is connected to the network, then the field bias resistor switch needs to be enabled to ensure proper communication. **See Figure 4 for the orientation of switch positions referenced below.**
  - The default factory setting is OFF (switch position = right side)
  - To enable biasing, turn the bias switch ON (switch position = left side)

NOTE: Biasing only needs to be enabled on one device. The FieldServer has 510 ohm resistors that are used to set the biasing.

- If the FieldServer is the last device on the trunk, then the end of line (EOL) termination switch needs to be enabled. **See Figure 4 for the orientation of switch positions referenced below.**
  - The default factory setting is OFF (switch position = right side)
  - To enable the EOL termination, turn the EOL switch ON (switch position = left side)

5 OPERATION

5.1 Power Up the Device

Apply power to the device. Ensure that the power supply used complies with the specifications provided in **Appendix B.1**. Ensure that the cable is grounded using the “Frame GND” terminal. The EZ Gateway requires a power supply that provides 9-30V DC or 24V AC.

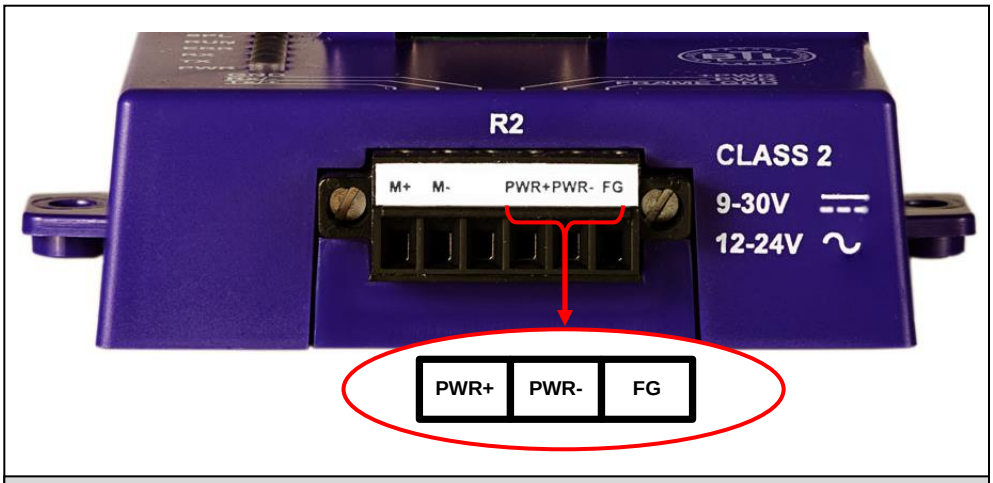


Figure 5: Power Connection

5.2 Connect the PC to the EZ Gateway Over the Ethernet Port

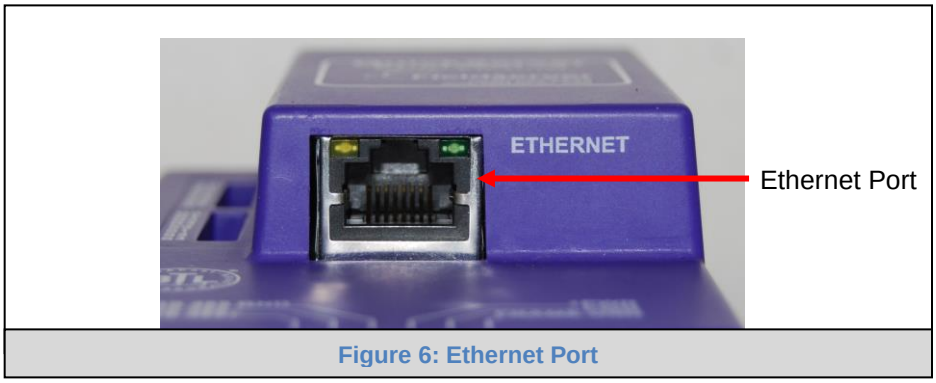


Figure 6: Ethernet Port

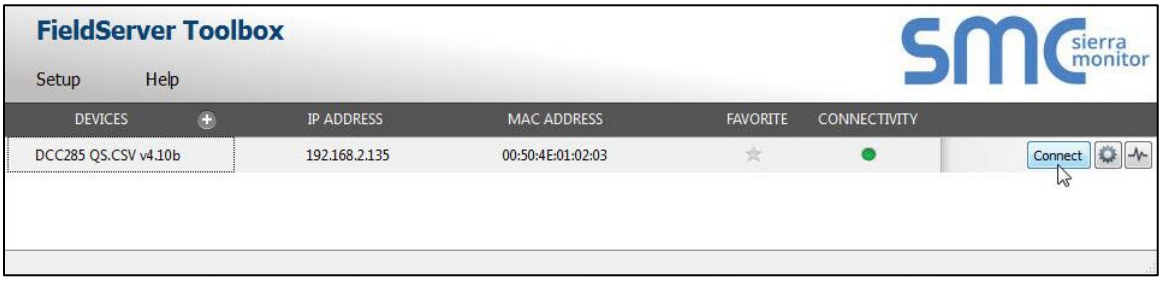
- Connect an Ethernet cable between the PC and EZ Gateway or connect the EZ Gateway and the PC to the switch using a straight Cat-5 cable.
- The default IP Address of the EZ Gateway is **192.168.2.101**, Subnet Mask is **255.255.255.0**.

5.3 Connecting to the EZ Gateway

5.3.1 Using the FieldServer Toolbox to Discover and Connect to the EZ Gateway

- Install the FS Toolbox from the USB drive or download it from the Sierra Monitor website.
- Use the FS Toolbox to find the EZ Gateway and launch the Web App.

NOTE: If the connect button is greyed out, the EZ Gateway's IP Address must be set to be on the same network as the PC. (**Section 5.3.2**)



5.3.2 Using the Web App

- Open a web browser and connect to the EZ Gateway's default IP Address. The default IP Address of the BACnet Router is **192.168.2.101**, Subnet Mask is **255.255.255.0**.
- If the PC and the EZ Gateway are on different IP networks, assign a static IP Address to the PC on the 192.168.2.X network.

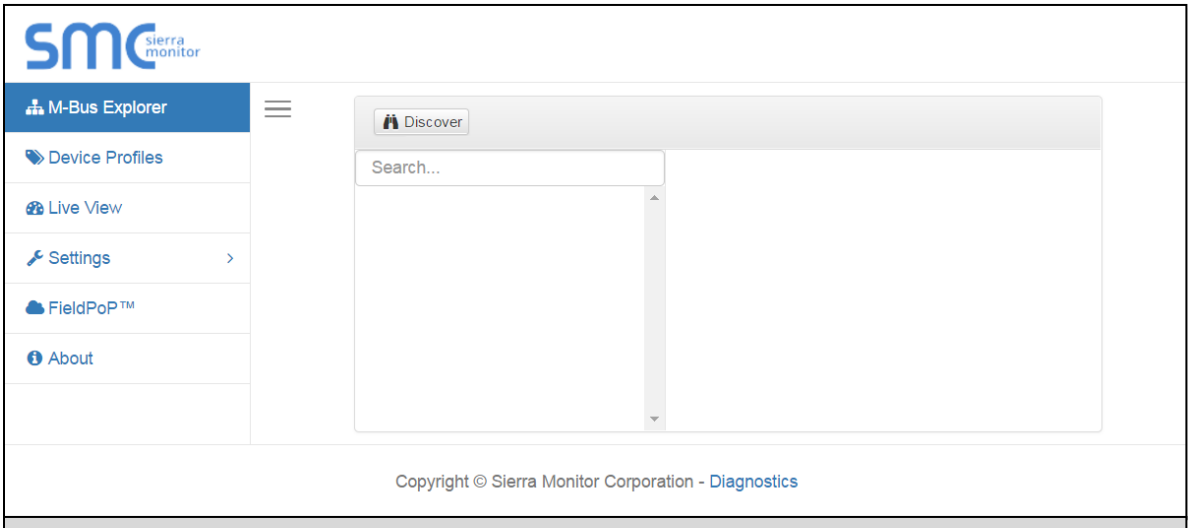


Figure 7: EZ Gateway Landing Page

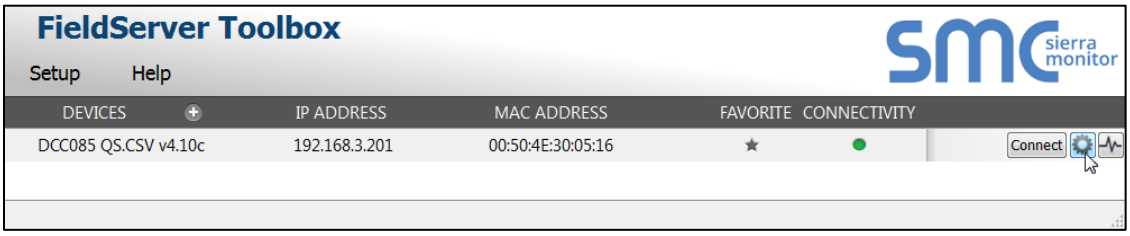
5.3.3 Accessing SMC Cloud

The FieldPoP™ tab FieldPoP™ (see **Figure 7**) allows users to connect to the SMC Cloud, Sierra Monitor's device cloud solution for IIoT. The SMC Cloud enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about the SMC Cloud, refer to the SMC Cloud Start-up Guide.

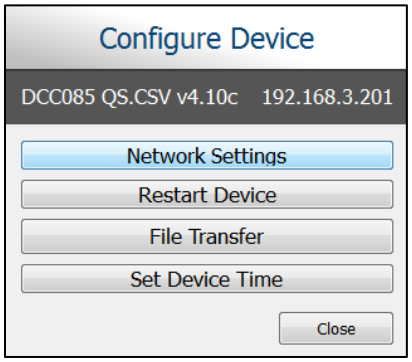
5.4 Set the IP Address of the EZ Gateway

5.4.1 Using the FieldServer Toolbox Application to Set the IP Address

- From the FS Toolbox main page, click on the setup button (gear icon).



- Select Network Settings in the Configure Device window.



- Modify the IP Address (N1 IP Address field) of the EZ Gateway Ethernet port.
  - The following fields may also be changed as needed: Netmask (N1 Netmask field), DHCP Client State (N1 DHCP Client State field), IP Gateway (Default Gateway field) and DNS 1 & 2 (Domain Name Server fields)

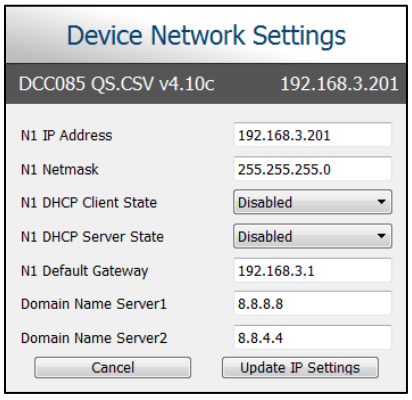
NOTE: If the EZ Gateway is connected to a router, the IP Gateway of the EZ Gateway should be set to the IP Address of the connected router.

NOTE: Do not change the DHCP Server State (N1 DHCP Server State field).

NOTE: If DNS settings are unknown, set DNS1 to "8.8.8.8" and DNS2 to "8.8.4.4".

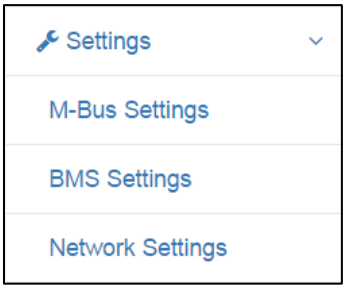
- Click Update IP Settings, then click on the Change and Restart to restart the Gateway and activate the new IP Address.

NOTE: If the Web App was open in a browser, the browser will need to be pointed to the new IP Address of the EZ Gateway before the Web App will be accessible again.



6 CONFIGURING THE EZ GATEWAY SETTINGS

Click on the Settings tab (wrench icon) to show all three settings pages: M-Bus, BMS and Network Settings.



The table below describes how the buttons at the bottom of each page function.

Button	Definition
Save	Click to save settings. Saving will require the device to be restarted.
Reset	Click to clear the current settings before saving; if settings have been saved the Reset button is unavailable.
Defaults	Click to change settings back to factory defaults.

Figure 8: Settings Button Functions

The following sections explain the setting parameters by page for the EZ Gateway.

6.1 M-Bus Settings

Enter the desired Baud Rate for the M-Bus port on the EZ Gateway.

The following baud rates are supported for M-Bus: 2400, 4800, 9600, 19200, 38400

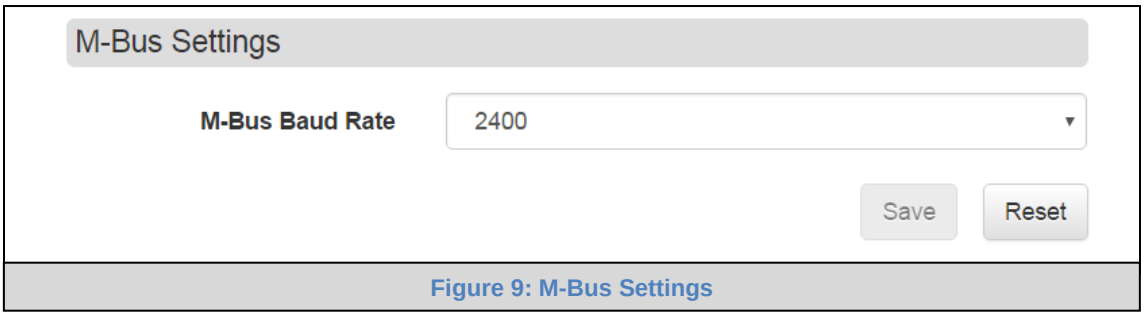


Figure 9: M-Bus Settings

NOTE: This Setting is also known as the global baud rate. The EZ Gateway supports communication between devices with different baud rates at the same time. You can specify a profile baud rate when creating or editing a profile (Figure 22).

6.2 BMS Settings

Select appropriate protocol and enter the fields for the protocol settings described below as needed.

6.2.1 BACnet/IP and BACnet MS/TP

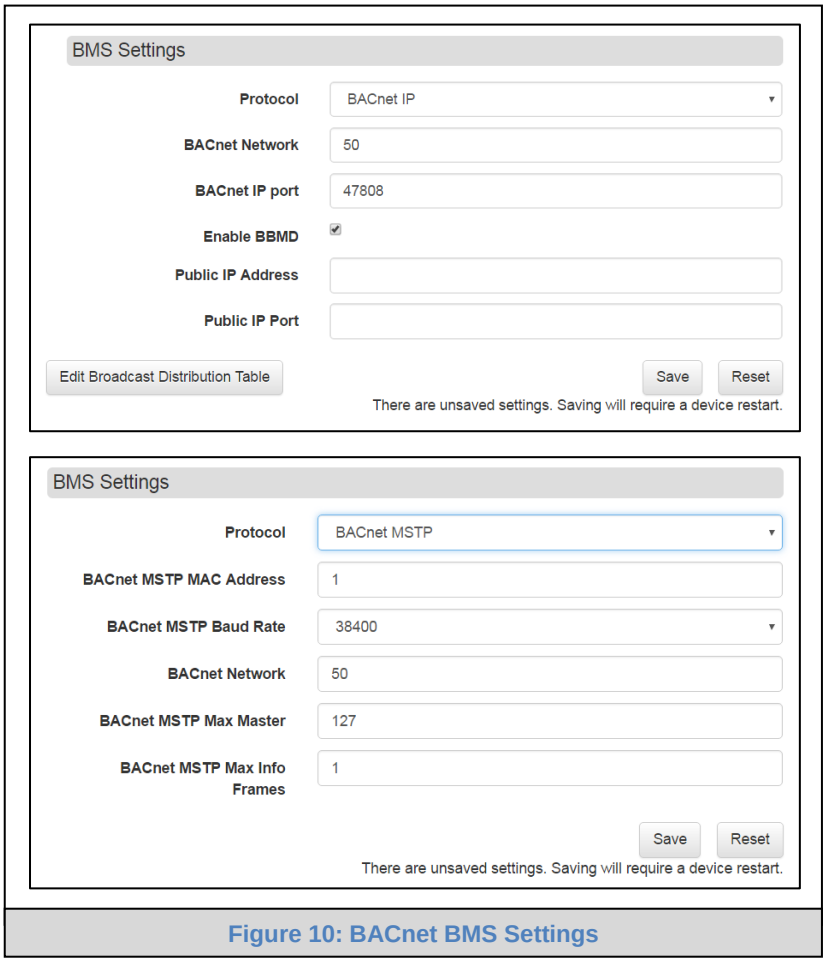


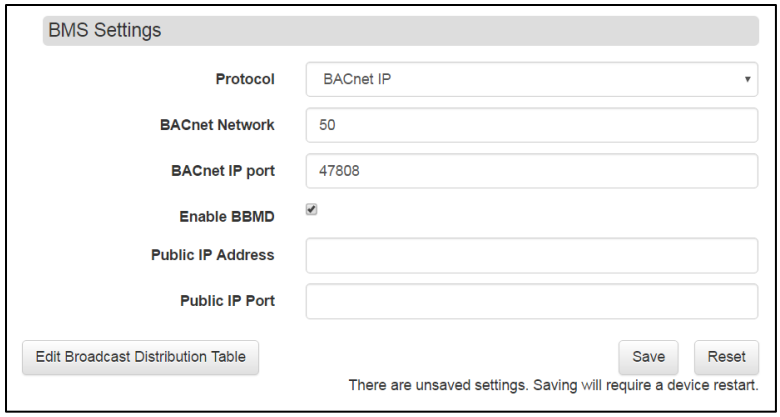
Figure 10: BACnet BMS Settings

Parameter	Definition
All Connections	
BACnet Network	The BACnet network number for the connection. Legal values are 1-65534. Each network number must be unique across the entire BACnet internetwork.
BACnet/IP Settings[2]	
IP Port	The BACnet/IP default is 47808 (0xBAC0), but other port numbers can may be specified.
BACnet MS/TP Settings	
MAC Address	Legal values are 0-127, must be unique on the physical network.
Max Master	The highest MAC address to scan for other MS/TP master devices. The default of 127 is guaranteed to discover all other MS/TP master devices on the network.
Max Info Frames	The number of transactions the BACnet Explorer may initiate while it has the MS/TP token. Default is 50.
Baud Rate	The serial baud rate used on the network.

Figure 11: BACnet Connection Parameters

[2] See BBMD details in **Section** 6.2.1.1; this includes Public IP Address and Port.

6.2.1.1 Enabling BBMD and Editing the Broadcast Distribution Table



Parameter	Definition
BACnet/IP BBMD Settings	
Enable BBMD	Select this checkbox to enable the Router to act as a BBMD.
Public IP Address	If the BBMD is being accessed across a NAT Router, then these values must be configured with the public IP address and Port by which the BBMD can be reached from across the NAT Router. The Public IP Address and Port would also be used in the Broadcast Distribution Table (BDT) of remote BBMD's that need to reach this BBMD across the NAT Router (see Figure 13). If no NAT Router is being used, these fields can be left blank.
Public IP Port	This MUST be different to the IP Port used on the BACnet/IP Primary connection. Default is 47809 (0xBAC1).

Figure 12: Connection Parameters – BBMD

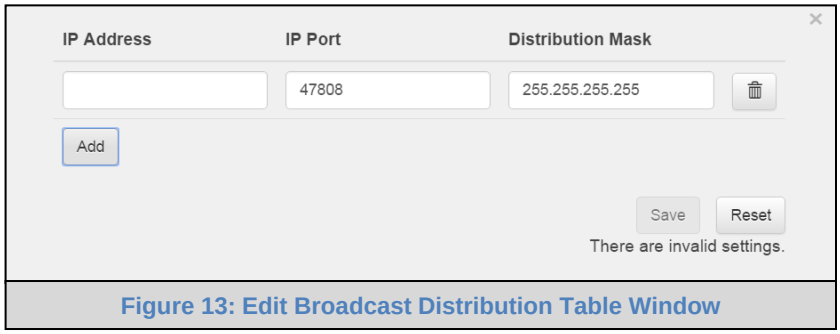


Figure 13: Edit Broadcast Distribution Table Window

6.2.1 Modbus TCP/IP and Modbus RTU

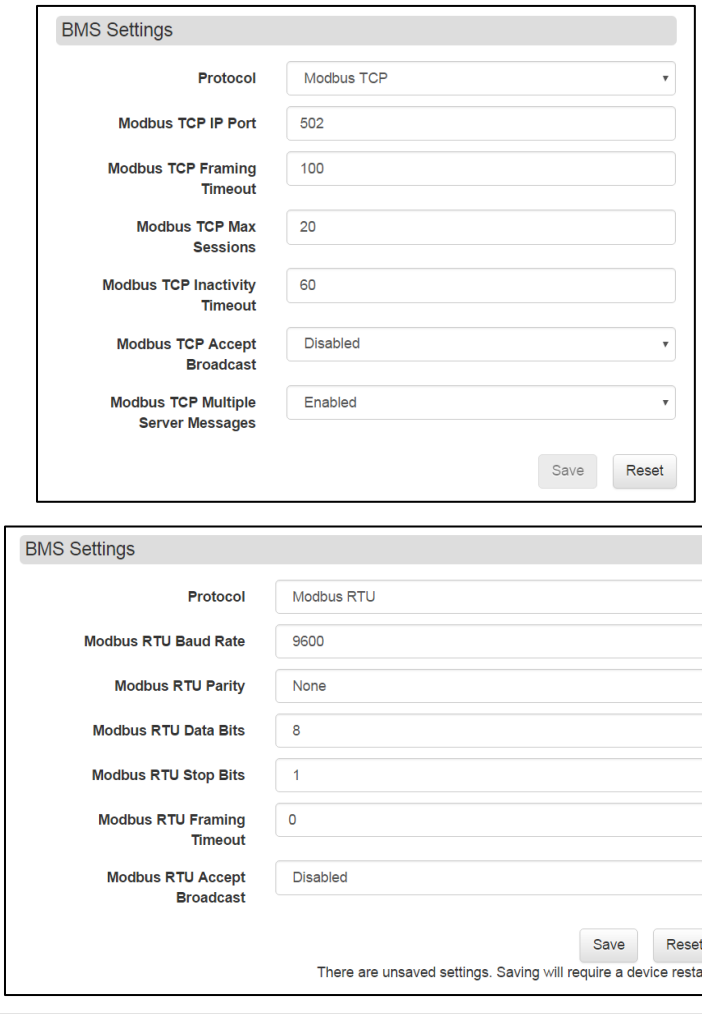


Figure 14: Connection Settings

Parameter	Definition
All Connections	
Framing Timeout	Sets time EZ Gateway will wait for a message frame to complete on the network. This is useful on busy Modbus networks where unknown messages for other devices may cause longer timeouts. Legal values are 0 - 2147483647 milliseconds (0 means disabled).
Accept Broadcast	Select whether server will accept broadcast messages.
Modbus TCP/IP Settings	
IP Port	The default is 502, but other port numbers can be specified.
Max Sessions	The maximum sessions that will be accepted by the server side.
Inactivity Timeout	The FieldServer will close the connection opened by the client if there is no activity for this time period.
Multiple Server Messages	Enable or disable the ability to parse multiple messages in a stream.
Modbus RTU Settings	
Parity, Data Bits, Stop Bits, and Baud Rate	Specify desired values.

Figure 15: Connection Parameters

6.3 Network Settings

The IP Settings for the EZ Gateway are used by BACnet/IP and Modbus TCP/IP. The IP Settings can be edited in the Network Settings section as shown.

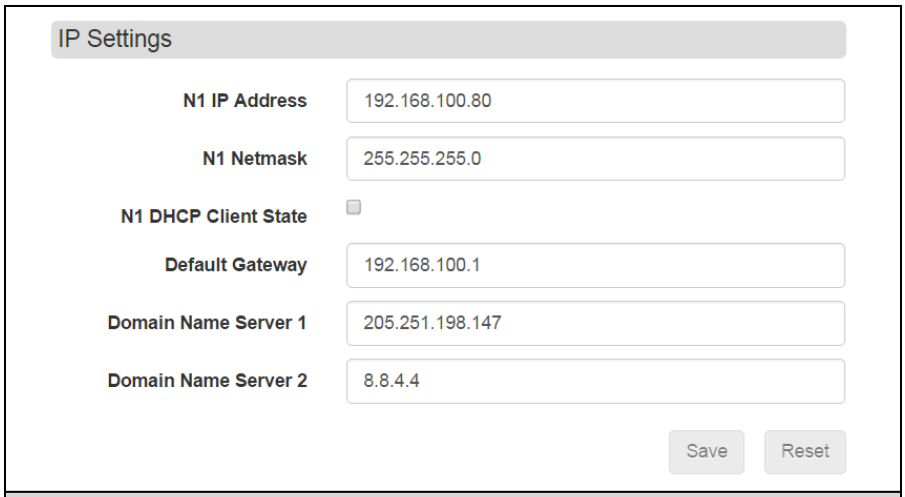


Figure 16: IP Settings

7 USING THE EZ GATEWAY

7.1 Find Devices Using M-Bus Explorer Page

- Click on the M-Bus Explorer tab on the left side of the screen to go to the M-Bus Explorer page.

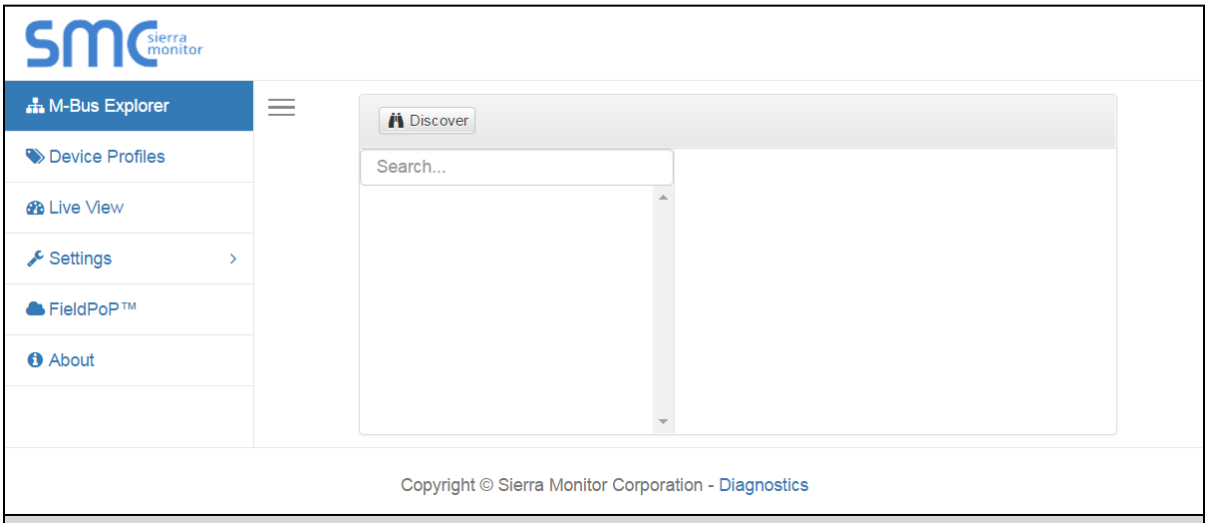


Figure 17: M-Bus Explorer Page

- To find M-Bus devices connected to the same subnet as the EZ Gateway, click the Discover button (binoculars icon).
- This will open the Device Discovery window, select Secondary Address or Test Address, then fill in the desired device ID range/baud rate(s) and click Discover to start the search.

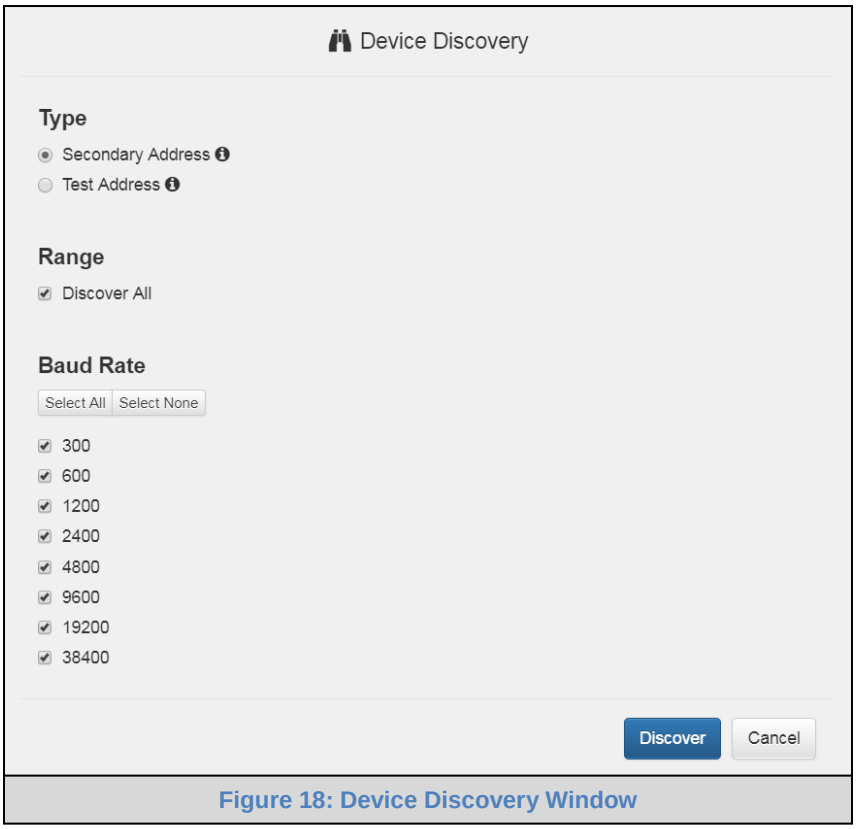


Figure 18: Device Discovery Window

Discovery Types

There are two discovery types that are useful in different situations. See details below.

Secondary Address – This discovery type should be used when there are multiple devices connected to the bus to do a wildcard search across the full address space. However, only some M-Bus Slave devices support secondary address discovery.

Test Address – This discovery type should be used when there is a single device connected the bus to do a fast discovery. This type is also useful when a Slave device doesn't support secondary address discovery and needs to be connected one at a time to read each device's info for profile creation/address information.

- Wait until the Device Discovery process is complete - a blue progress bar will show the discovery progress and is followed by a green bubble stating that the discovery is complete.
- Once the discovery is finished, new M-Bus devices connected to the same bus should appear on the M-Bus Explorer page.



Figure 19: M-Bus Explorer Page with Discovered Devices

NOTE: Should any devices not be listed using Secondary Address Discovery, it is recommended that the undiscovered devices are connected one at a time to the M-Bus network and be discovered using the Test Address method.

Device Status

There are four possible statuses for a device as seen in parenthesis in **Figure 19**.

No Profile – The EZ Gateway does not have a profile for this device.

Not Loaded – The EZ Gateway has a saved profile for this device but the profile instance is not loaded.

Loaded – The EZ Gateway has a saved profile for this device and the profile instance is loaded.

Data Error – Not all data could be retrieved for the device.

- Click a device to see device details and data.

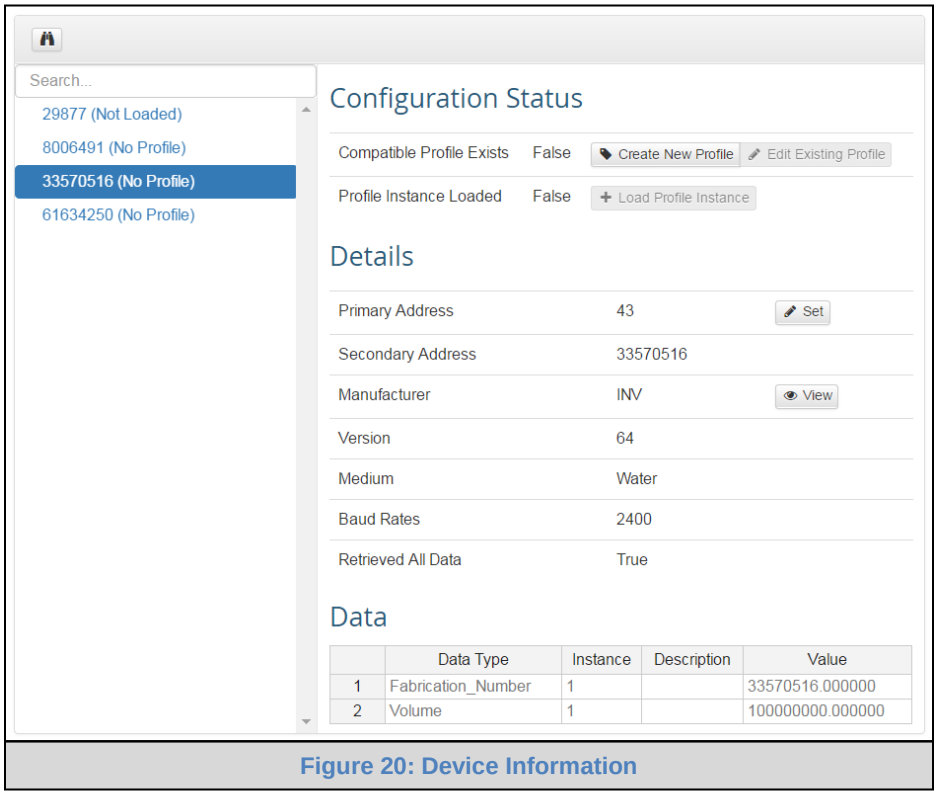


Figure 20: Device Information

7.2 Create a Profile from a Discovered Device

- Click on the desired device to show Configuration Status, Details and Data.

  Compatible Profile Exists – If “True” is displayed, a profile already exists for this M-Bus discovered device.

  Profile Instance Loaded – If “True” is displayed, this profile has been created and the profile instance has been loaded.

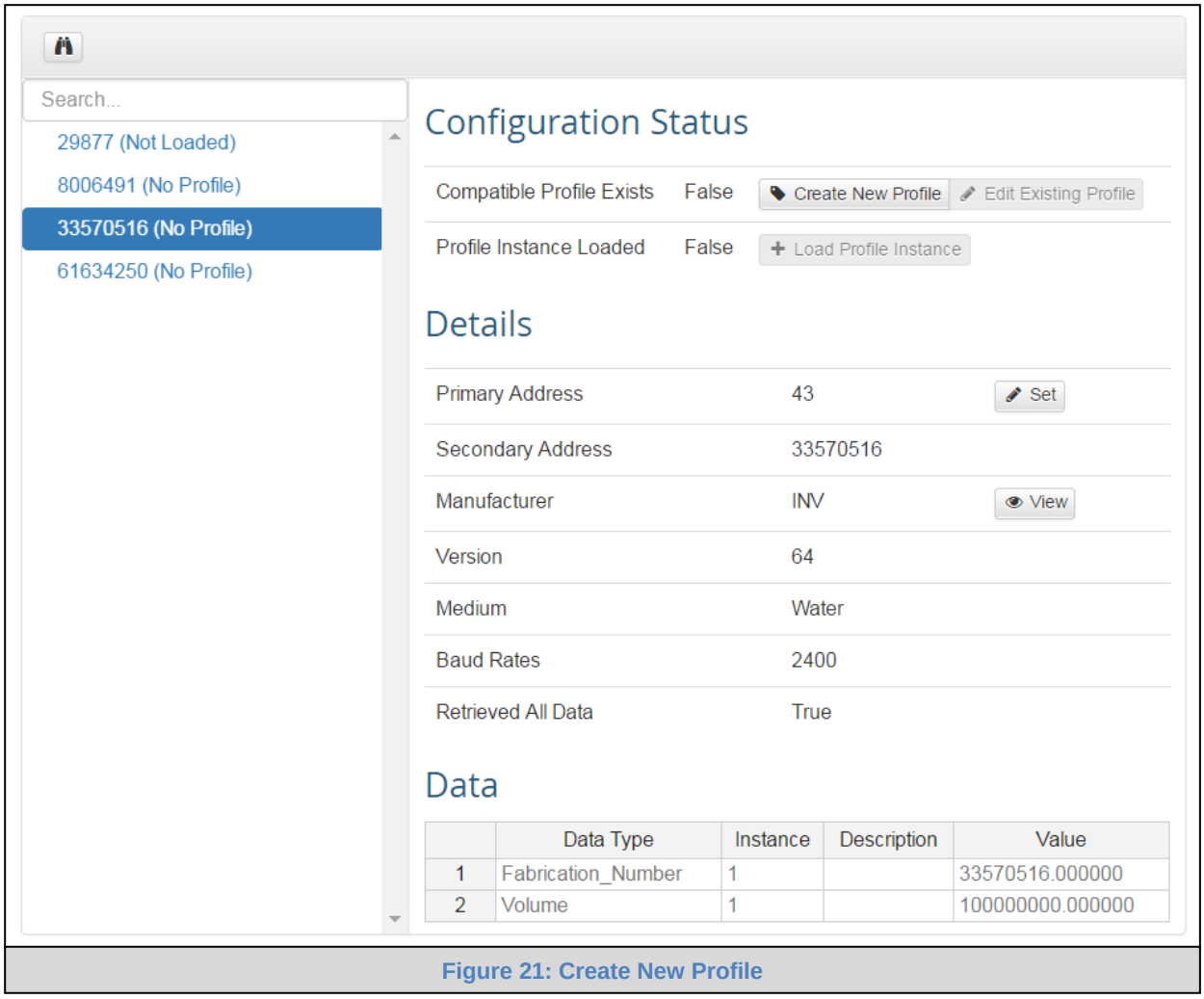


Figure 21: Create New Profile

- Click on the Create New Profile button (under the Configuraion Status section) to use this M-Bus data map as the template for a new profile.

- Define the Profile Settings as needed.

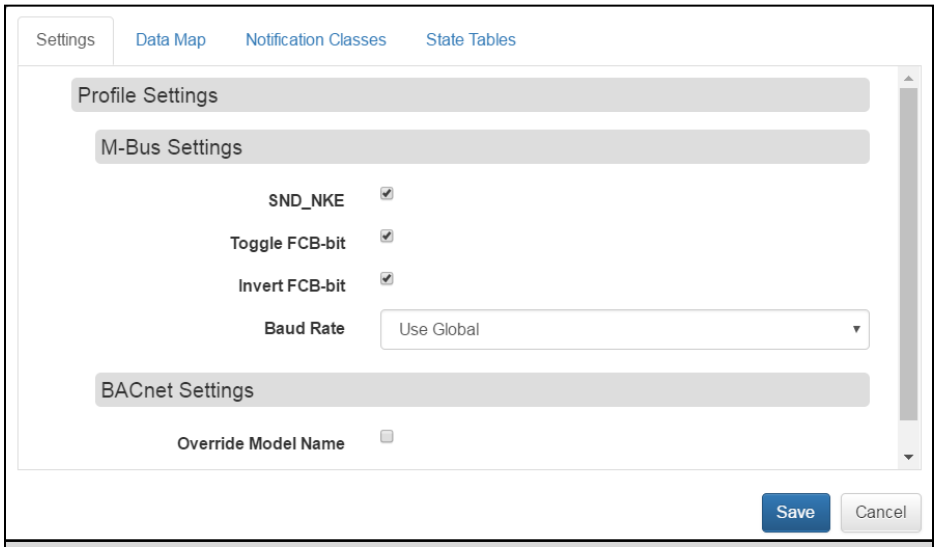


Figure 22: New Profile – Select Profile Settings

NOTE: A profile baud rate can be set to global or a specific buad rate. To set the global buad rate see Section 6.1.

- Edit the Data Map as needed.

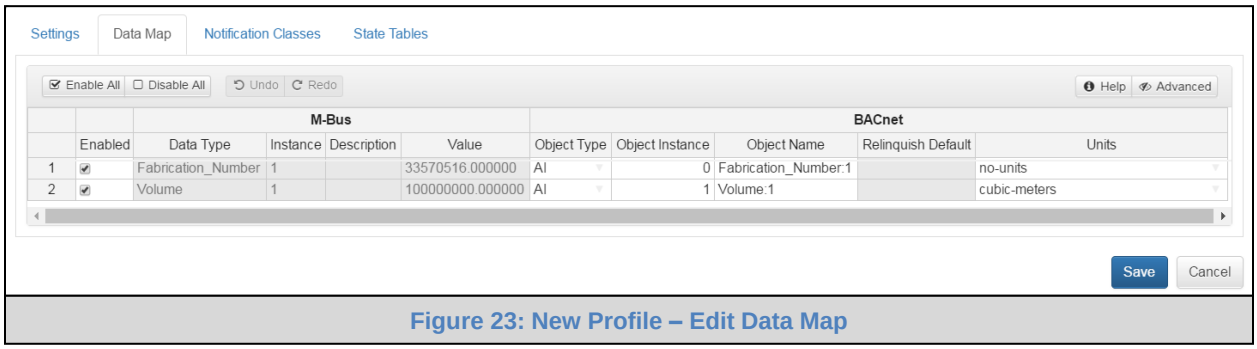


Figure 23: New Profile – Edit Data Map

- Click the Advanced button to see all possible mapping elements
- Click the Help button to see detailed explanations of each element

- Add Notification Class(es) if needed.
  - Click the Add button and enter the number of Notification Classes to create
  - Fill in the fields as needed

NOTE: The desired notification class must be specified per point on the data map.

NOTE: The Save button will be disabled unless all red fields are filled in with valid values.

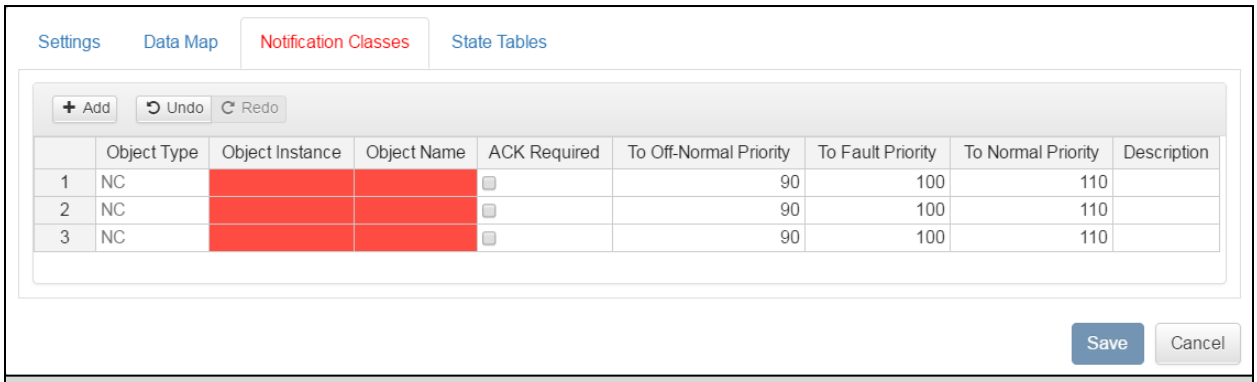


Figure 24: New Profile – Adding Notification Class

- Add State Table(s) if needed.
  - Click the Add button and enter the name of the State Table to create a new table
  - Click the table that was just created, then click the Add button in the table and enter the number of required entries (rows) for the table

NOTE: The desired notification class must be specified per point on the data map.

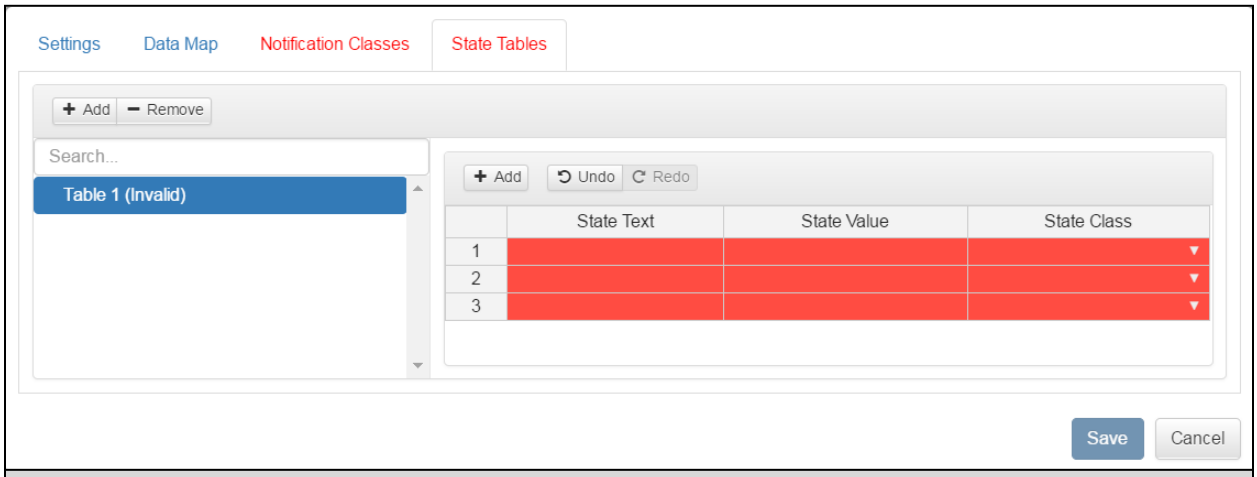


Figure 25: New Profile – Adding State Table

  - Fill in the desired state values and repeat this process if additional tables are required.

NOTE: The Save button will be disabled unless all red fields are filled in with valid values.

- Once all editing is complete, click the Save button to open the Save Profile window; name the profile and click Save again to complete profile creation.

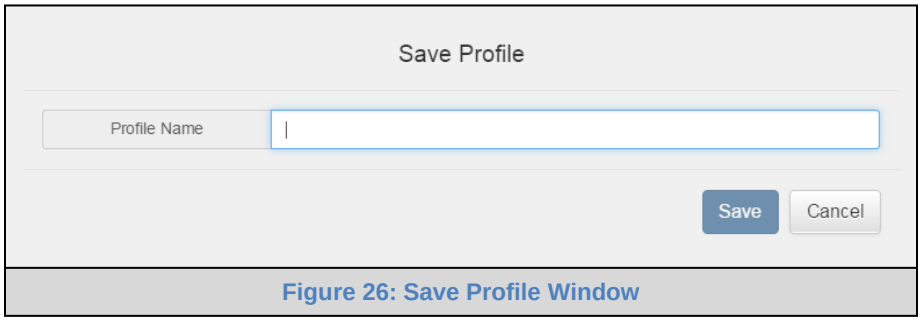
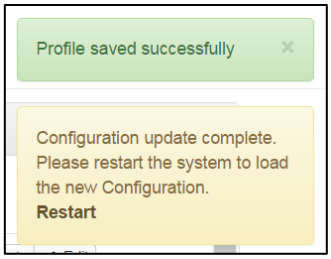


Figure 26: Save Profile Window

- After saving the profile the following messages will appear:



- Click the bolded “Restart” text on the bottom of the yellow message to restart the EZ Gateway.

7.3 Manage Profiles Using the Device Profiles Page

- Click on the Device Profiles tab on the left side of the screen to go to the device profiles page.

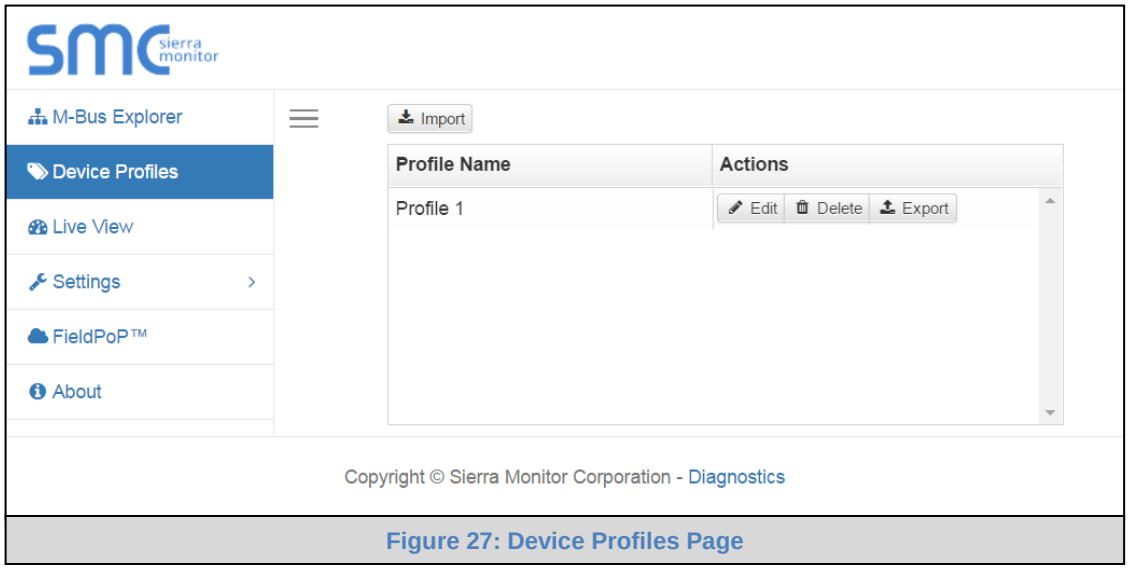
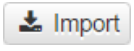


Figure 27: Device Profiles Page

NOTE: If a profile has been saved from a discovered device using the M-Bus Explorer, the saved profiles will appear on this page.

- Profiles can be edited, deleted or exported as needed using the buttons under the Actions heading to the right of each profile name.
- Profiles can also be imported from the local PC using the Import button.

7.3.1 Import Button

- To import profiles from the local PC, click the Import button 

.
- Select the profile via the Import Profile window and click the Import button.

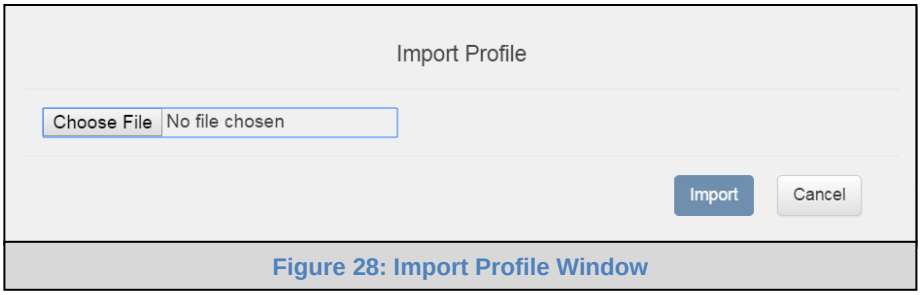


Figure 28: Import Profile Window

- A green bubble will appear that states the profile has been imported sucessfully.
- The new profile will now show on the Device Profiles page.

7.3.2 Edit Button

- Through the Edit button the Profile Settings, Data Map, Notication Classes and State Table can be redefined.

NOTE: See Section 7.2 for a walkthrough on editing profile information.

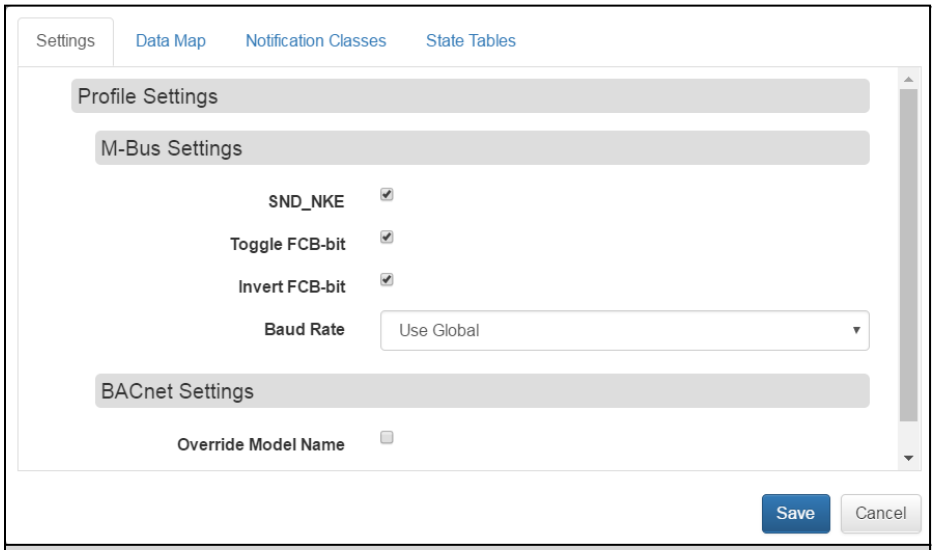


Figure 29: Edit Profile Window

- Once all editing is complete, click the Save button to open the Save Profile window; name the profile and click Save again to complete profile creation.

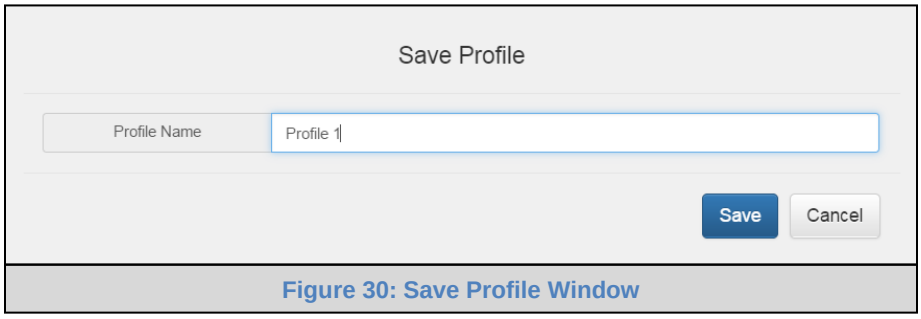
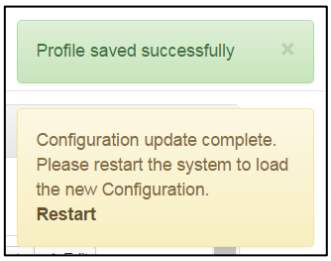


Figure 30: Save Profile Window

- After saving the profile the following messages will appear:



- Click the bolded “Restart” text on the bottom of the yellow message to restart the EZ Gateway.

7.3.3 Delete Button

- Click the Delete button Delete to remove the profile in that row from the EZ Gateway.

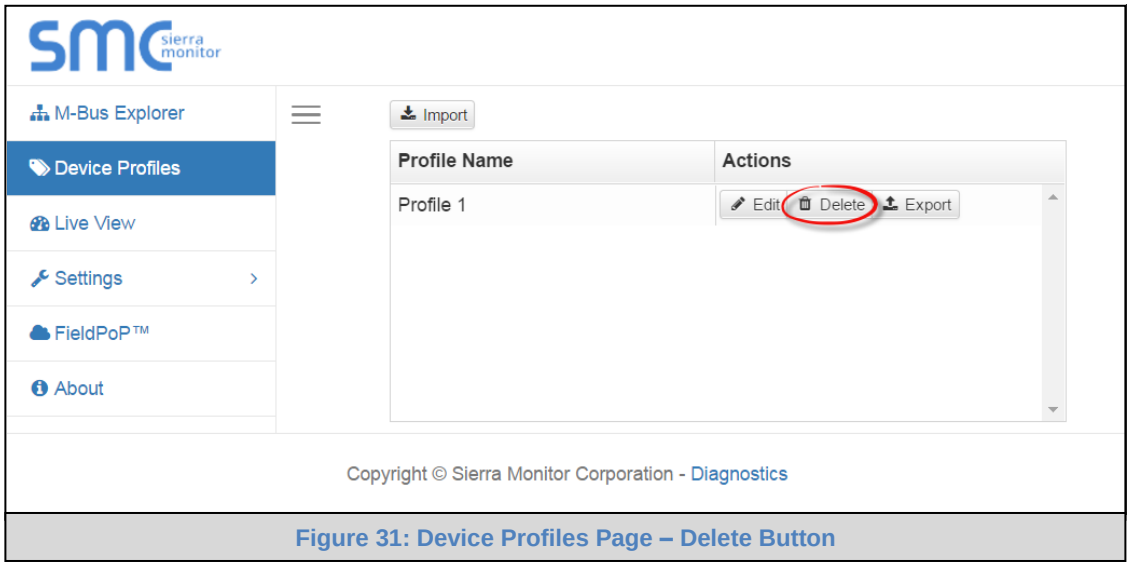


Figure 31: Device Profiles Page – Delete Button

7.3.4 Export Button

- Click the Export button Export to create a copy of the profile in that row on the local computer's default download folder.

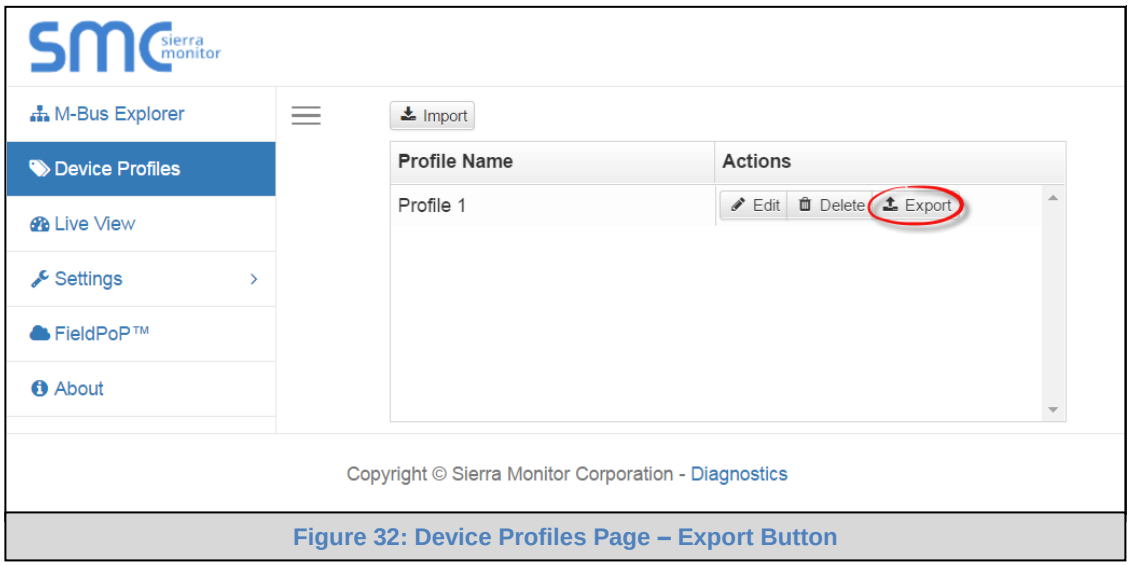


Figure 32: Device Profiles Page – Export Button

NOTE: The .profile file will instantly download to the default download folder.

7.4 Load a Profile Instance Using M-Bus Explorer

- Click the M-Bus Explorer tab.
- Click on a device to load that also has a profile saved on the EZ Gateway (the Compatible Profile Exists parameter is “True”).
- Click on the Load Profile Instance button.

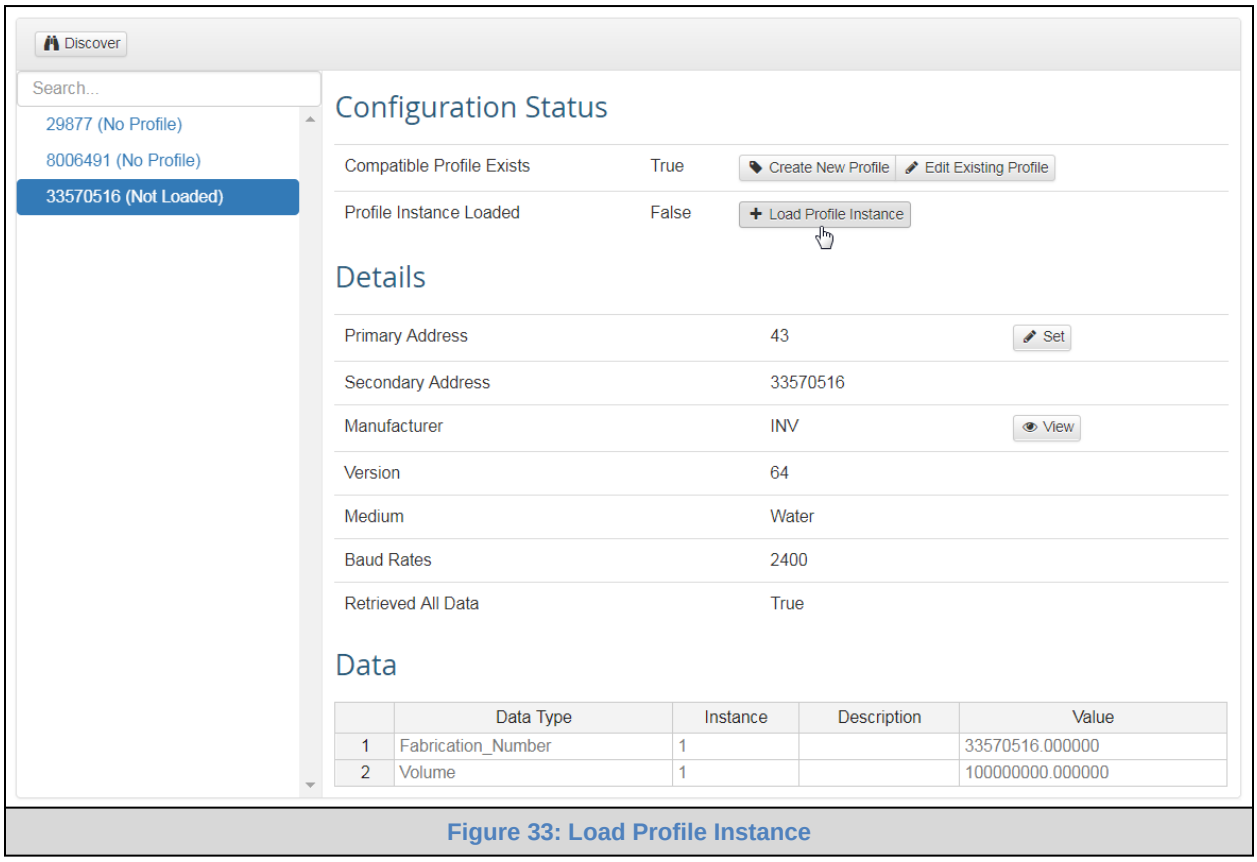


Figure 33: Load Profile Instance

- Select the desired profile and click the Select button.

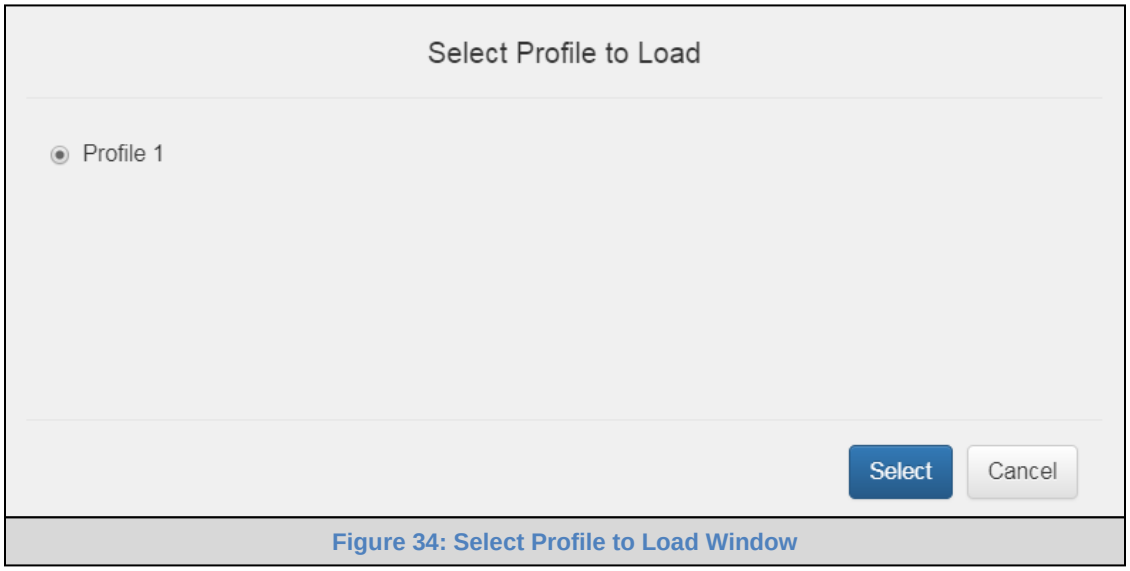


Figure 34: Select Profile to Load Window

- The associated BACnet and M-Bus parameters will populate from the profile saved on the EZ Gateway.

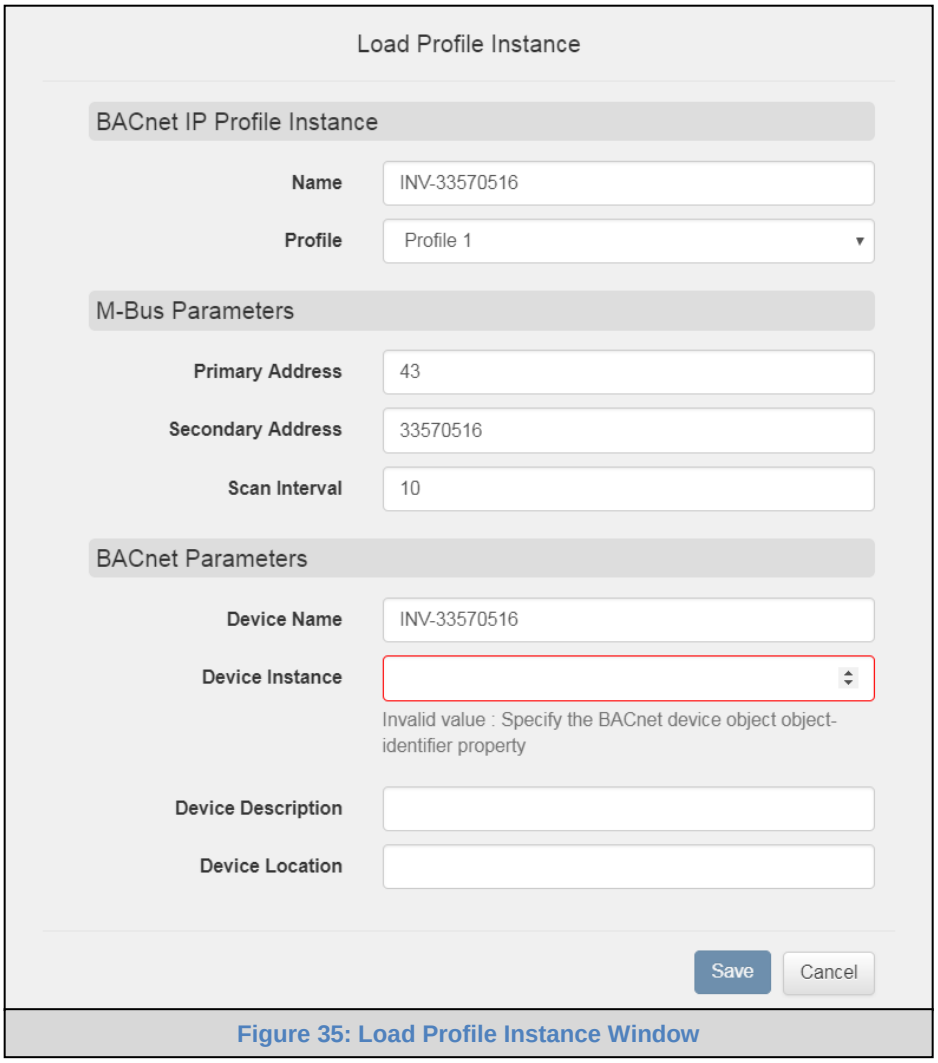


Figure 35: Load Profile Instance Window

- Edit and enter additional parameter informaiton as needed.
- Click Save and then click Restart when prompted to load the new settings.

7.5 View Live Data Using Live View

- Click on the Live View tab on the left side of the screen to go to the Live View page.
  - The Live View page will now show the created profile instance

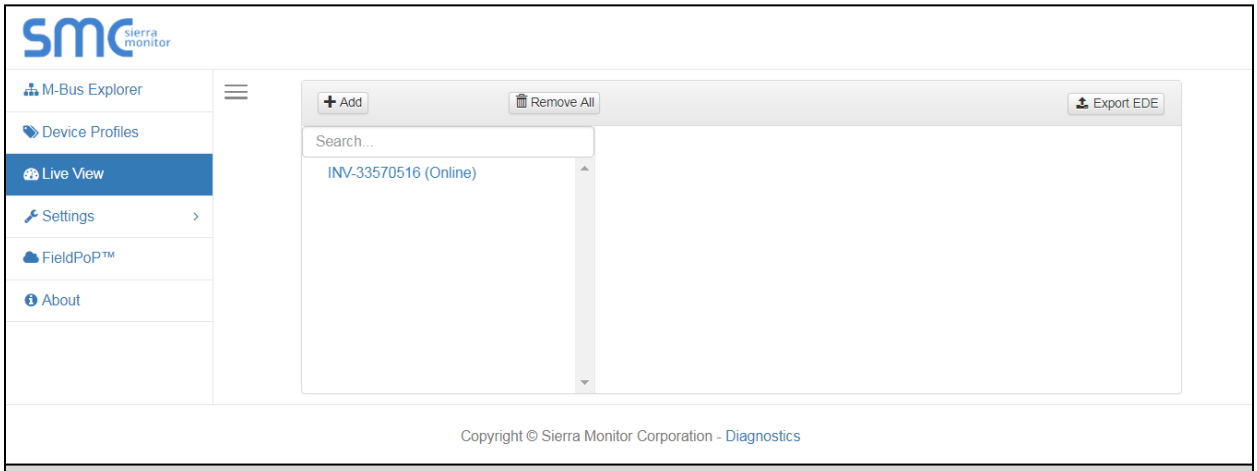


Figure 36: Live View Page with Created Profile Instance

- Click the profile listing to view or edit the entry as needed.
  - The loaded profile will show:

    Live Data – Status, Messages and Data

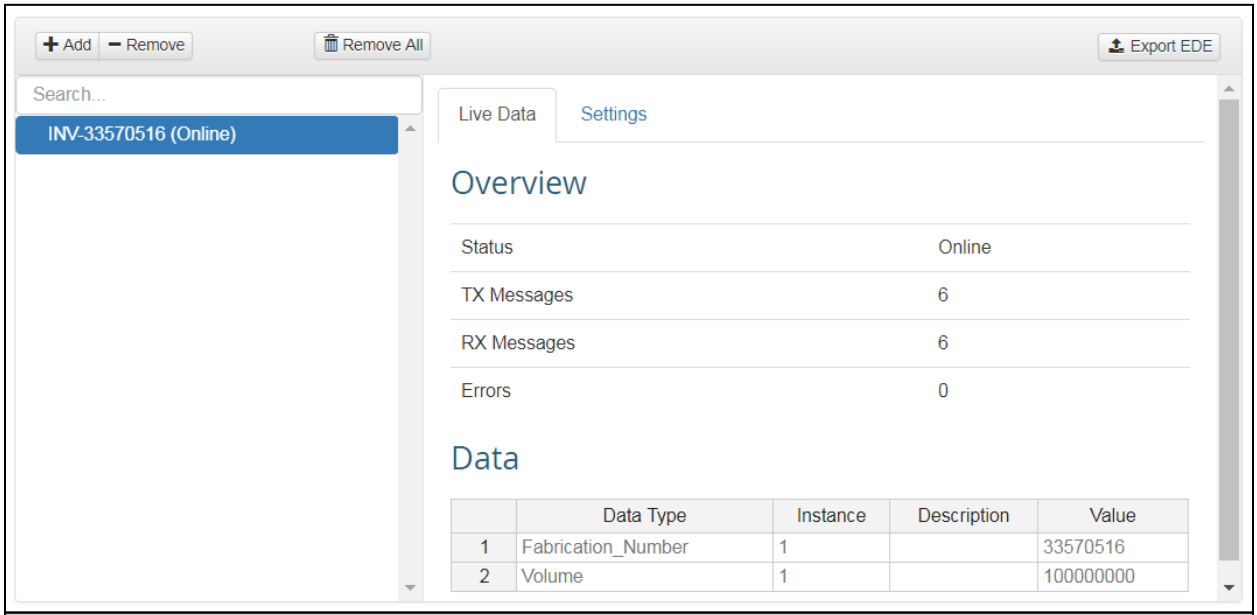


Figure 37: Viewing Created Profile Instance Live Data

Settings – Profile Instance, M-Bus Parameters and BACnet Parameters

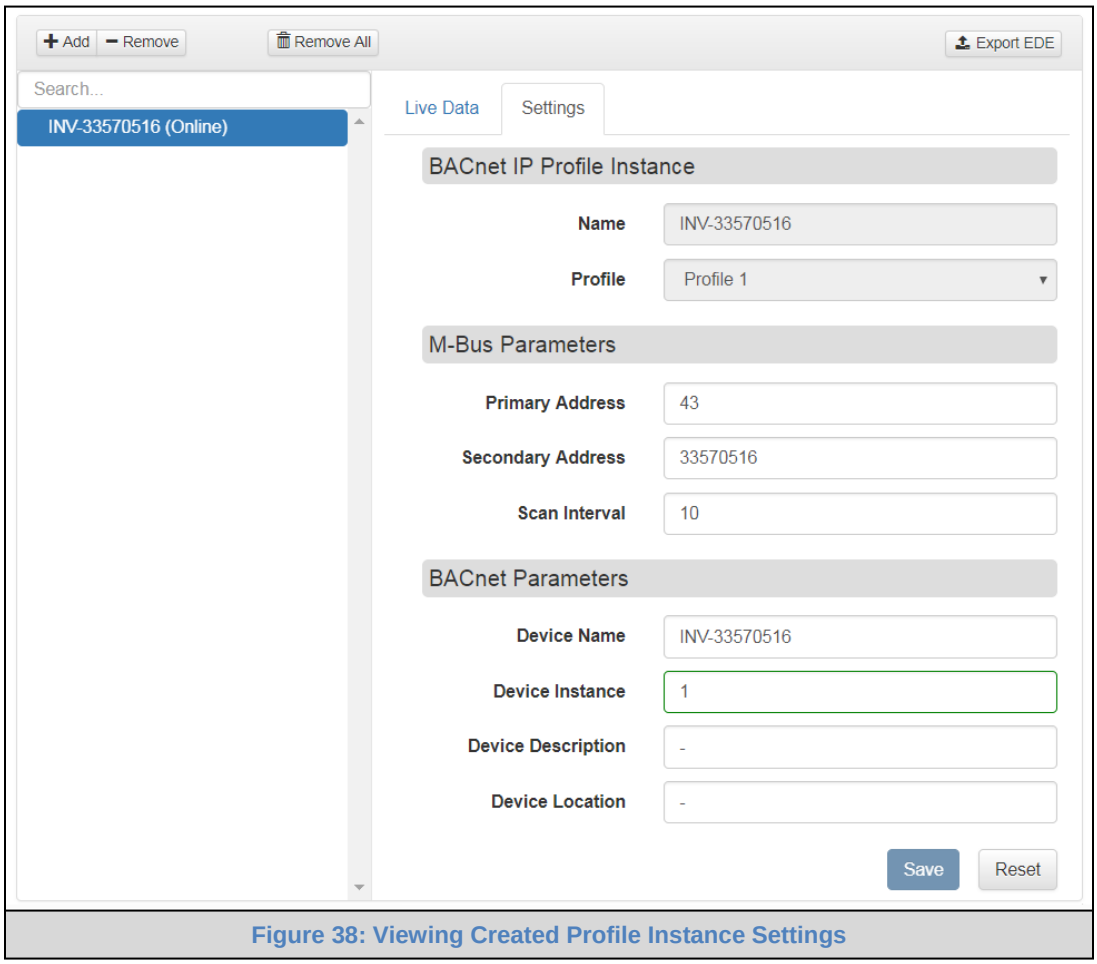


Figure 38: Viewing Created Profile Instance Settings

NOTE: To export the EDE file, click the Export EDE button (Figure 38) and fill out the Export EDE window as needed.

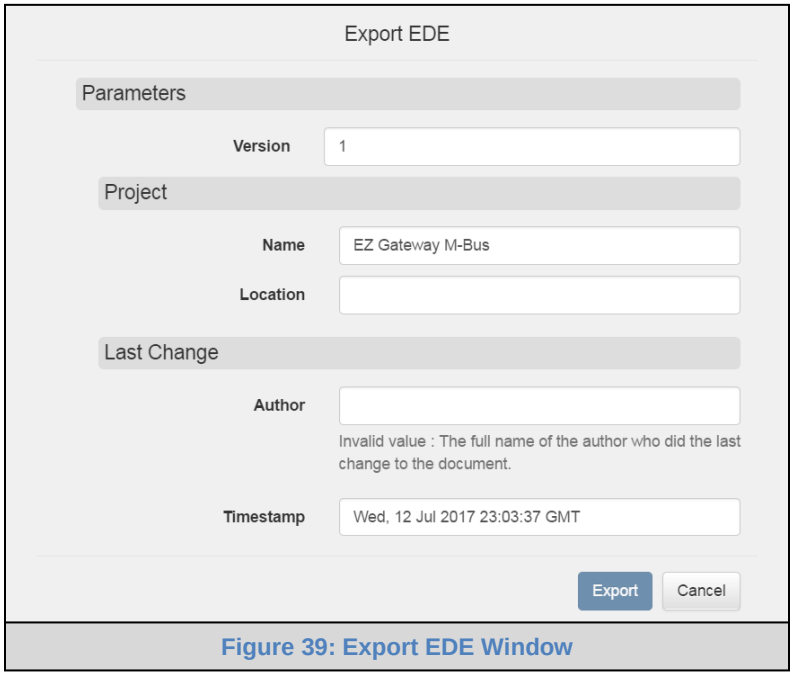


Figure 39: Export EDE Window

7.6 EZ Gateway Diagnostics and Cloud Connection

- Connect the EZ Gateway to the third party device(s), and test the application.
- Click on the Diagnostic link (found along the bottom of the page) to open the FS-GUI.
- From the main menu of FS-GUI click on View in the navigation tree, then Connections to see the number of messages on each protocol.

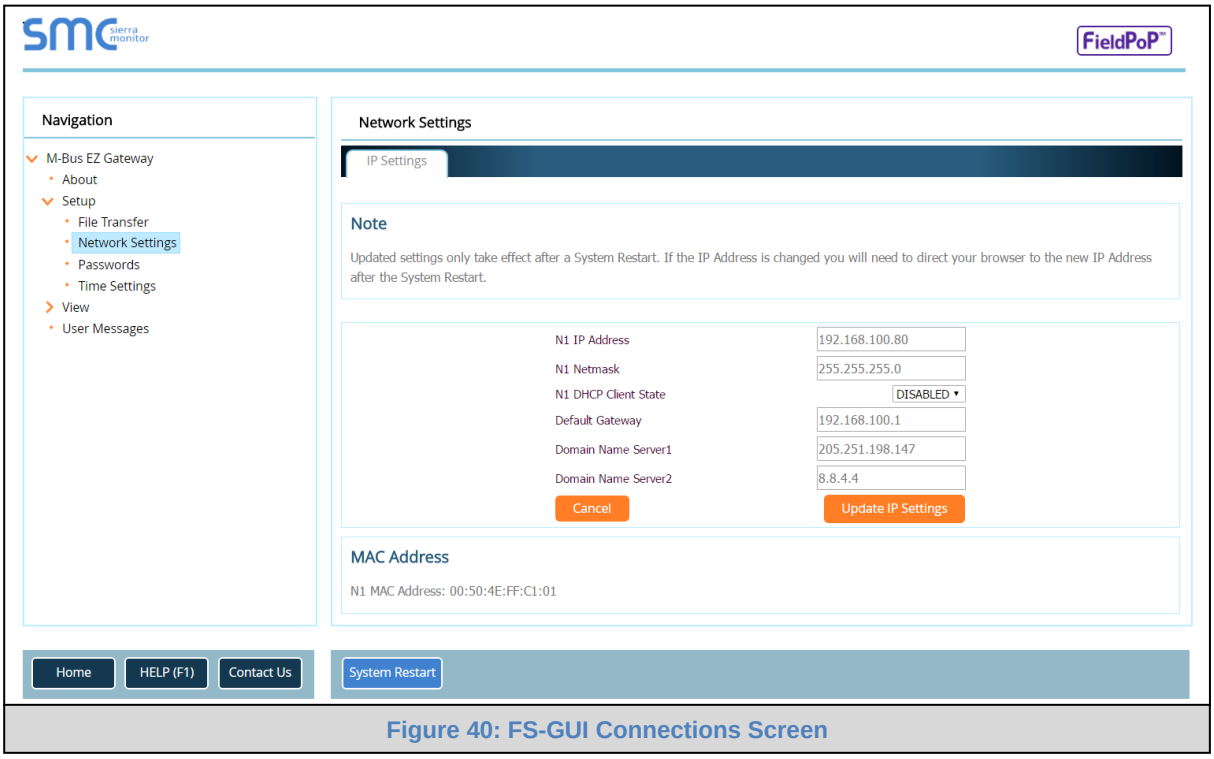


Figure 40: FS-GUI Connections Screen

NOTE: The FieldPoP™ button FieldPoP™ (see Figure 40) allows users to connect to the SMC Cloud, Sierra Monitor's device cloud solution for IIoT. The SMC Cloud enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about the SMC Cloud, refer to the SMC Cloud Start-up Guide.

APPENDIX A TROUBLESHOOTING

Appendix A.1. Communicating with the EZ Gateway over the Network

- Confirm that the network cabling is correct.
- Confirm that the computer network card is operational and correctly configured.
- Confirm that there is an Ethernet adapter installed in the PC's Device Manager List, and that it is configured to run the TCP/IP protocol.
- Check that the IP netmask of the PC matches the EZ Gateway. The Default IP Address of the EZ Gateway is 192.168.2.X, Subnet Mask is 255.255.255.0.
  - Go to Start|Run
  - Type in "ipconfig"
  - The account settings should be displayed
  - Ensure that the IP Address is 102.168.2.X and the netmask 255.255.255.0
- Ensure that the PC and EZ Gateway are on the same IP Network, or assign a Static IP Address to the PC on the 192.168.2.X network.

Appendix A.2. Take a FieldServer Diagnostic Capture

When there is a problem on-site that cannot easily be resolved, perform a diagnostic capture before contacting support so that support can quickly solve the problem. There are two methods for taking diagnostic captures:

- **FieldServer Toolbox:**
  This method requires installation of the FS Toolbox program. A FS Toolbox diagnostic capture takes a snapshot of the loaded configuration files and a log of all the communications on the serial ports over a specified period of time. If the problem occurs over an Ethernet connection, then take a Wire Shark capture.
- **Gateway's FS-GUI Page:**
  This method doesn't require downloading software. The diagnostic capture utilities are embedded in the FS-GUI web interface. Starting a diagnostic capture takes a snapshot of the loaded configuration files and a log of all the communications over a specified period of time. This works for both serial and Ethernet connections.

NOTE: The information in the zipped files contains everything support needs to quickly resolve problems that occur on-site.

Appendix A.2.1. Using the FieldServer Toolbox

Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

NOTE: While all necessary documentation is shipped with the FieldServer on the USB flash drive, these documents are constantly being updated. Newer versions may be available on the Sierra Monitor website.

- Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer-Toolbox.zip via the Sierra Monitor Software Downloads.
- Extract the executable file and complete the installation.

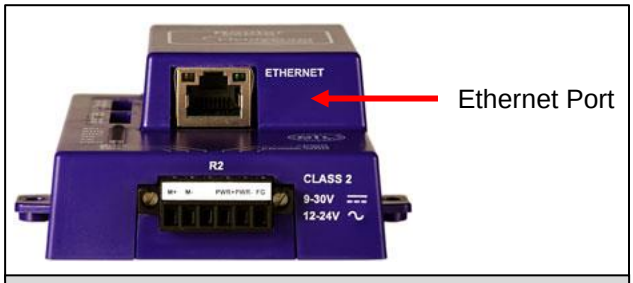
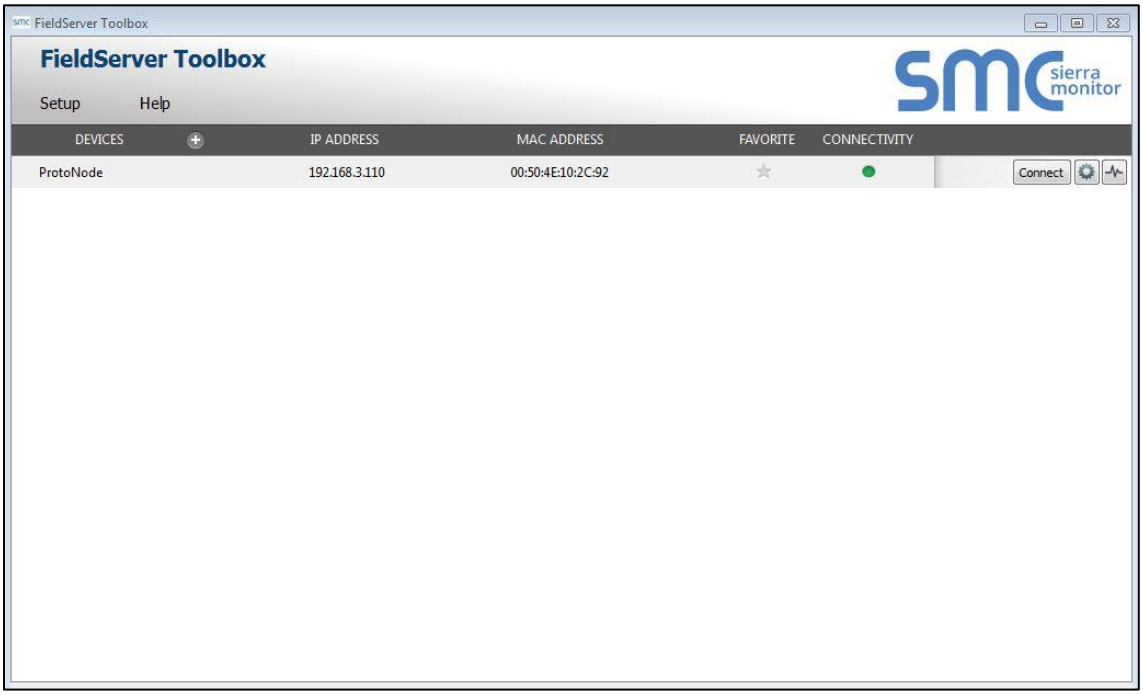
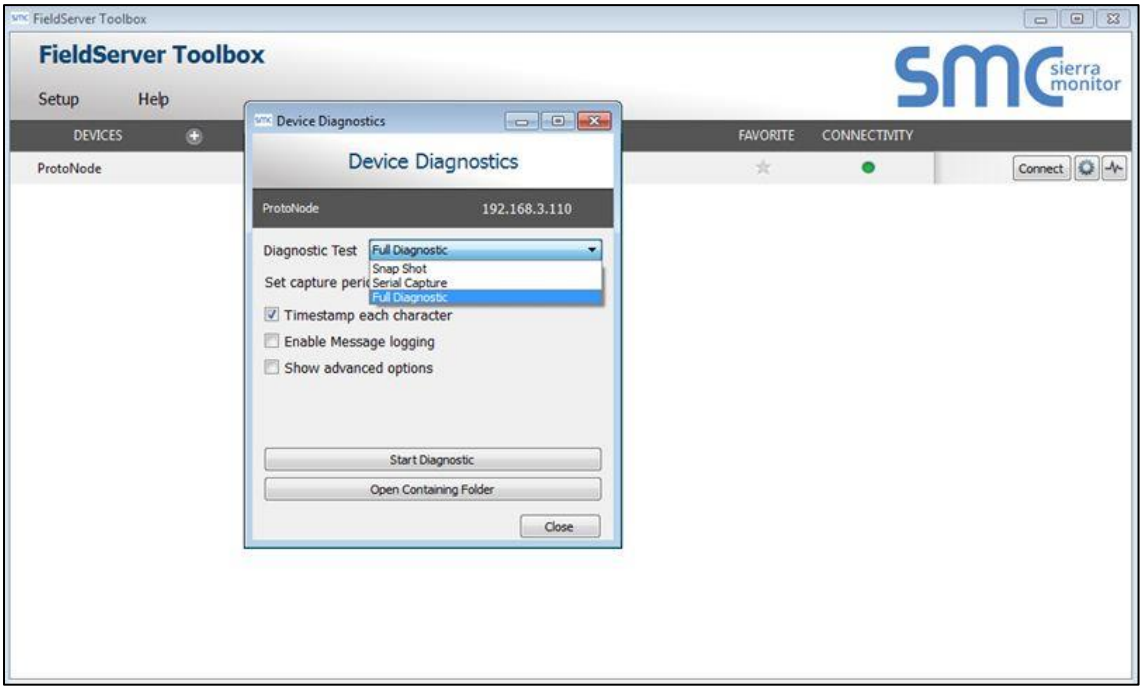


Figure 41: Ethernet Port Location

- Connect a standard Cat-5 Ethernet cable between the PC and FieldServer.
- Double click on the FS Toolbox Utility.
- **Step 1:** Take a Log
  - Click on the diagnose icon  of the desired device

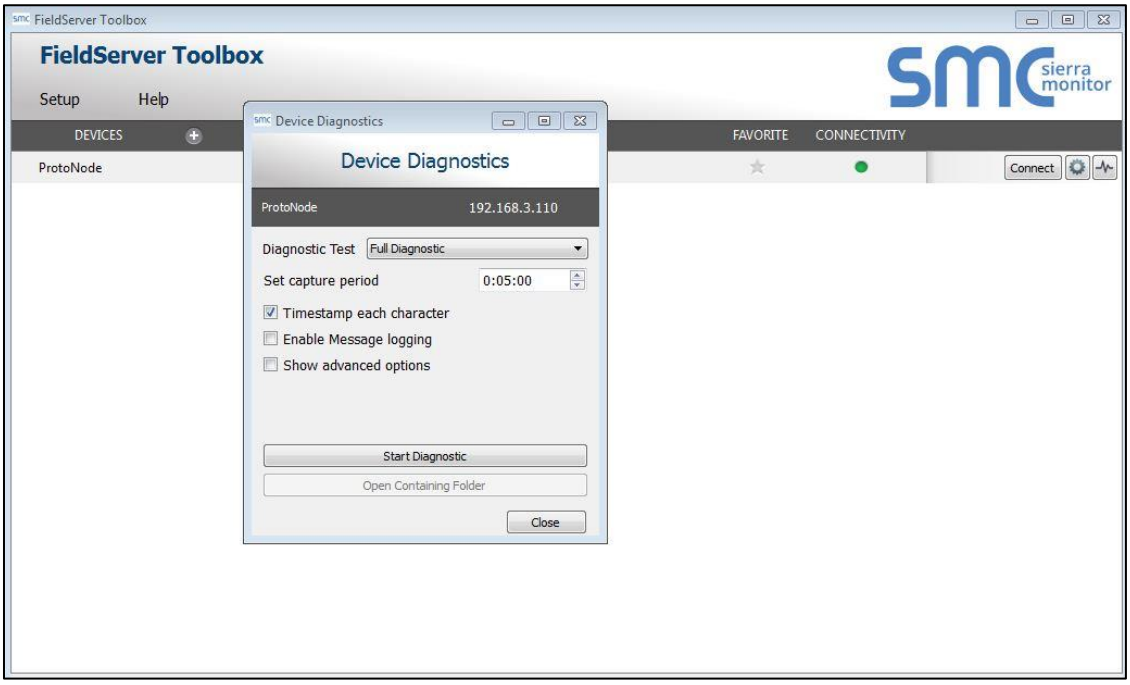


- Ensure “Full Diagnostic" is selected (this is the default)



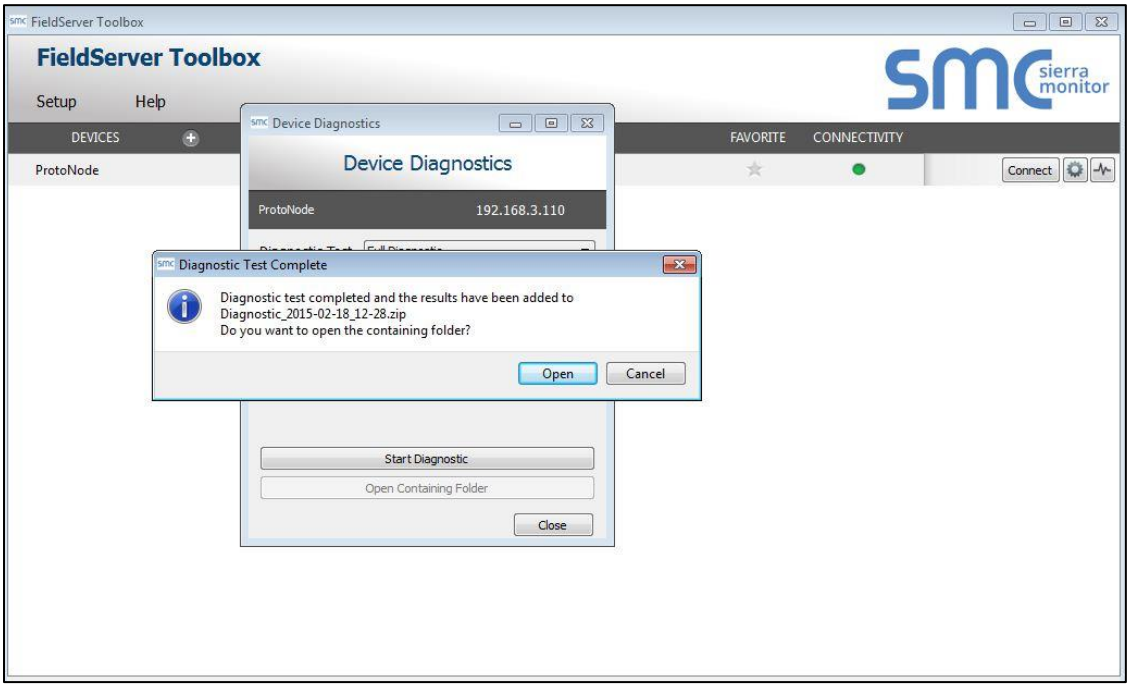
NOTE: If desired, the default capture period can be changed.

- Click on “Start Diagnostic”



- Wait for Capture period to finish, then the Diagnostic Test Complete window will appear

- **Step 2**: Send Log
  - Once the Diagnostic test is complete, a .zip file will be saved on the PC



  - Choose “Open” to launch explorer and have it point directly at the correct folder
  - Send the Diagnostic zip file to support@sierramonitor.com

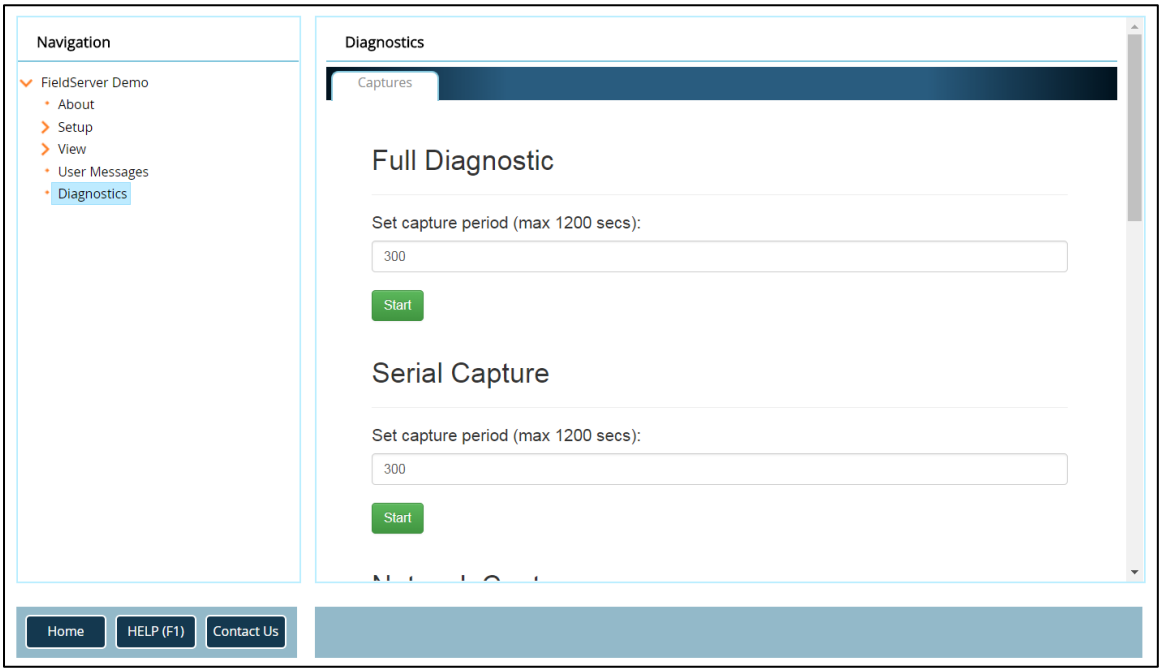


Appendix A.2.2. Using FS-GUI

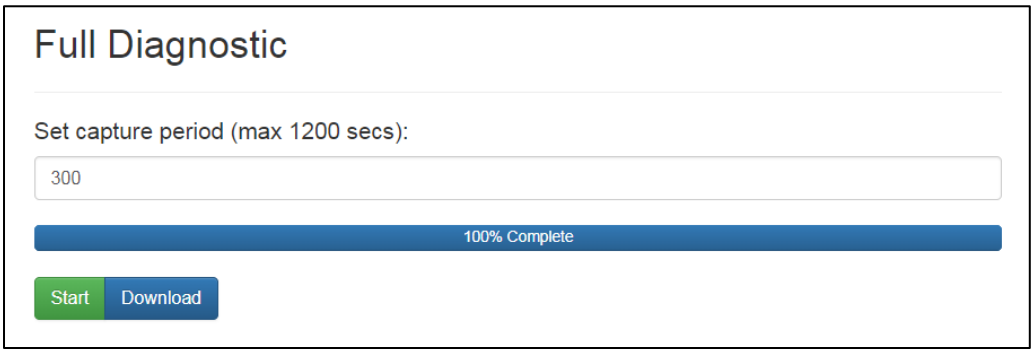
Diagnostic Capture with FS-GUI is only available on FieldServers with a bios updated/released on November 2017 or later. Completing a Diagnostic Capture through the FieldServer allows network connections (such as Ethernet) to be captured.

Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

- Open the FieldServer FS-GUI page.
- Click on Diagnostics in the Navigation panel.



- Go to Full Diagnostic and select the capture period.
- Click the Start button under the Full Diagnostic heading to start the capture.
  - When the capture period is finished, a Download button will appear next to the Start button



- Click Download for the caputure to be downloaded to the local PC.
- Send the diagnostic zip file to support@sierramonitor.com.

NOTE: Diagnostic captures of BACnet MS/TP communication are output in a ".PCAP" file extension which is compatible with Wireshark.

Appendix A.3. Notes Regarding Subnets and Subnet Masks

RFC standards allocate the IP Address range of 192.0.0.0 through to 223.255.255.255 to be used in Class-C subnetting (subnets listed as 255.255.255.xxx, where xxx can vary based on filtering required).

Consequently, the IP stack for this product will not allow any IP Addresses in this range to be allocated a subnet that does not fall within the Class C range.

Appendix A.4. LED Functions



Figure 42: LED Allocation

Light	Description
SPL	SPL LED will be on when a configured node in the EZ Gateway is detected as being offline. For details, check the FS-GUI Node overview screen in FS-GUI (click “View” then “Nodes”).
RUN	RUN LED will flash 20 seconds after power up, signifying normal operation. The EZ Gateway will be able to access the Web App (**Section** 5.3) once this LED starts flashing. During the first 20 seconds, the LED should be off.
ERR	The ERR LED will go on solid 15 seconds after power up. It will turn off after 5 seconds. A steady red light will indicate there is a system error on the FieldServer. If this occurs, immediately report the related “system error” shown in the FS-GUI User Messages error screen to technical support for evaluation.
RX	On normal operation, the RX LED will flash when a message is received on the field port.
TX	On normal operation, the TX LED will flash when a message is sent on the field port.
PWR	This is the power light. It should always show a steady green light when powered.

APPENDIX B REFERENCE

Appendix B.1. Specifications

	FS-EZX-MOD-BAC[3]
Available Ports	One 6-pin Phoenix connector with: M-Bus port (+ / - / No Connection) Power port (+ / - / Frame-gnd) One 3-pin Phoenix connector with: RS-485 port (+ / - / gnd) One Ethernet 10/100 BaseT port
Power Requirements	Input Voltage: 9-30V DC or 24V AC Input Power Frequency 50/60 Hz. Power Rating: 2.5 Watts Current draw @ 12V, 150 mA
Approvals	TUV approved to UL 916 RoHS compliant FCC part 15 compliant CE certified BTL certified WEEE compliant
Surge Suppression	
EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT	
Physical Dimensions (excluding the external power supply)	
(WxDxH)	5.05 x 2.91 x 1.6 in. (12.82 x 7.39 x 4.06 cm) excluding mounting tabs
Weight	0.4 lbs (0.2 Kg)
Environment	
Operating Temperature:	-40°C to 75°C (-40°F to167°F)
Humidity:	5 - 90% RH (non-condensing)

"This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense.
Modifications not expressly approved by Sierra Monitor could void the user's authority to operate the equipment under FCC rules".

[3] Specifications subject to change without notice.

Appendix B.2. Compliance with UL Regulations

For UL compliance, the following instructions must be met when operating the EZ Gateway.

- The units shall be powered by listed LPS or Class 2 power supply suited to the expected operating temperature range.
- The interconnecting power connector and power cable shall:
  - Comply with local electrical code
  - Be suited to the expected operating temperature range
  - Meet the current and voltage rating for the EZ Gateway
- Furthermore, the interconnecting power cable shall:
  - Be of length not exceeding 3.05m (118.3”)
  - Be constructed of materials rated VW-1, FT-1 or better
- If the unit is to be installed in an operating environment with a temperature above 65 °C, it should be installed in a Restricted Access Area requiring a key or a special tool to gain access.
- This device must not be connected to a LAN segment with outdoor wiring.

Appendix B.3. Dimension Drawing FS-EZX-MBUS-MOD-BAC

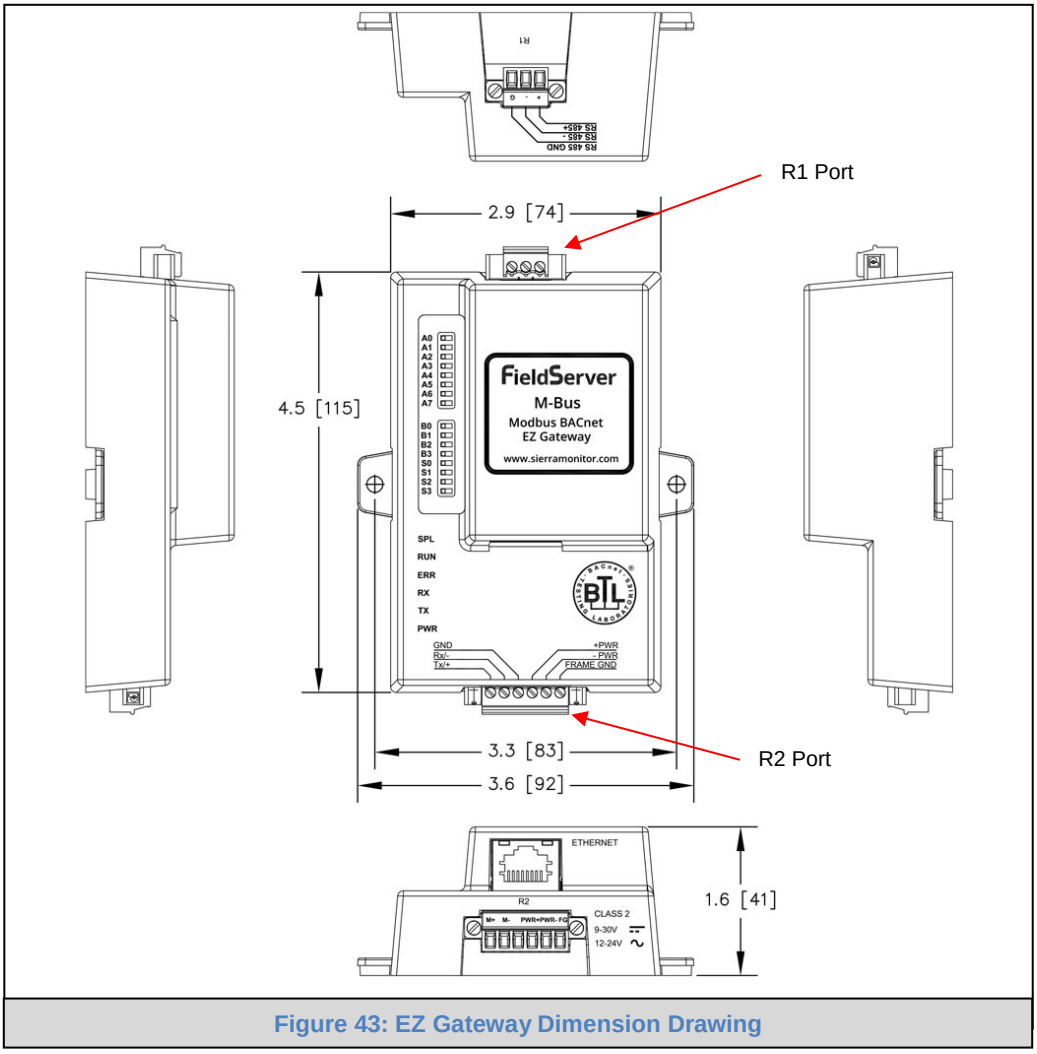


Figure 43: EZ Gateway Dimension Drawing

APPENDIX C LIMITED 2 YEAR WARRANTY

Sierra Monitor Corporation warrants its products to be free from defects in workmanship or material under normal use and service for two years after date of shipment. Sierra Monitor Corporation will repair or replace any equipment found to be defective during the warranty period. Final determination of the nature and responsibility for defective or damaged equipment will be made by Sierra Monitor Corporation personnel.

All warranties hereunder are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without Sierra Monitor Corporation's approval or which have been subjected to accident, improper maintenance, installation or application, or on which original identification marks have been removed or altered. This Limited Warranty also will not apply to interconnecting cables or wires, consumables or to any damage resulting from battery leakage.

In all cases Sierra Monitor Corporation's responsibility and liability under this warranty shall be limited to the cost of the equipment. The purchaser must obtain shipping instructions for the prepaid return of any item under this warranty provision and compliance with such instruction shall be a condition of this warranty.

Except for the express warranty stated above, Sierra Monitor Corporation disclaims all warranties with regard to the products sold hereunder including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of Sierra Monitor Corporation for damages including, but not limited to, consequential damages arising out of/or in connection with the use or performance of the product.