FieldServer – EZ Gateway

M-Bus to Modbus & BACnet Start-up Guide

FS-EZX-MBUS-MOD-BAC

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after May 2017.

Document Revision: 1.A

Technical Support

Please call us for any technical support needs related to the FieldServer product.

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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 Resource Center for technical support resources and documentation that may be of assistance.

The EZ Gateway is cloud ready and connects with Sierra Monitor's FieldPoP™ device 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 Resource Center.

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

- 7-ft CAT5 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).

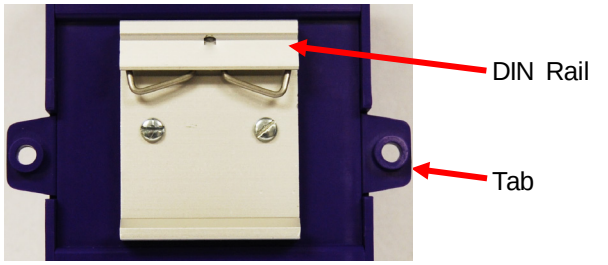


Figure 1: DIN Rail

NOTE: 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.

NOTE: If the FieldServer is removed from the DIN rail, use the original screws to reattach. Longer screws will damage the FieldServer.

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.

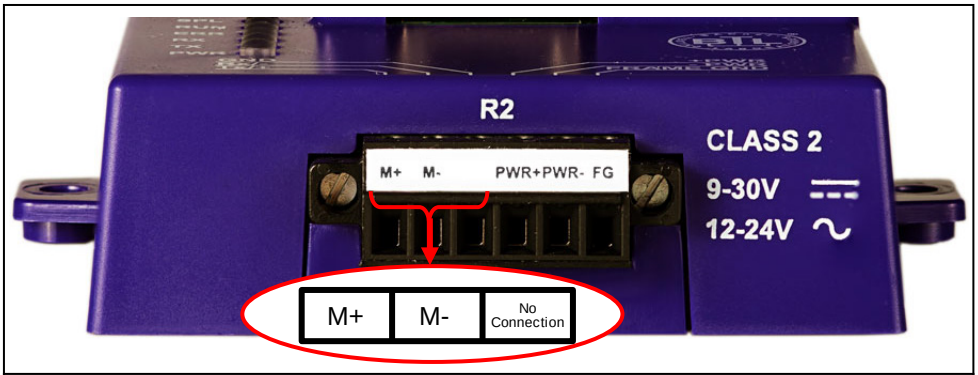


Figure 2: M-Bus Connection Port

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.

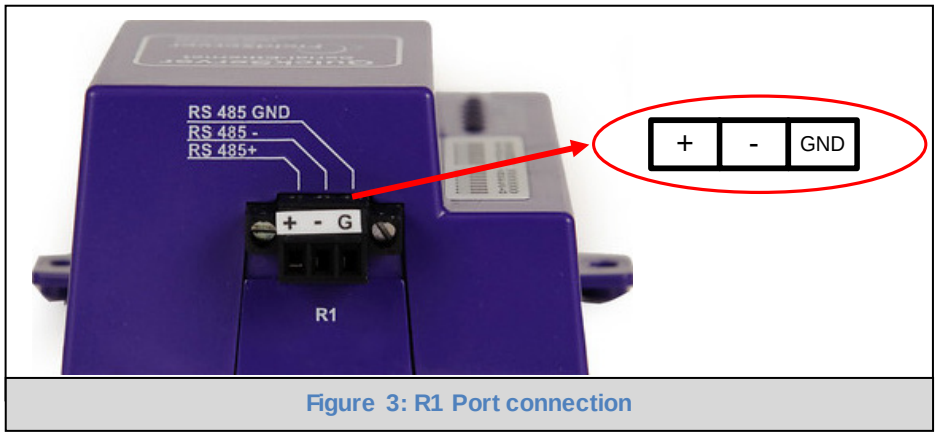


Figure 3: R1 Port connection

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

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.

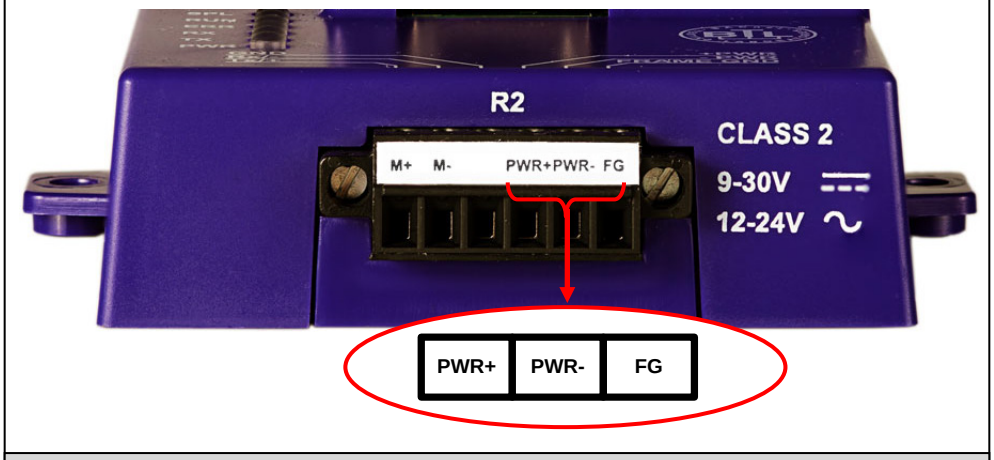


Figure 4: Power Connection

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

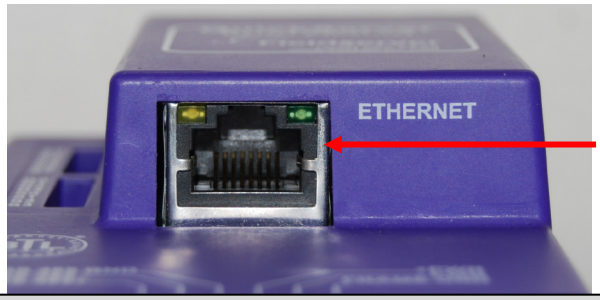


Figure 5: Ethernet Port

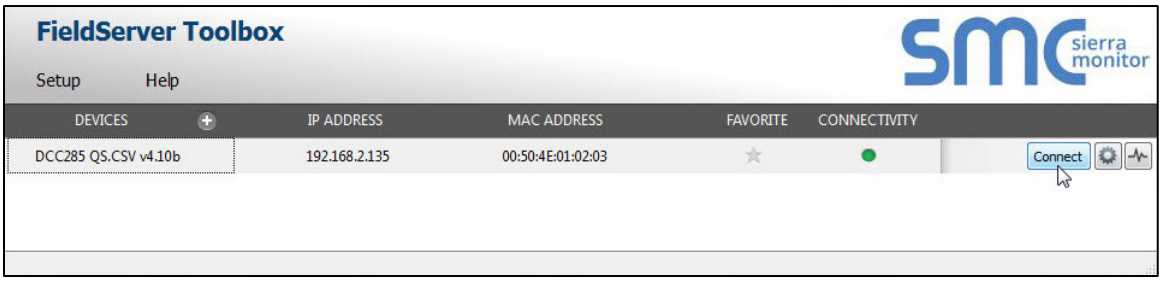
- Connect an Ethernet cable between the PC and EZ Gateway or connect the EZ Gateway and the PC to the switch using a straight CAT5 cable.
- The default IP Address of the EZ Gateway is **192.168.2.101**, Subnet Mask is **255.255.255.0**.

5.3 Connecting to the EZ Gateway

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

- Install the Toolbox application from the USB drive or download it from the Sierra Monitor website (www.sierramonitor.com/customer-care/resource-center?filters=software-downloads).
- Use the Toolbox application 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 6: EZ Gateway Landing Page

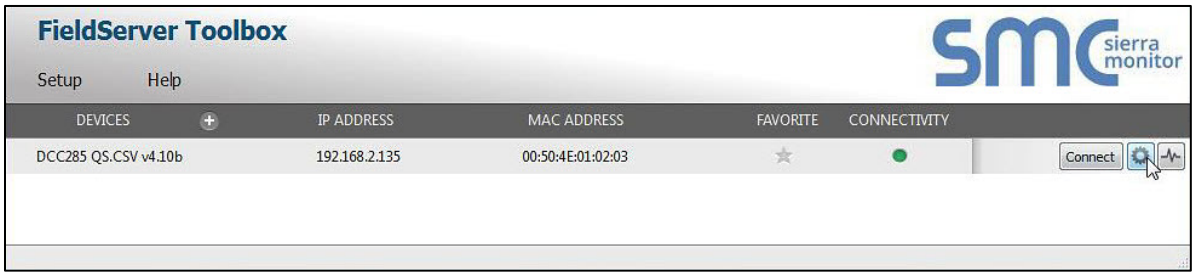
5.3.3 Accessing FieldPoP

The FieldPoP™ tab FieldPoP™ (see **Figure 6**) allows users to connect to FieldPoP, Sierra Monitor's device cloud solution for the IIOT. FieldPoP enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about FieldPoP, refer to the **FieldPoP™ Device Cloud Start-up Guide**.

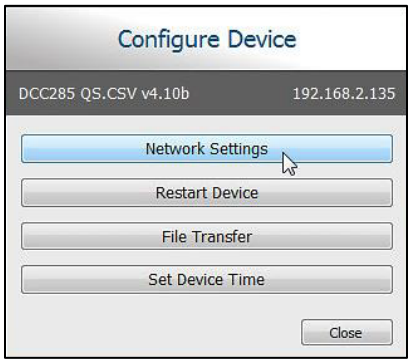
5.4 Set the IP Address of the EZ Gateway

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.

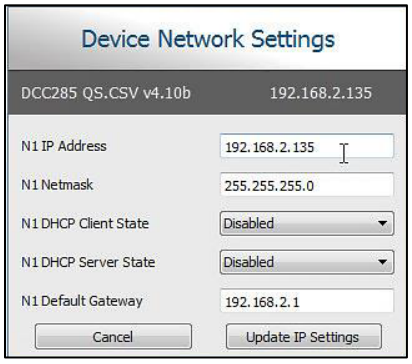


- Modify the IP Address (N1 IP Address field) of the EZ Gateway Ethernet port.

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.

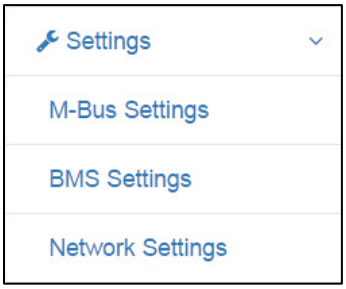
- The following fields may also be changed as needed:
  - Netmask (N1 Netmask field)
  - DHCP Client State (N1 DHCP Client State field)
  - IP Gateway (Default Gateway field)
- Click Update IP Settings, then click on the Change and Restart to restart the Gateway and activate the new IP Address.

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 7: 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 M-Bus.

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

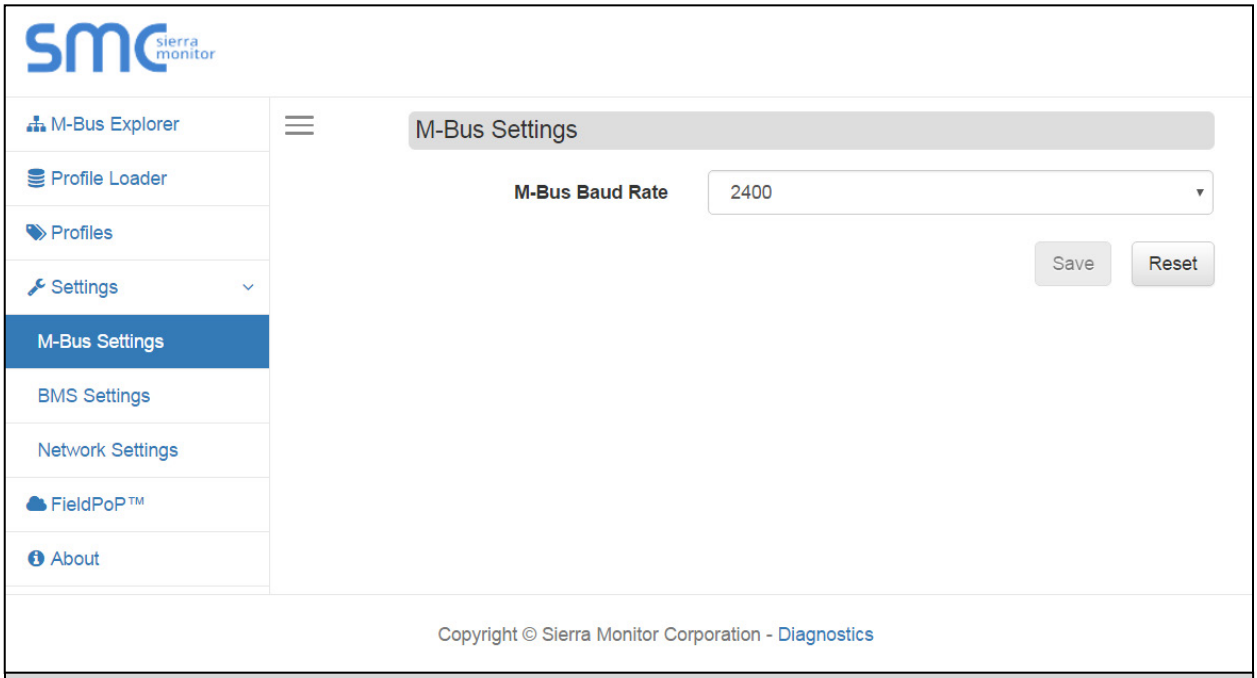


Figure 8: M-Bus Settings

NOTE: The EZ Gateway supports communication between devices with different baud rates at the same time.

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

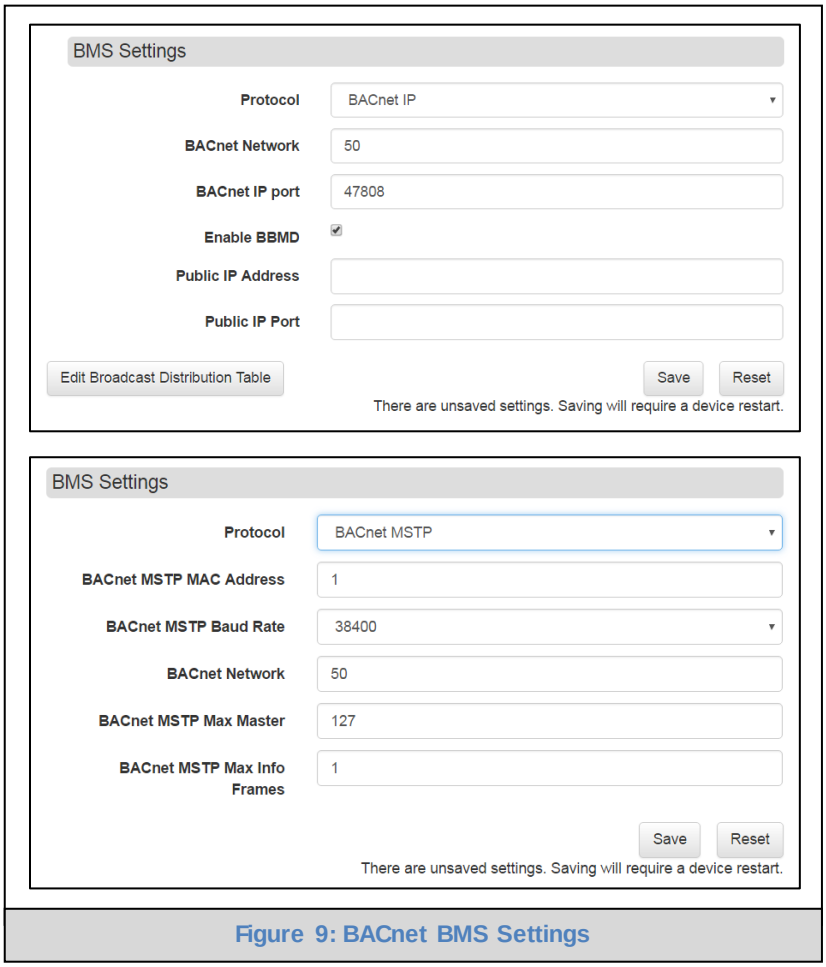


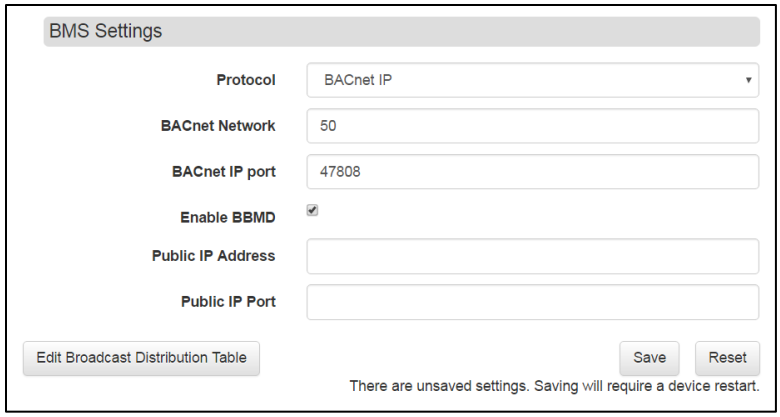
Figure 9: BACnet BMS Settings

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 maybe 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 10: 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 12). 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 11: Connection Parameters – BBMD

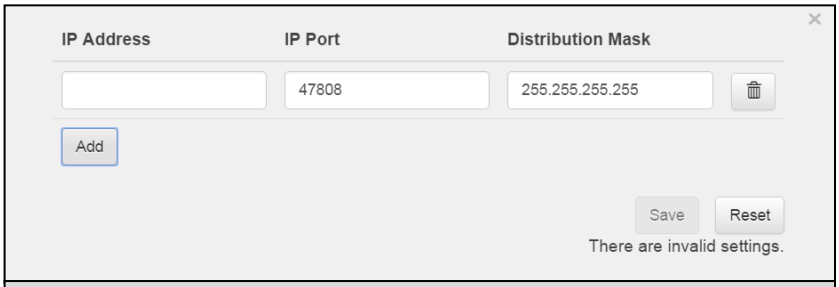


Figure 12: Edit Broadcast Distribution Table Window

6.2.1 Modbus TCP/IP and Modbus RTU

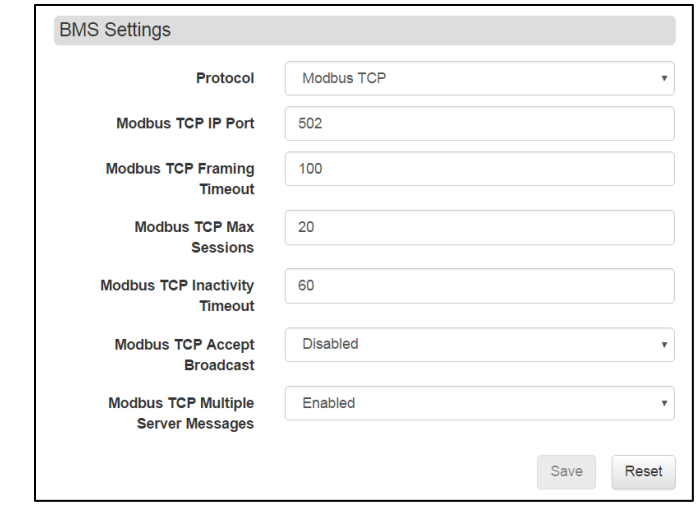


Figure 13: Connection Settings

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 14: 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.

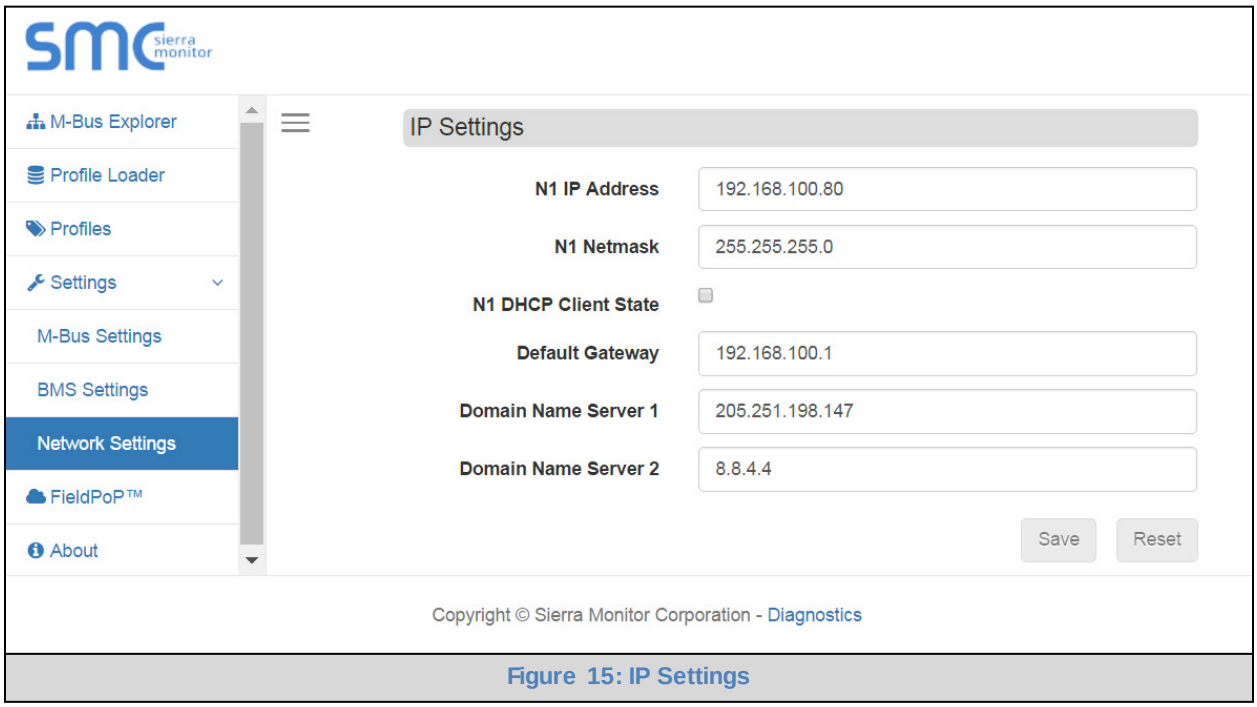


Figure 15: IP Settings

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 16: 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.

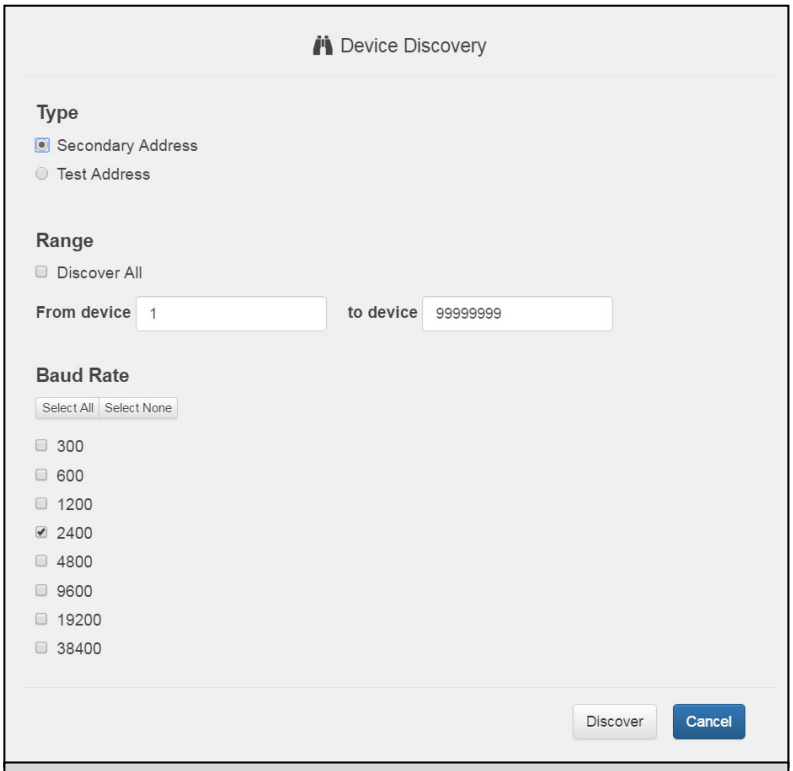


Figure 17: Device Discovery Window

- Wait until t[illegible] show the discovery progress and is followed by a green bubble stating the Discovery is complete.

- Once the discovery is complete, new M-Bus devices connected to the same subnet should appear on the M-Bus Explorer page.

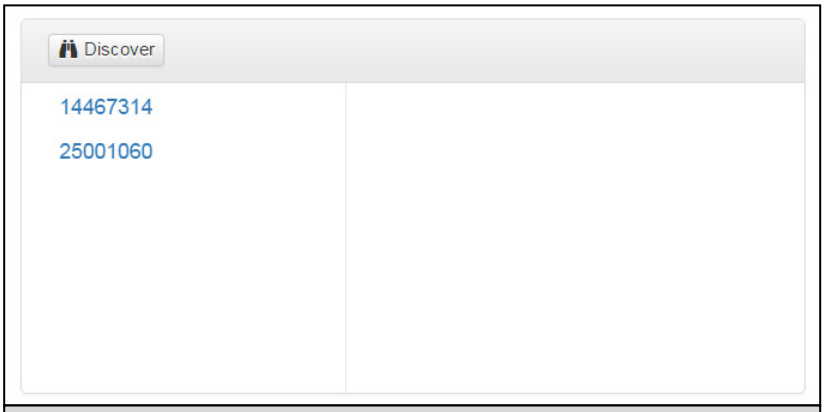
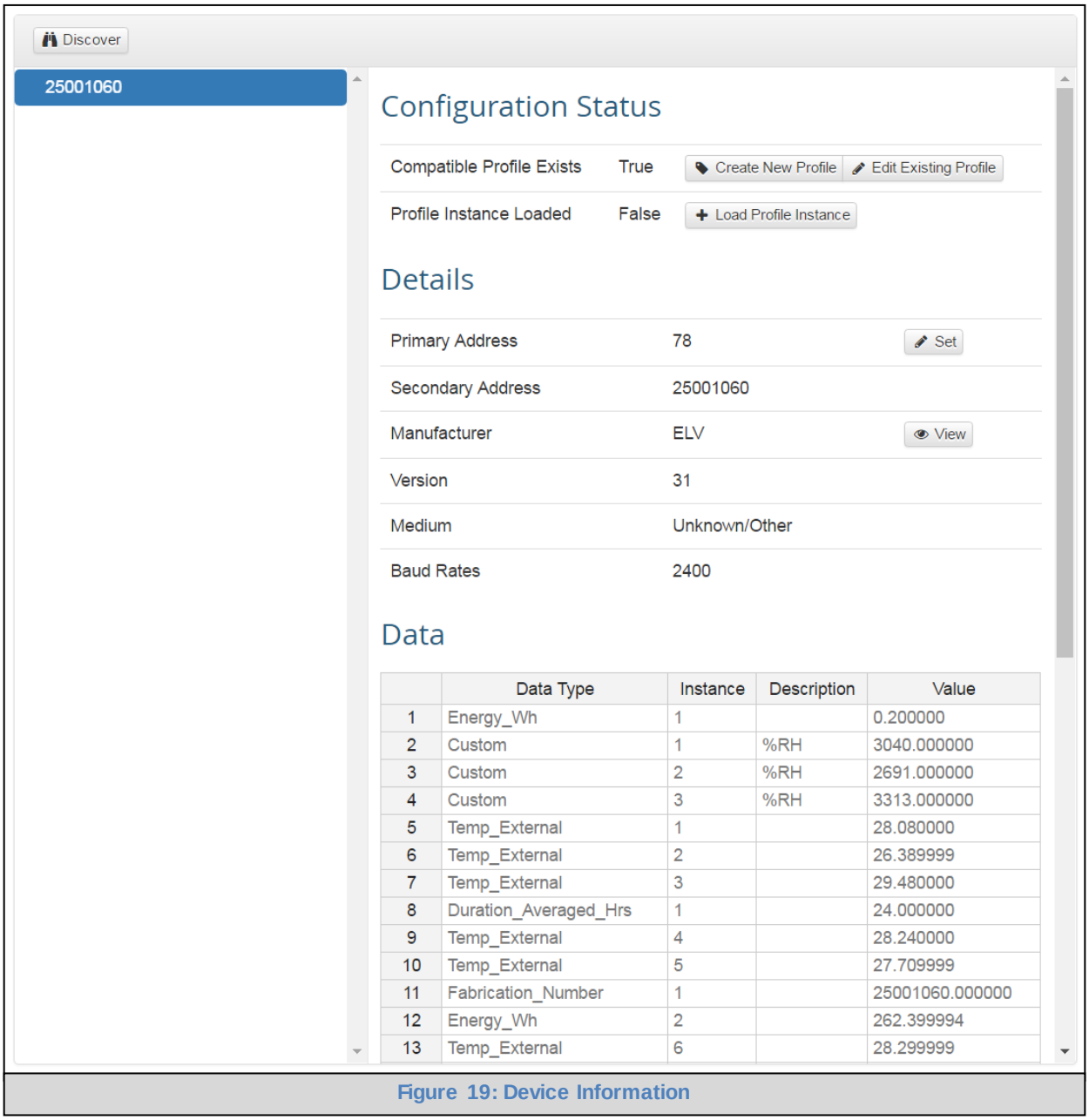


Figure 18: M-Bus Explorer Page with Discovered Devices

7.2 Create a Profile from Existing Device Details

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



	Data Type	Instance	Description	Value
1	Energy_Wh	1		0.200000
2	Custom	1	%RH	3040.000000
3	Custom	2	%RH	2691.000000
4	Custom	3	%RH	3313.000000
5	Temp_External	1		28.080000
6	Temp_External	2		26.389999
7	Temp_External	3		29.480000
8	Duration_Averaged_Hrs	1		24.000000
9	Temp_External	4		28.240000
10	Temp_External	5		27.709999
11	Fabrication_Number	1		25001060.000000
12	Energy_Wh	2		262.399994
13	Temp_External	6		28.299999

Figure 19: Device Information

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

- Define the Profile Settings as needed.

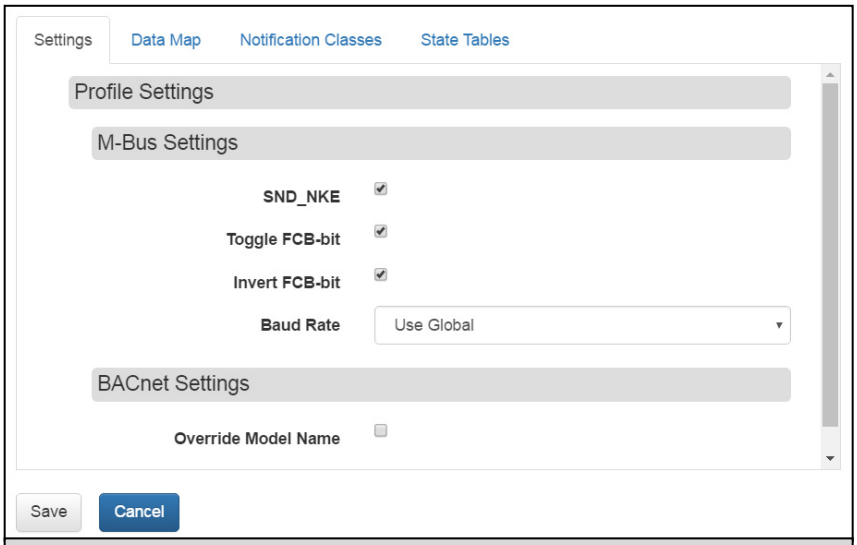


Figure 20: New Profile – Select Profile Settings

- Edit the Data Map as needed.

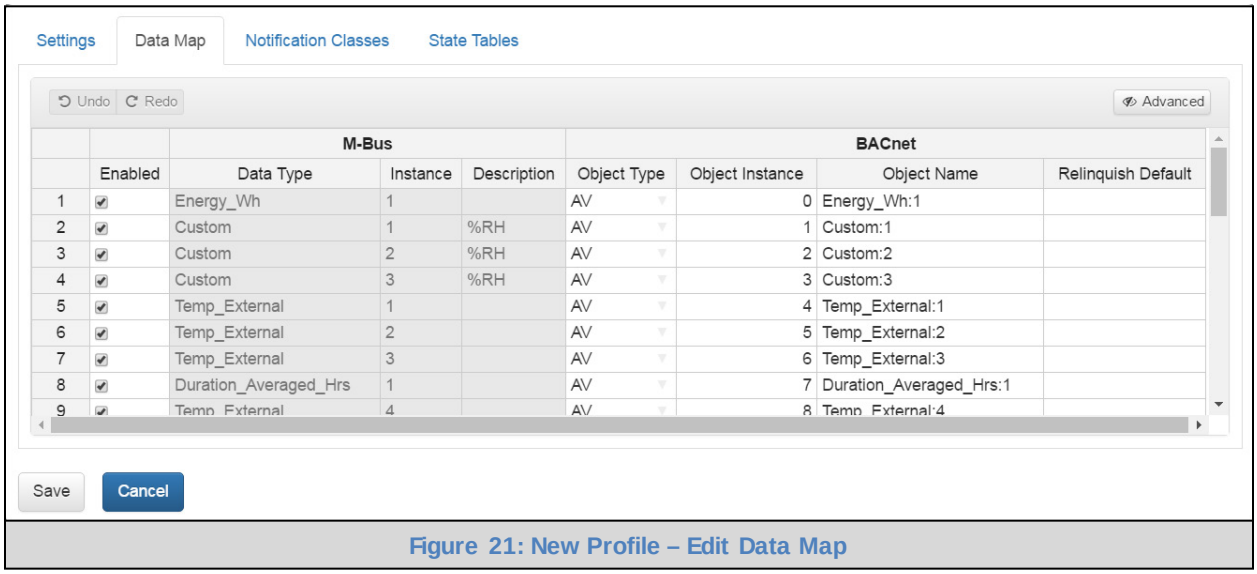


Figure 21: New Profile – Edit Data Map

  - Click the Advanced button to see all possible mapping elements

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

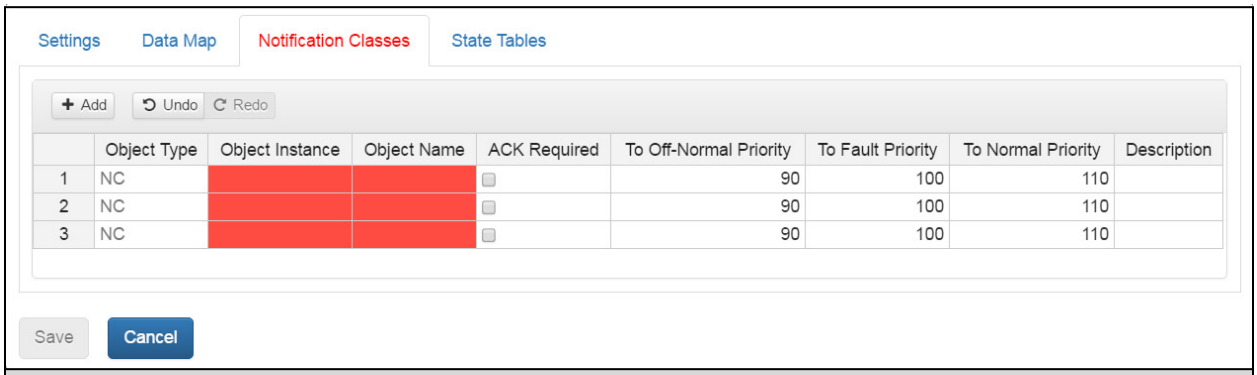


Figure 22: New Profile – Adding Notification Class

- 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

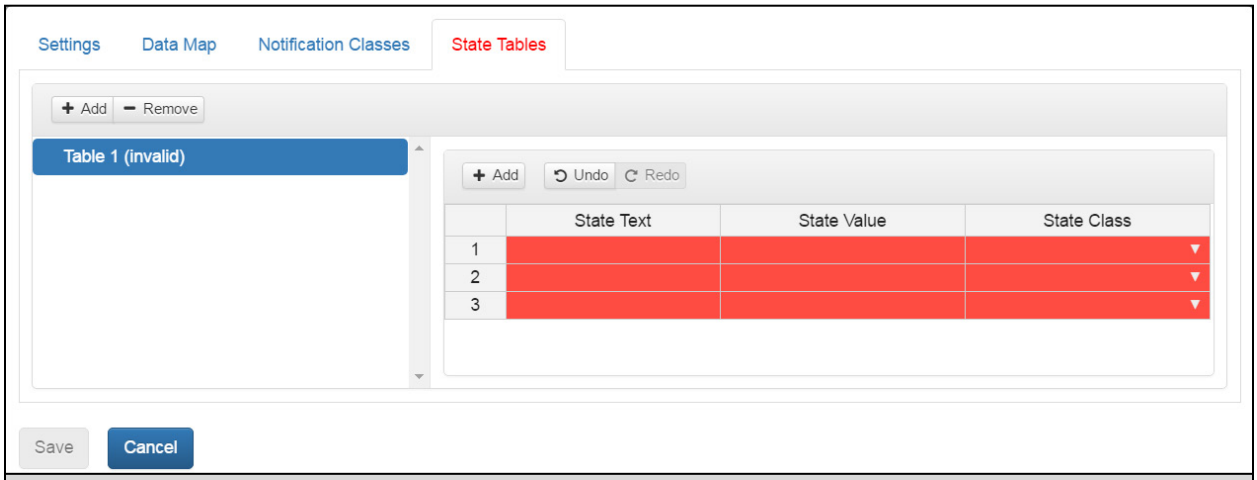


Figure 23: New Profile – Adding State Table

  - 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.

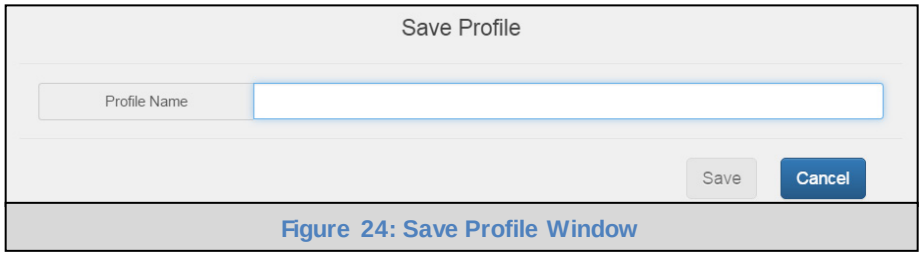
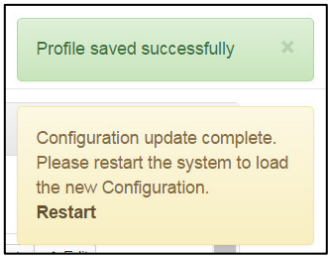


Figure 24: Save Profile Window

- 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 Profiles Page

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

Figure 25: 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 Action buttons 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.

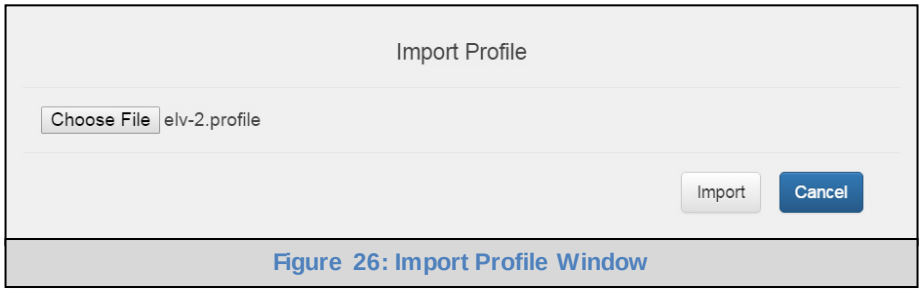


Figure 26: Import Profile Window

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

7.3.2 Edit Button

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

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

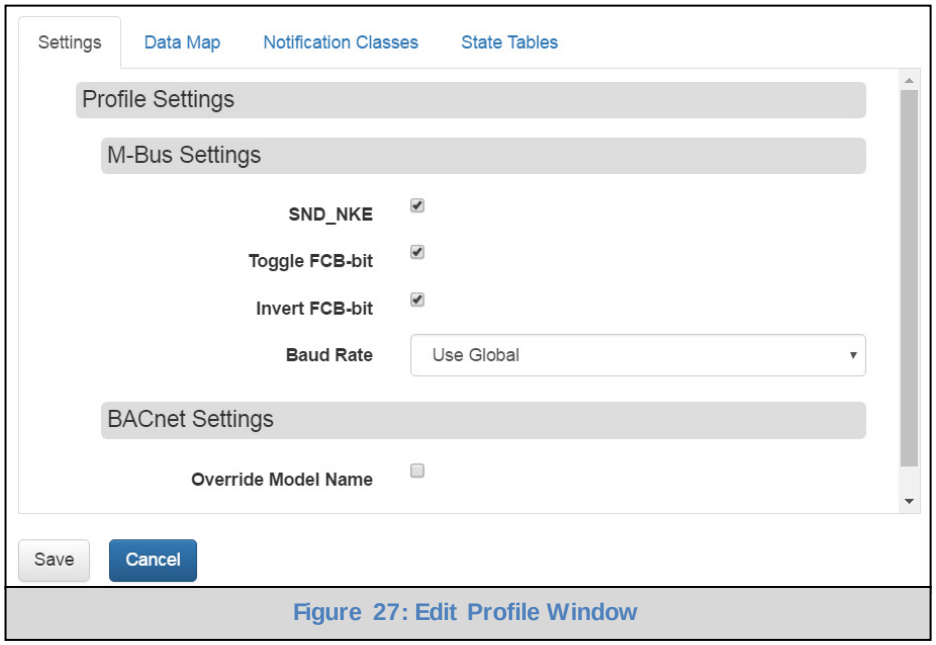


Figure 27: Edit Profile Window

- 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.

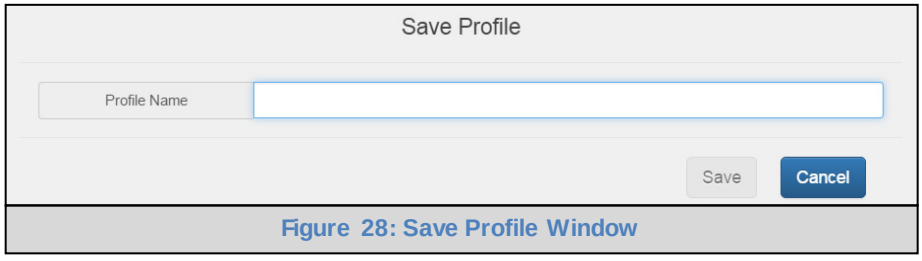
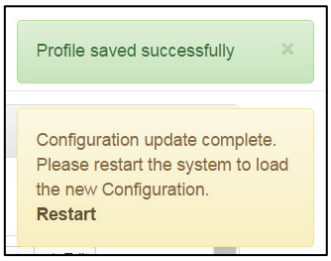


Figure 28: Save Profile Window

- 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 29: 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 30: Device Profiles Page – Export Button

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

7.4 Set up Profiles using Profile Loader Page

- Click on the Profile Loader tab on the left side of the screen to go to the Profile Loader page.

Figure 31: Profile Loader Page

- Click the Add button to open up the Profile Loader window.
- Enter a Device Name and select a profile saved on the EZ Gateway.
  - Once a profile has been selected in the Profile field, the M-Bus Parameter and BACnet Parameter fields will appear

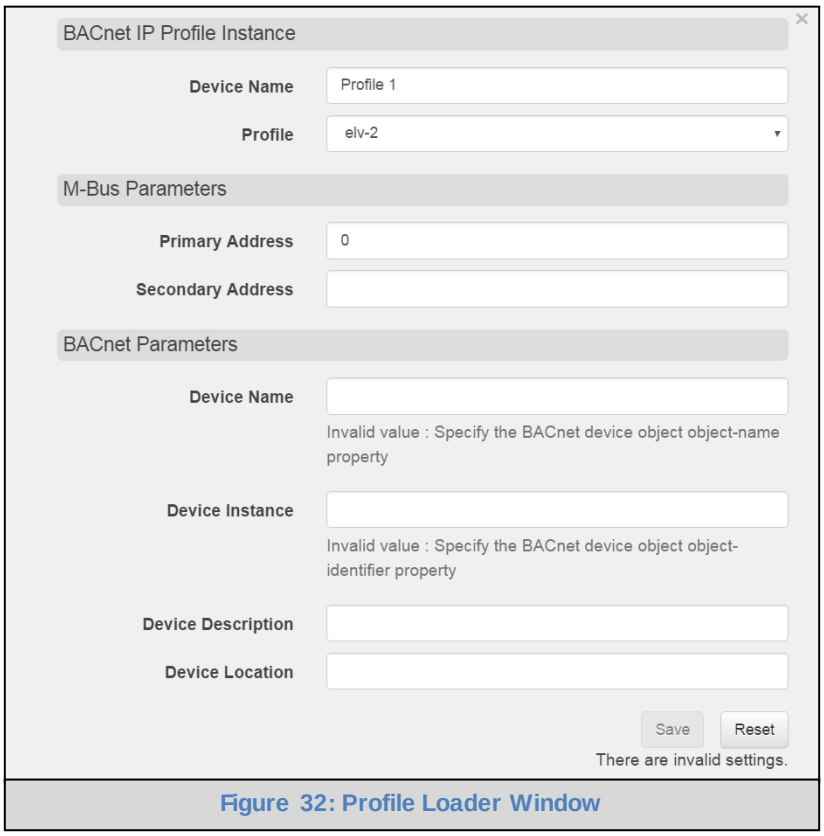


Figure 32: Profile Loader Window

- Enter parameter informaiton as needed.
- Click Save and then click Restart when prompted to load the new settings.
- Once restarted, the Profile Loader page will show the created profile instance.

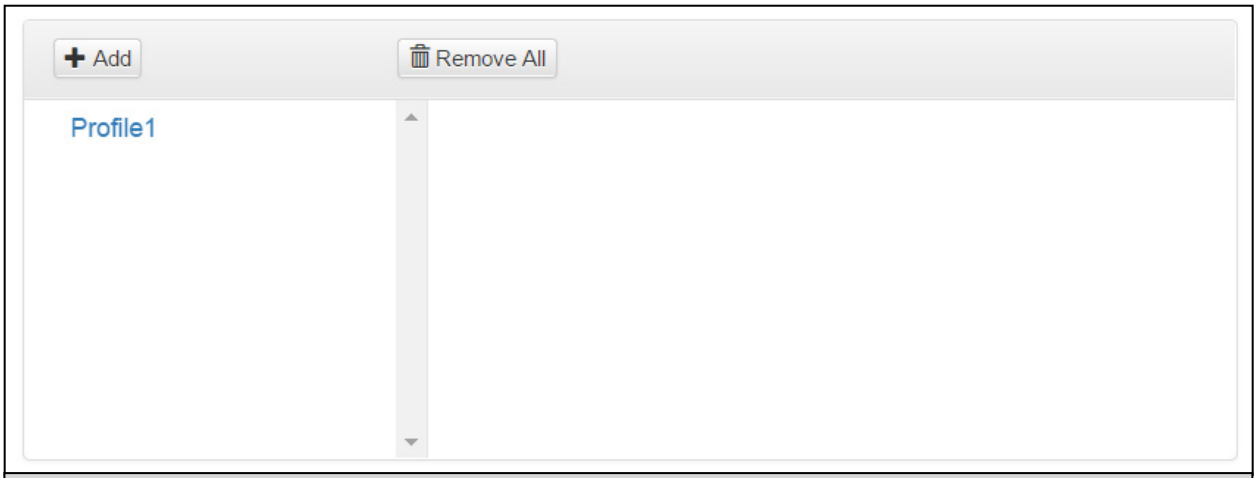


Figure 33: Profile Loader Page with Created Profile Instance

- Click the profile listing to view or edit the entry as needed.

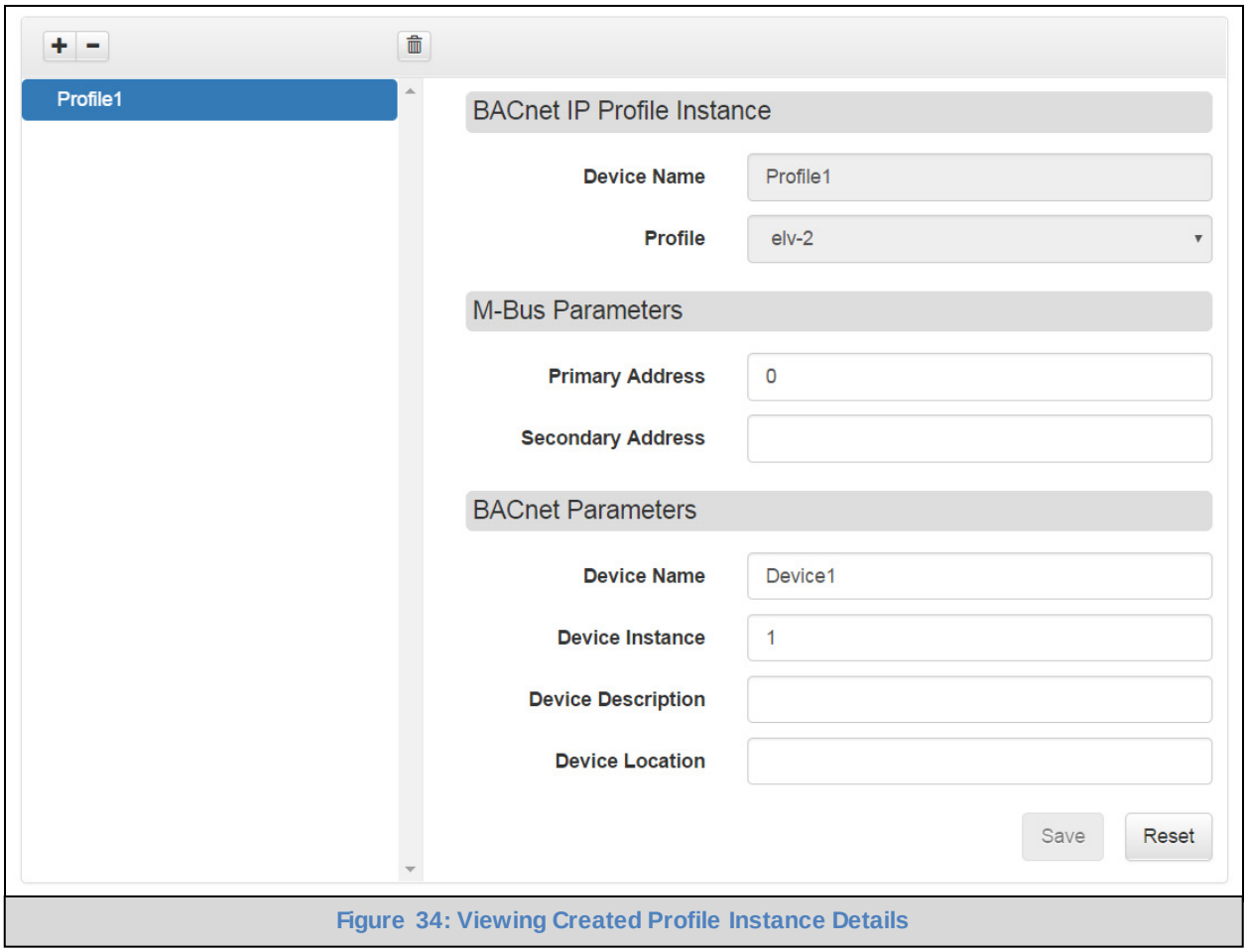


Figure 34: Viewing Created Profile Instance Details

7.5 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.

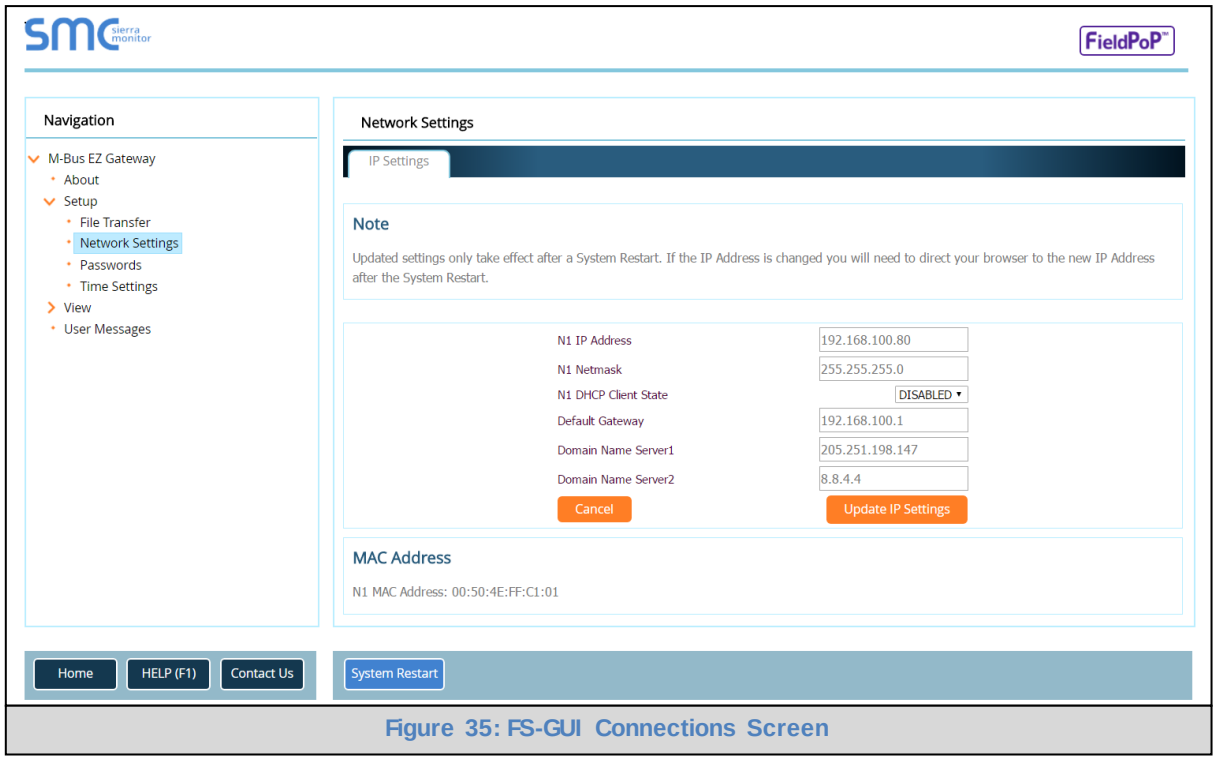


Figure 35: FS-GUI Connections Screen

NOTE: The FieldPoP™ button FieldPoP™ (see Figure 35) allows users to connect to FieldPoP, Sierra Monitor's device cloud solution for the IIoT. FieldPoP enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about FieldPoP, refer to the FieldPoP™ Device 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.1. Before Contacting Technical Support take a Diagnostic Capture

When a problem occurs that cannot be resolved with regular troubleshooting, take a log via the FieldServer Toolbox. Send this log together with a detailed description of the problem to support@sierramonitor.com for evaluation. The diagnostic capture assists technical support to quickly solve 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 Resource Center.

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

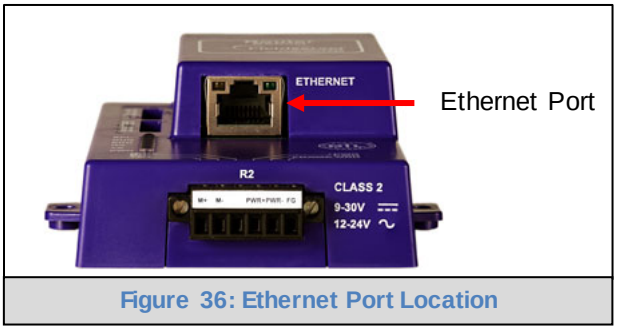
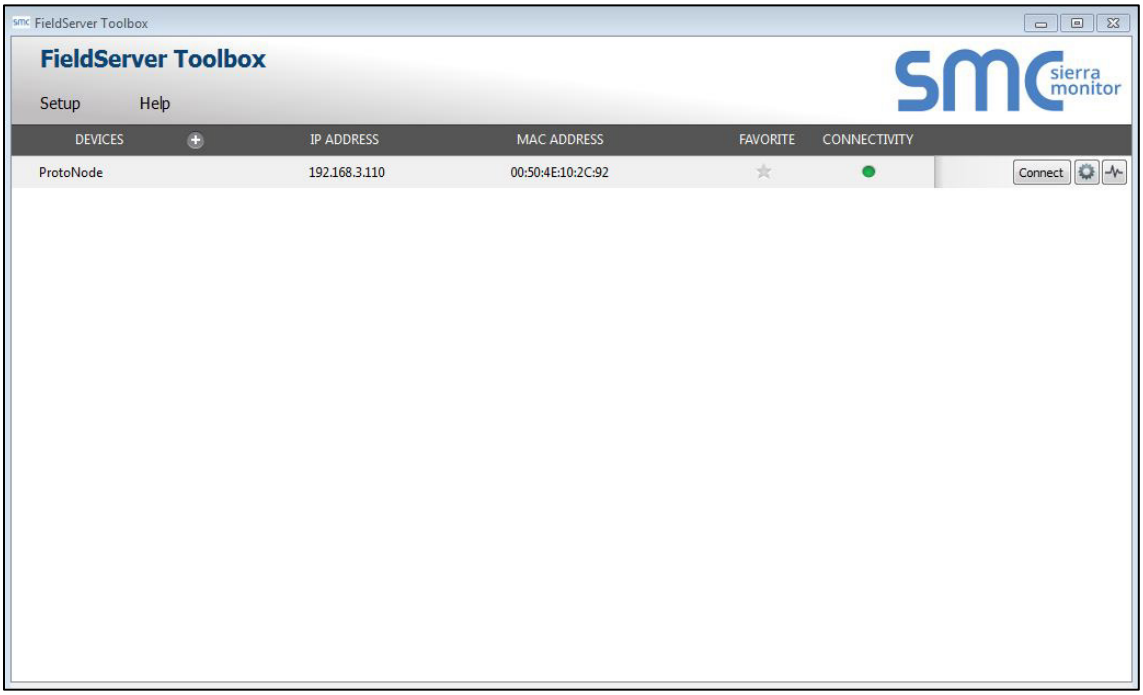


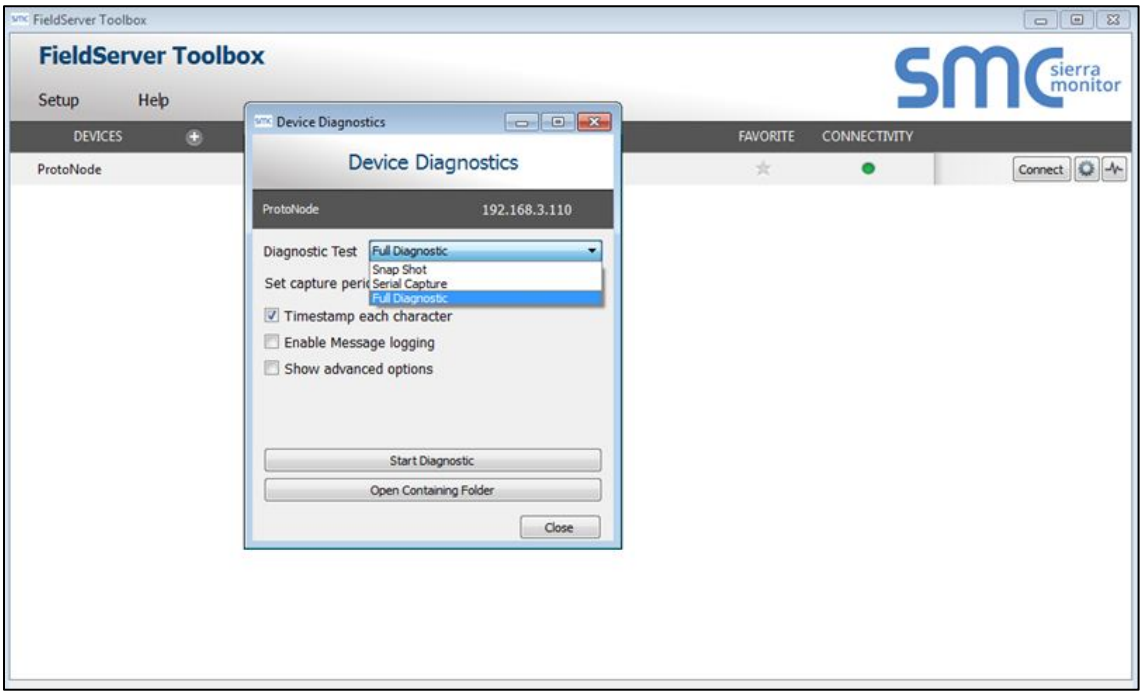
Figure 36: Ethernet Port Location

- Connect a standard CAT5 Ethernet cable between the PC and ProtoNode.
- Double click on the FS Toolbox Utility.

- **Step 1:** Take a Log
  - Click on the diagnose icon  of the desired device

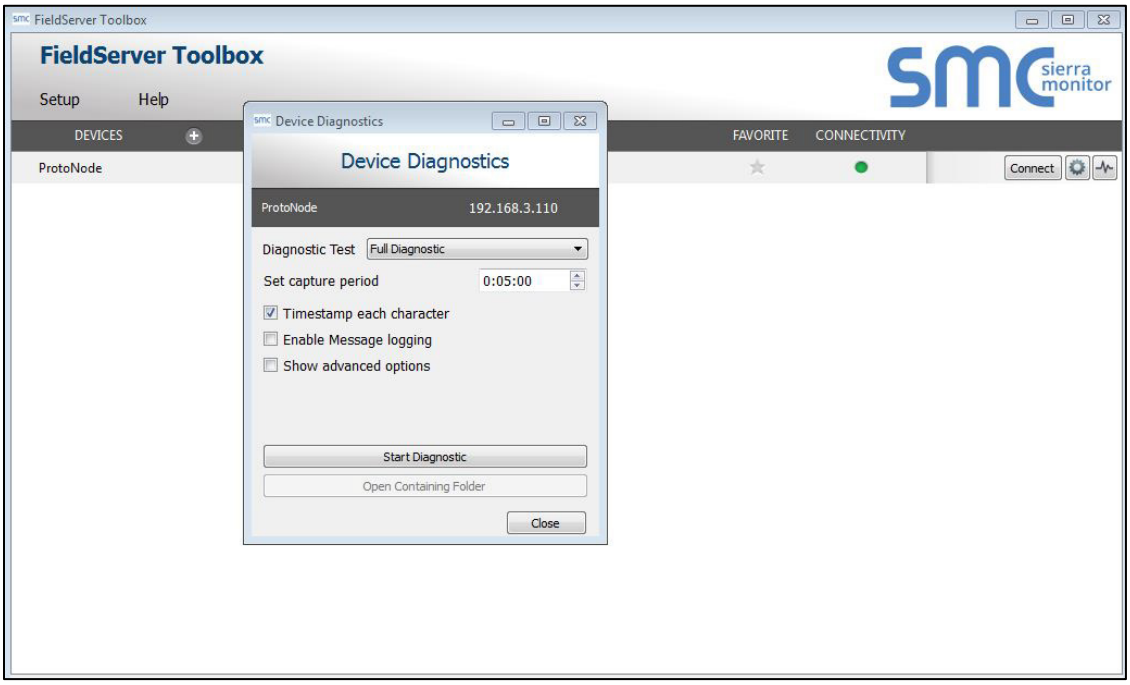


  - Ensure “Full Diagnostic" is selected (this is the default)



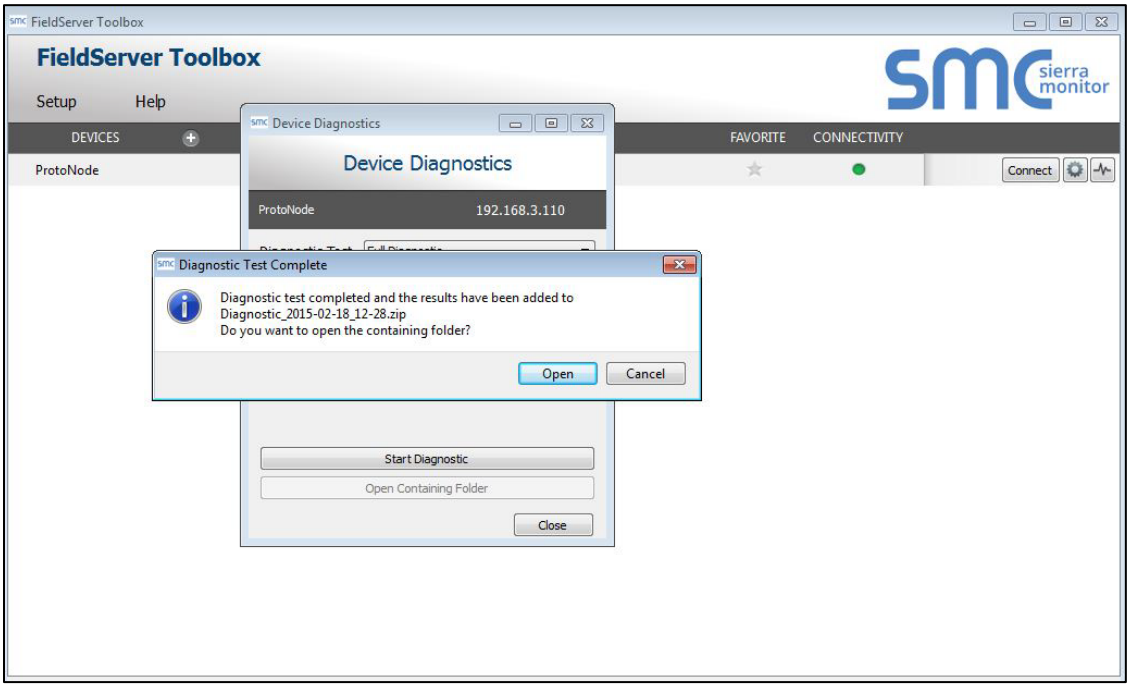
NOTE: If desired, the default capture period can be changed.

- 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. 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.3. LED Functions

Figure 37: 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 of the EZ Gateway.
TX	On normal operation, the TX LED will flash when a message is sent on the field port of the EZ Gateway.
PWR	This is the power light and should show steady green at all times when the EZ Gateway is powered.

Appendix B Reference

Appendix B.1. Specifications[3]

	FS-EZX-MOD-BAC
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 Standard RoHS Compliant FCC Part 15 Compliant CE Mark BTL Mark
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

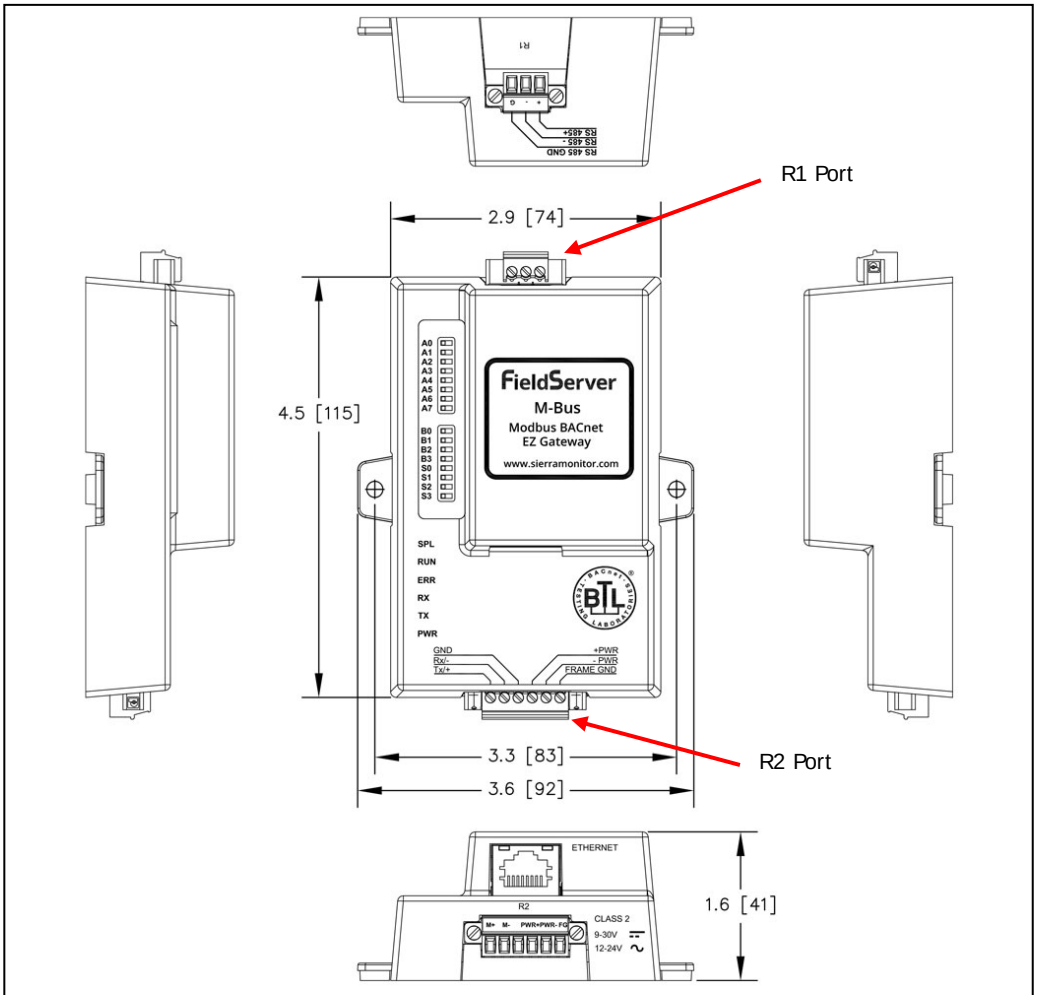


Figure 38: EZ Gateway Dimension Drawing

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.