FieldServer – EZ Gateway

KNX to BACnet Start-up Guide

FS-EZX-KNX-BAC

APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after August 2016.

Document Revision: 6.D

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 FieldPoP™ information, refer to the FieldPoP™ Device Cloud Start-up Guide online at the Sierra Monitor.com Resource Center.
www.sierramonitor.com/customer-care/resource-center

2 CERTIFICATION

2.1 BTL Mark – BACnet Testing Laboratory[1]

The BTL Mark on the 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 http://www.BACnetInternational.net/btl/ for more information about the BACnet Testing Laboratory. Click here for BACnet PIC Statement.

3 SUPPLIED EQUIPMENT

EZ Gateway

- Preloaded with the KNX and BACnet drivers.
- All instruction manuals, driver manuals, configuration manuals and support utilities are available on the USB drive provided in the optional accessory kit, or on-line at http://www.sierramonitor.com/customer-care/resource-center?filters=software-downloads

Accessory Kit (Optional) (Part # FS-8915-36-QS) including:

- 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:
  - KNX to BACnet Start-up Guide
  - FieldServer Configuration Manual
  - FieldServer Utilities Manual
  - 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

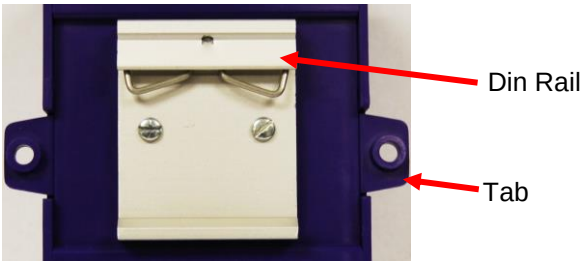
[1] BACnet is a registered trademark of ASHRAE.

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).



NOTE: For dimension details see Appendix B.4.

4.2 KNX Connections

4.2.1 KNX Connection R2 Port

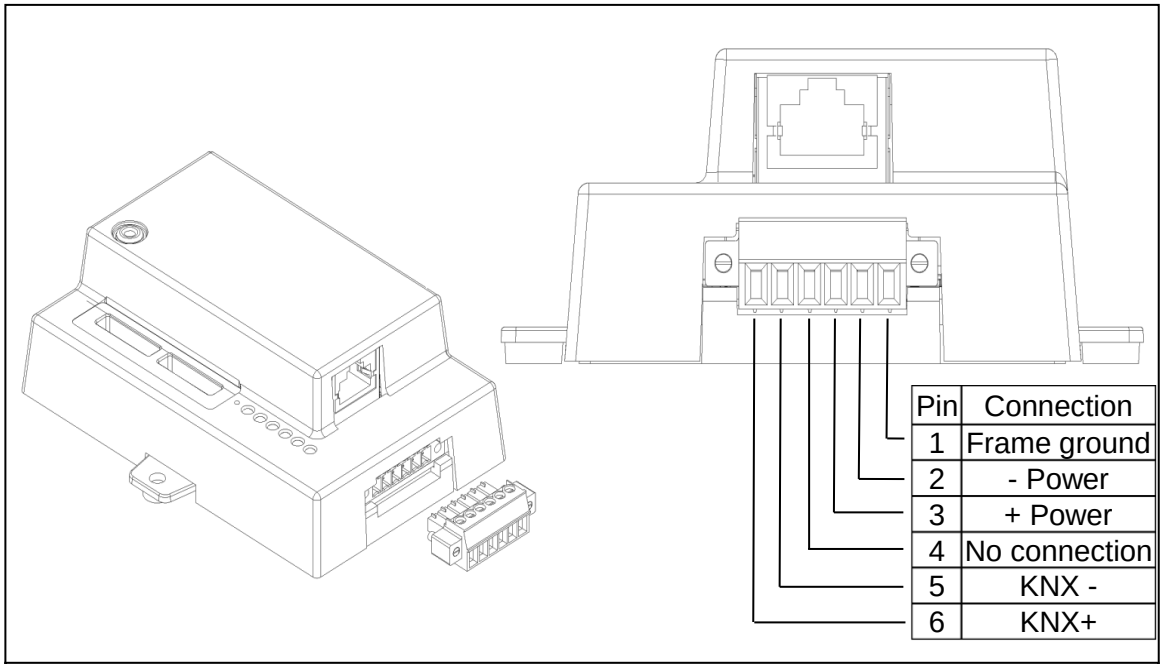


Figure 1: R2 Port Connection

Connect to the 3 pins on the left-hand-side of the 6 pin connector as shown.

4.2.2 RS-485 Connection R1 Port

Connect to the 3-pin connector as shown.

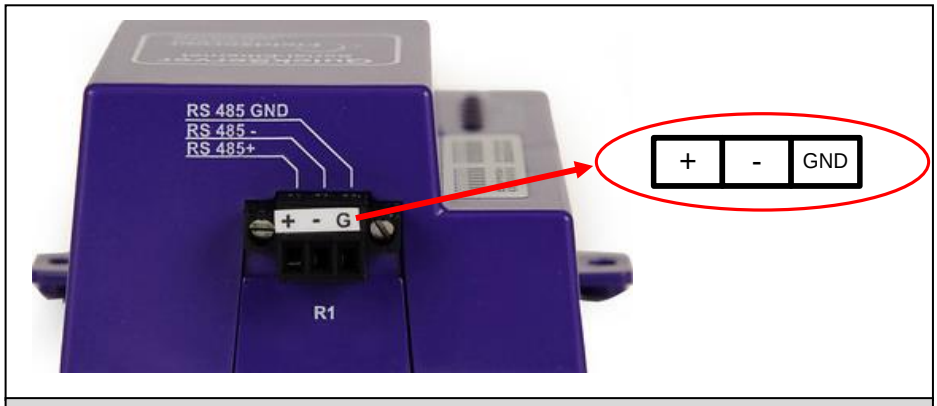


Figure 2: R1 Port connection

The following Baud Rates are supported on the R1 Port:
9600, 19200, 38400, 76800, 115200

5 OPERATION

5.1 Power up the Device

Apply power to the device. Ensure the power supply complies with the specifications provided in **Section Appendix B.1**. Ensure the cable is grounded using the “Frame GND” terminal. The EZ Gateway requires a power supply that provides 9-30VDC or 12-24VAC.

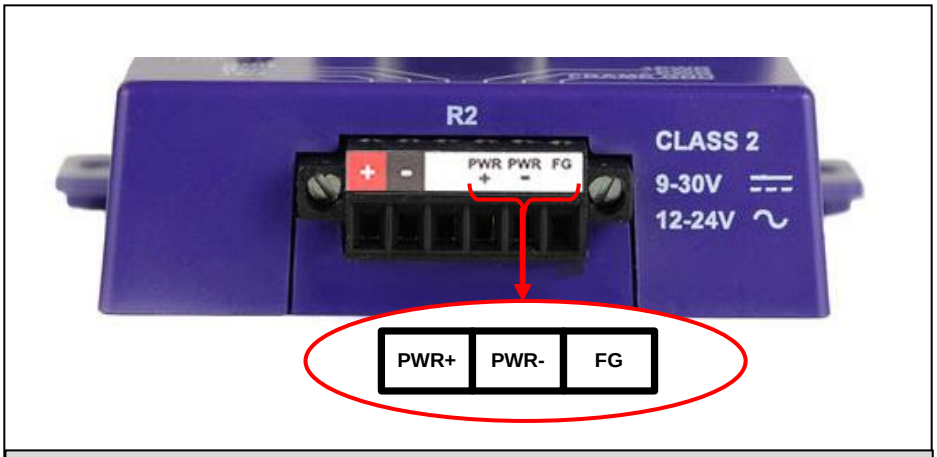


Figure 3: KNX Power Connection

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

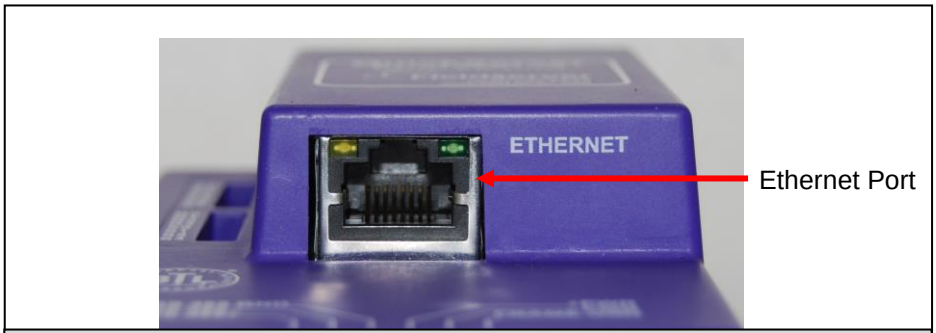


Figure 4: Ethernet Port

- Connect an Ethernet cable between the PC and EZ Gateway or connect the EZ Gateway and the PC to the Hub/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**.
- Virus protection and firewall software should temporarily be disabled if connection problems are experienced.

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: http://www.sierramonitor.com/customer-care/resource-center?filters=software-downloads
- Use the Toolbox application to find the EZ Gateway, and launch the Web Configurator.

NOTE: If the connect button is disabled, the EZ Gateway's IP Address must be set to be on the same network as the PC. (**Section** 6.3.2)

5.3.2 Using Web Configurator GUI

- Open a web browser and connect to the EZ Gateway's Default IP Address. The Default IP Address of the EZ Gateway 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 5: Web Configurator GUI Landing Page

5.3.2.1 Controls, Status and Log Functions

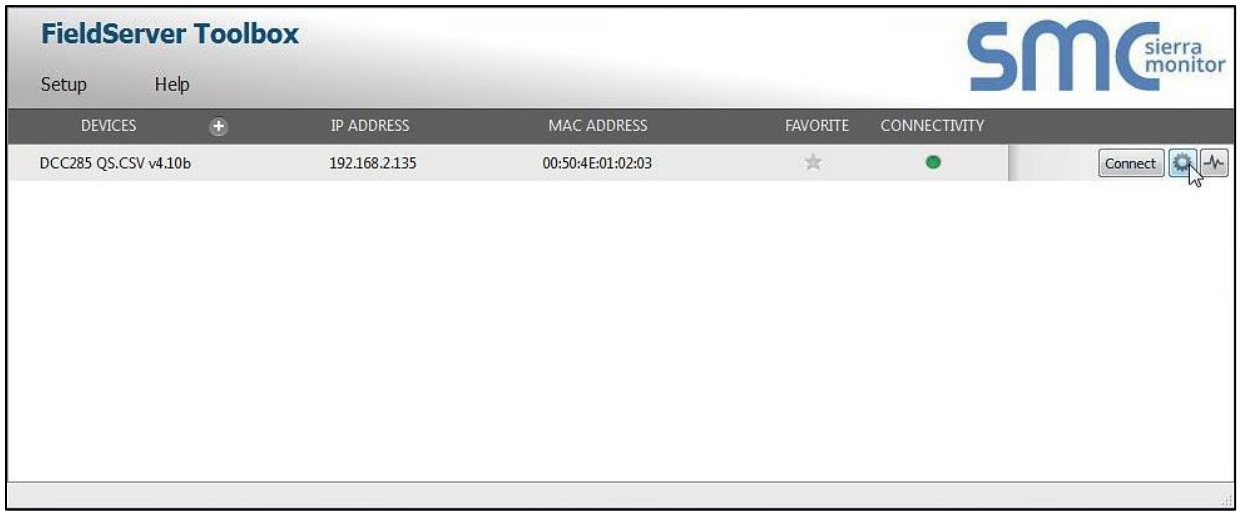
Along the right side of every Web Configurator GUI page is a column of buttons and event generated messages.

- **Controls Panel** – Contains the following four buttons:
  - *Reload* – Resets all settings to the last saved configuration.
  - *Defaults* – Resets all settings to the default configuration.
  - *Save* – Records all settings.
  - *Restart* – Reboots the Gateway.
- **Status Information** – Shows Gateway messages such as whether the Gateway is online, element validation status, unsaved settings, etc.
- **Log Messages** – Lists last five events and when they were performed.

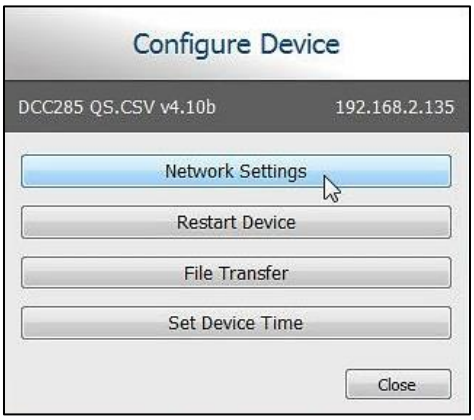
5.4 Set IP Address of the EZ Gateway

5.4.1 Using the Toolbox Application to Set the IP Address

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



- Select Network Settings.

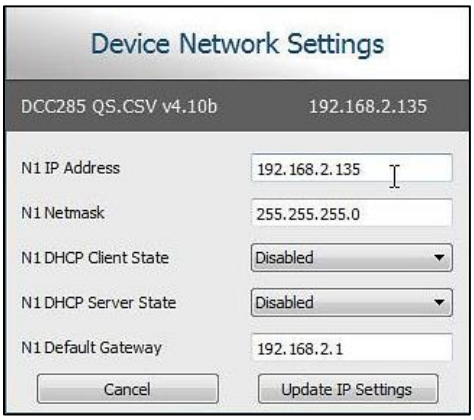


- Modify the IP Address (N1 IP Address field) of the EZ Gateway Ethernet port.
- If necessary, change the Netmask (N1 Netmask field).
- Type in a new Subnet Mask.
- If necessary, change the IP Gateway (Default Gateway field).
- Type in a new IP Gateway.

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.

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

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



6 CONFIGURING THE EZ GATEWAY

6.1 KNX Connection Setup

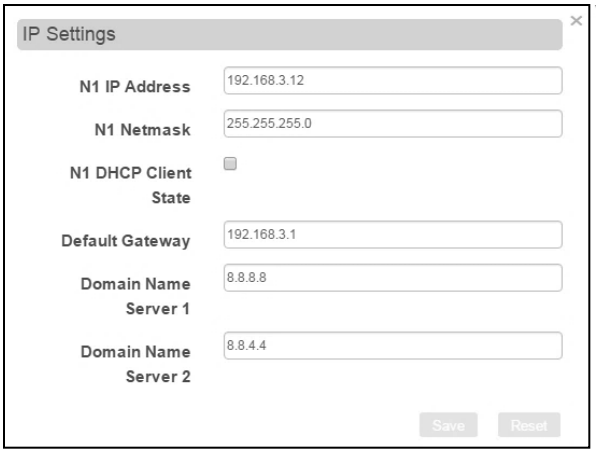
- Open the KNX EZ Gateway Web Configurator GUI in a local web browser (**Section 5.3.2**).

NOTE: The browser should open into the "Gateway" section, as shown in the Sections navigation map on the left side of the page (Figure 6). If navigating from another page in the Web Configurator GUI, click "Gateway" in the Sections navigation map.

- Specify the Gateway's Title and a System ID Number.
    - The System ID Number is a unique number to identify the EZ Gate way and is used as the default Device Instance if there are no nodes configured on the BACnet connection

Figure 6: Gateway Network Settings

- Edit the IP Settings and Password Settings as needed by opening the respective settings windows via the edit buttons (pencil icons under "Network").



- Click Save button in the Controls Panel once edits are completed to record changes.

6.2 BACnet Connection Setup

- Click on the Enable checkbox under the 'BACnet/IP or BACnet MS/TP Connection' heading to configure the BACnet connections. The gateway has a BACnet MS/TP (R1) and BACnet/IP connection (N1).

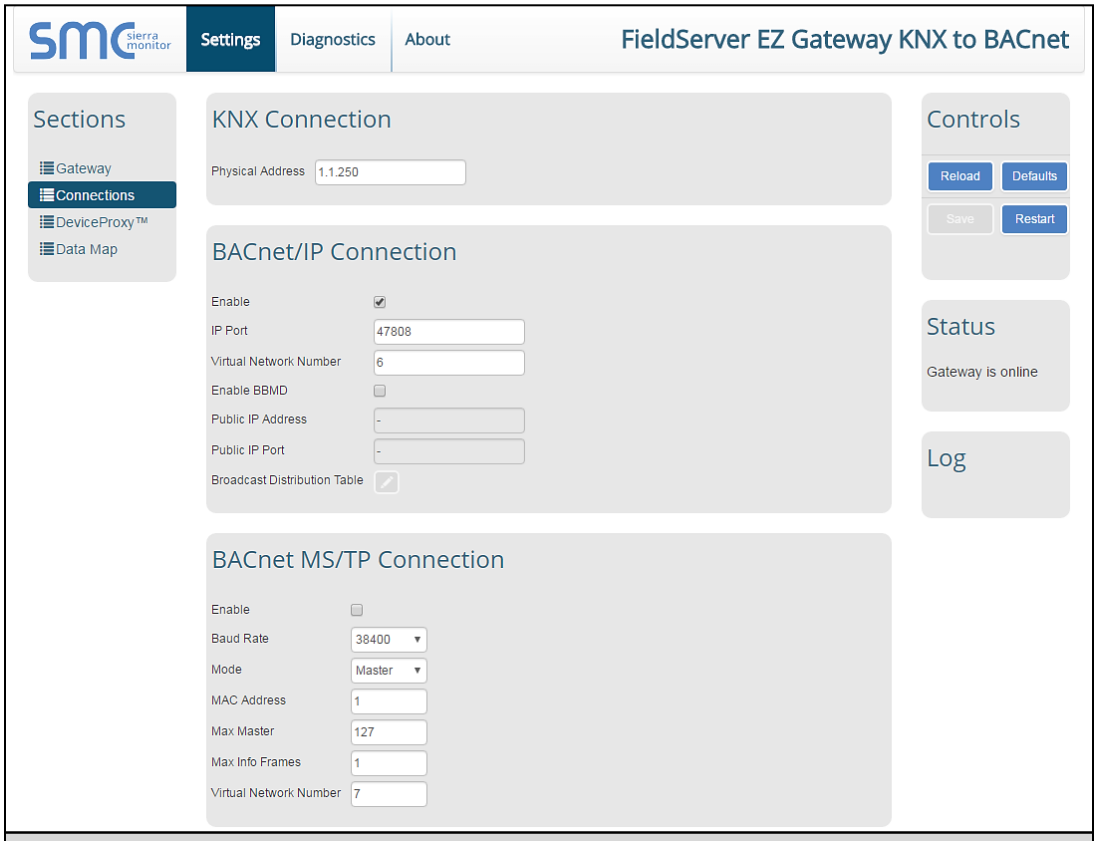


Figure 7: BACnet Connection Settings

- Enter the required BACnet/IP or BACnet MS/TP settings and **click the Save button in the Controls Panel once all edits are completed to record changes.**

6.2.1 All Connections Settings

Network Number – Set up the BACnet network number for the connection. Legal values are 1-65534. Each network number must be unique across the entire BACnet internetwork.

Enable – Enable or disable the connection.

6.2.2 BACnet/IP Connection Settings

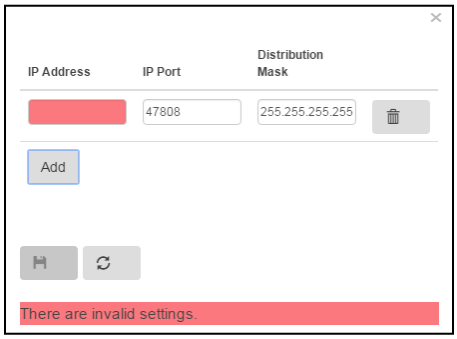
IP Port – The BACnet/IP default is 47808 (0xBAC0), but a different port may be specified.

Enable BBMD – Select this checkbox to enable the EZ Gateway to act as a BBMD.

Public IP Address and Port – 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 BDT of remote BBMD's that need to reach this BBMD across the NAT Router. If no NAT Router is being used, these fields can be left blank.

Broadcast Distribution Table – Click the edit button (pencil icon) to change the IP Address, IP Port and Distribution Mask. The following buttons are also available along the bottom of the window:

- Add Button - Add additional broadcasts, opening a new row of fields
- Save Button (floppy disk icon) - Save broadcast settings
- Reset Fields Button (cycle icon) - Clear fields



6.2.3 BACnet MS/TP Connection Settings

Baud Rate – The serial baud rate used on the network.

Mode – Select Master or Slave.

MAC Address – Legal values are 0 to 127. Address must be unique on the physical network.

Max Master – The highest MAC address to scan for other MSTP master devices. The default of 127 is guaranteed to discover all other MSTP master devices on the network.

Max Info Frames – The number of transactions the Router may initiate while it has the MSTP token. Default is 50.

6.3 BACnet Device Setup

- Click on the DeviceProxy™ section to configure the BACnet virtual nodes.

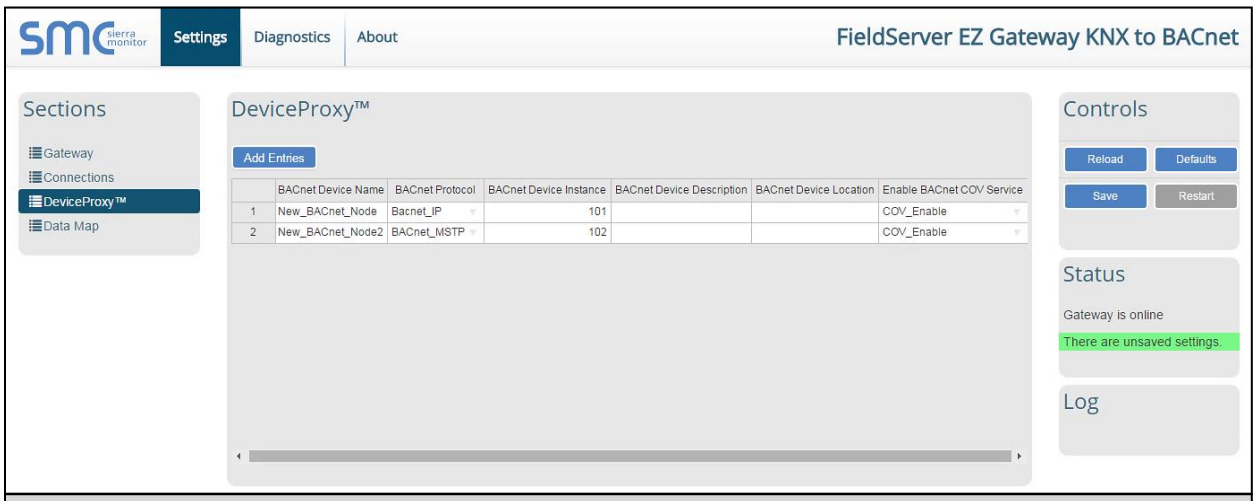
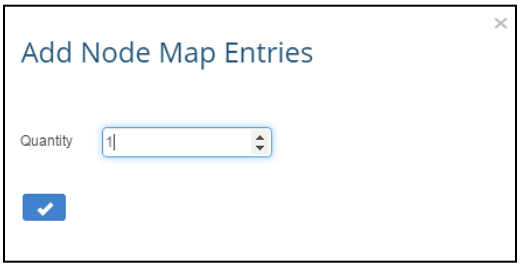


Figure 8: BACnet Device Settings

- Click the "Add Entries" button to reach the Add Node Map Entries window.



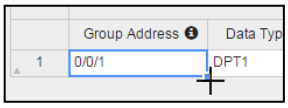
- Choose the number of devices to add and click the checkmark.
  - This will generate the requisite field inputs for each device
- Enter the approriate information for each device.

NOTE: Click the ℹ next to the DeviceProxy heading to see a list of all keyboard functions and shortcuts.

6.3.1 Table Editing Options

The DeviceProxy, Data Mapping and Notification tables allow special table editing options listed below:

- **Drag and drop** – When clicking on a field/cell in the table, a blue dot will appear in the bottom right corner of the field/cell. By scrolling over this dot the arrow cursor will become a crosshair. By clicking this corner of the cell and dragging below the bottom of the table, additional rows are created. Release while highlighting cells below to populate with the same values as the originally highlighted cell.



- **Right click menu** – When right clicking on a field/cell the following menu will appear, allowing: inserting a row, removing a row, undo-ing the last edit and redo-ing the last undo.

6.4 KNX Network Mapping

There are two methods of mapping KNX Network to BACnet. ETS4 has the ability to export group addresses, which can then be imported into the KNX EZ Gateway (Section 6.4.1). The KNX mapping can also be set up manually in the Web Configurator GUI (Section 6.4.2).

6.4.1 KNX Mapping Method 1: Import Group Addresses

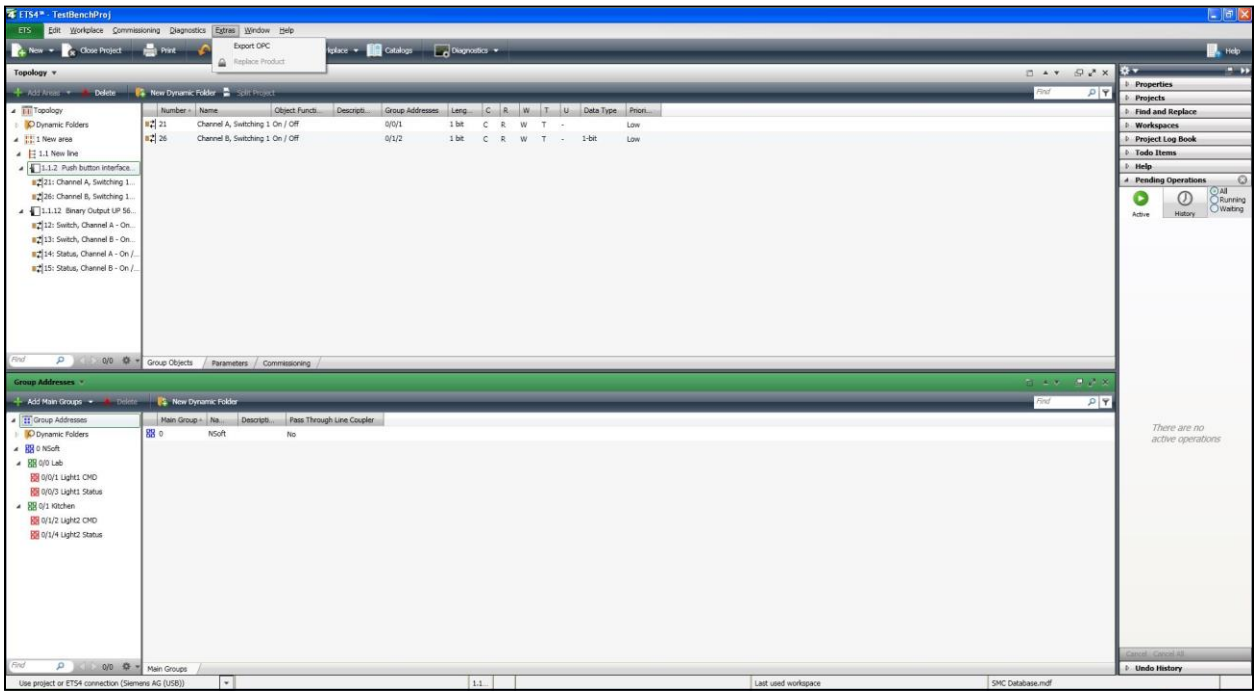
NOTE: This document assumes that a qualified ETS4 Operator will create the KNX Network in the ETS4 program. No direct instructions related to ETS4 (besides the file export instructions below) are present in this start up guide.

When the KNX Network is completed in ETS4, the group addresses can be exported. Follow the instructions below to complete this process.

NOTE: Both ESF and XML file types are supported for import by the EZ Gateway. However, ESF files are recommended as the saved data contains data type values while XML files do not.

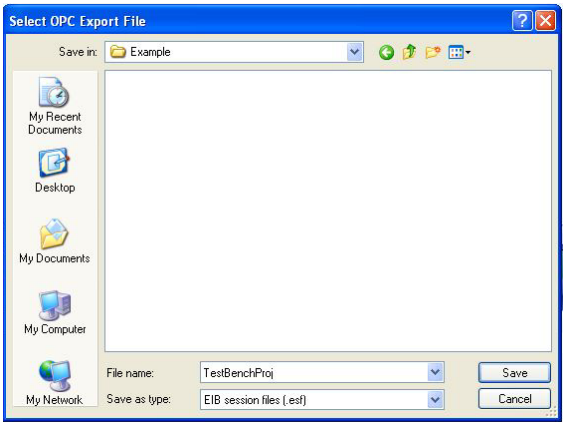
ESF File Export:

- In ETS, click the Extras drop down menu acros the top of the page.



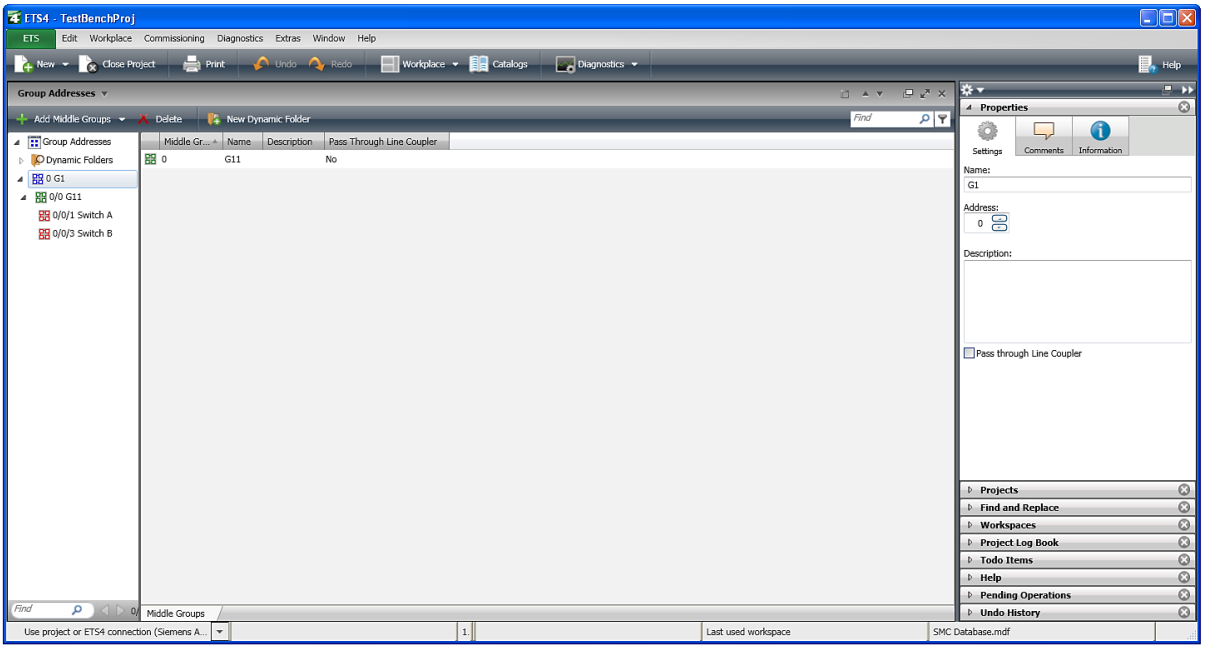
- Select “Export OPC”.

- Choose the location and name of the file then click Save.

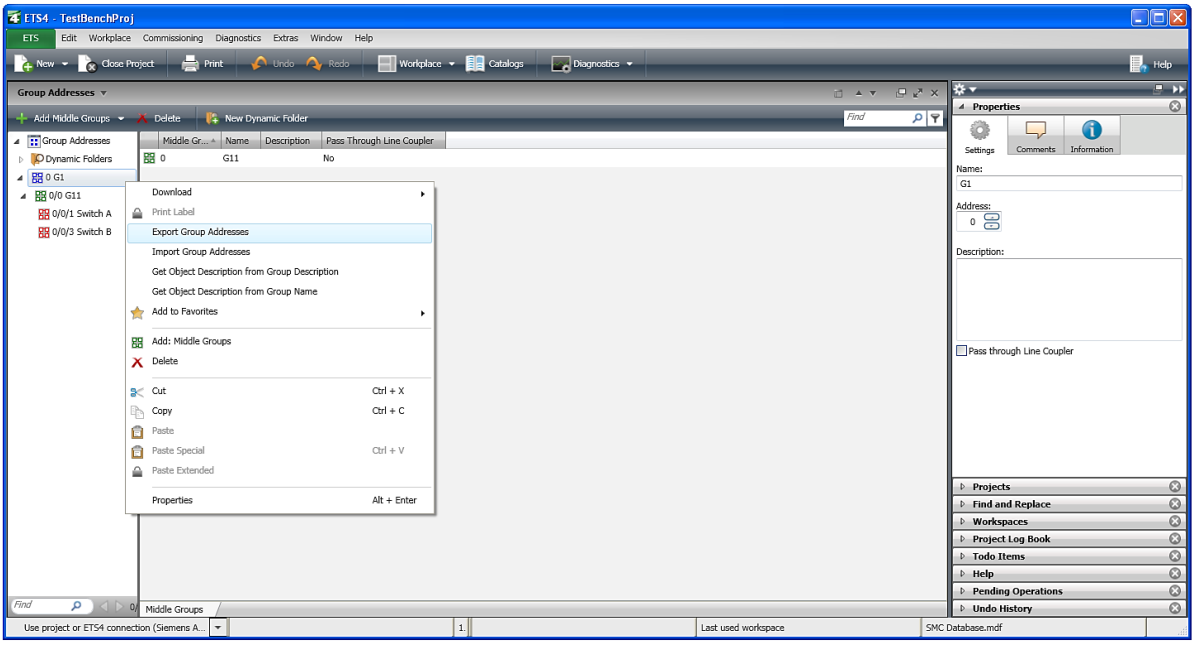


XML File Export:

- In ETS, select the Group Address window and navigate to the desired main group (at the highest level) to export all addresses contained within.



- Right-click on the main group and select “Export Group Addresses”.



- Select XML as the Output format type, enter the desired file location as well as file name in the Export file name field and save the file by clicking the “OK” button.

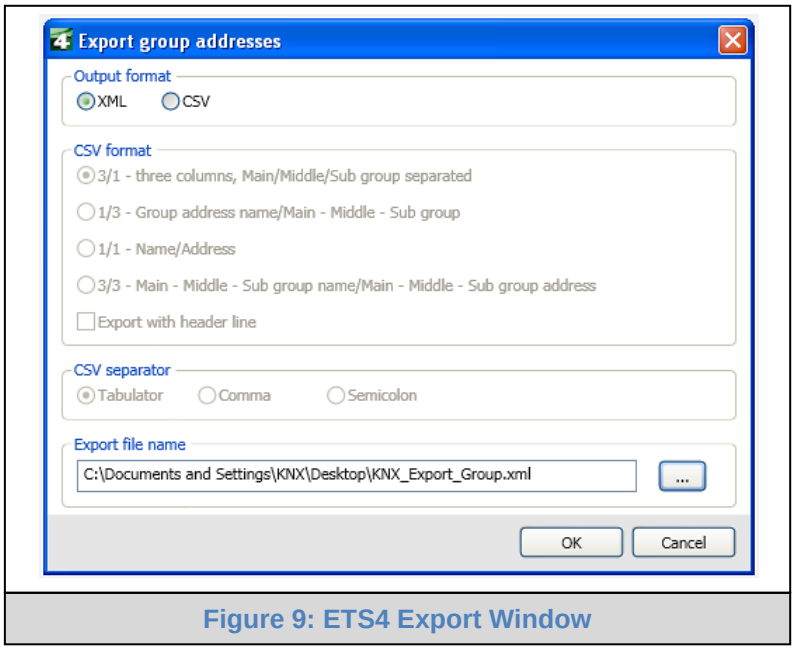


Figure 9: ETS4 Export Window

Import to EZ Gateway:

- Back on the Web Configurator GUI; click the "Data Map" section to configure the KNX to BACnet data point mapping.
- Click the "Import File" button to load the previously saved XML file.

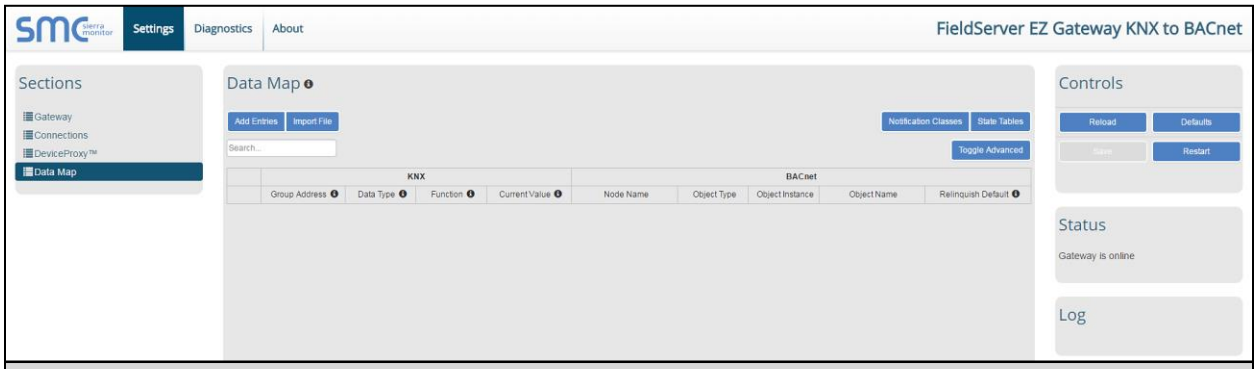
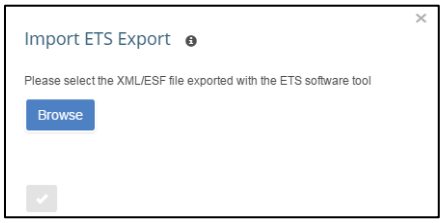


Figure 10: Data Map Page

- Click Browse to find and select the correct XML file.



- Click the checkmark to open the "Import ETS Export" window with the following import options:

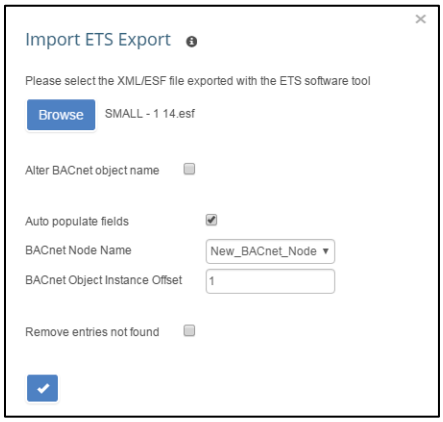
Alter the BACnet object name – Changes how the BACnet Object Name is generated by giving the option of inserting the group address, main group name and/or sub group name into the field.

Auto populate fields – Adds options to manipulate certain values generated for the imported data, specifically BACnet Node Name and BACnet Object Instance Offset.

BACnet Node Name – Select an already created BACnet Virtual Node to assign the imported data.

BACnet Object Instance Offset – Choose the starting number to assign BACnet Instances to the imported data.

Remove entries not found – Clears data map entries with group addresses not found in imported data.

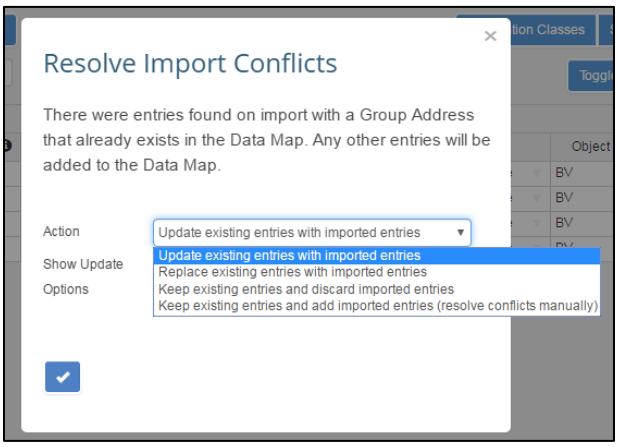


- Click the checkmark to confirm file selection and begin import.

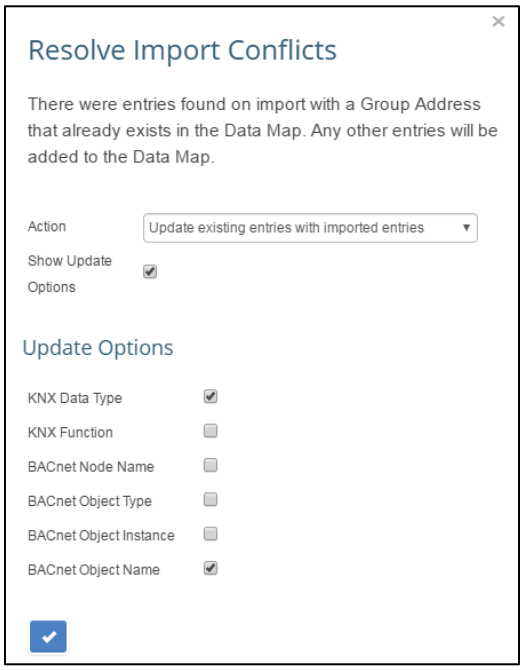
If there are problems with the import, one of two situations can occur.

Resolve Import Conflicts Window:

- If there are entries with the same group address on both the imported data and the existing data map the “Resolve Import Conflicts” window will appear



- Decide the appropriate action; if “Update existing entries with imported entries” is selected, the “Show Update Options” checkbox can be clicked to decide exactly which elements can be written over by the import



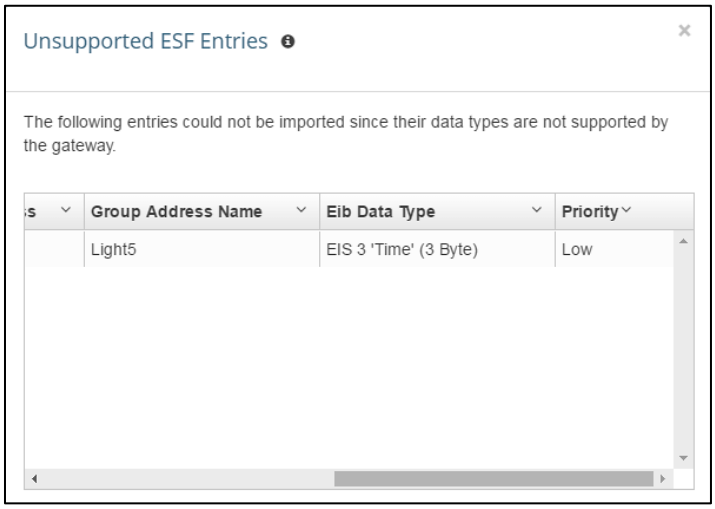
- Click the check mark in the bottom left corner of the window to begin import
- Once the XML file is imported, the data map screen will populate the appropriate group addresses and names

NOTE: If there are still conflicts, such as two entries on the same node using the same object instance, the offending fields are highlighted red and saving is unavailable until the conflict is resolved.

Unsupported or Uncertain eib Data Types Warning:

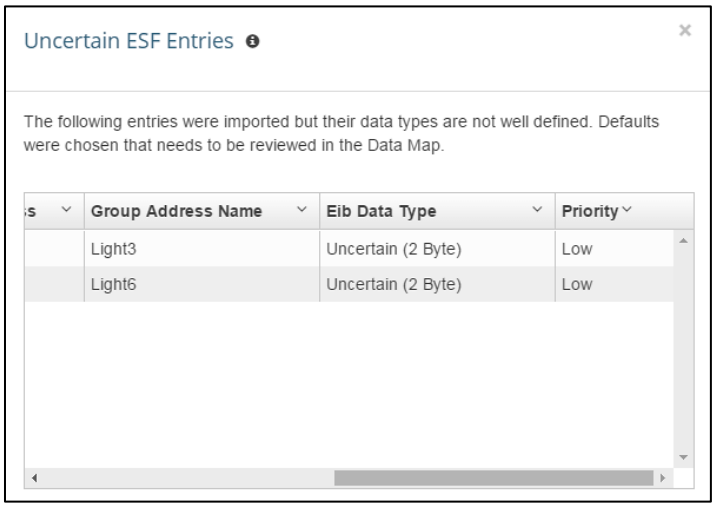
- If one or both of these warning pop-up messages appear after importing data, click the bolded “Show” text below the message

- The Unsupported ESF Entries Window lists which group addresses were not imported because the data type was not supported



NOTE: To fix an unsupported data type, the data type would have to be changed to a supported data type before exporting the KNX address data.

- On the other hand, the Uncertain ESF Entries Window shows which group addresses were imported with default data types because the data type was unclear



NOTE: Review the imported group address shown in the window and correct the data type if necessary.

- Once review is complete, click the “X” in the upper right corner of the window and do the same to the original warning message to clear them from the screen

- After the import is complete the EZ Gateway will generate BACnet mapping data automatically, but if there are missing fields they must be defined for proper mapping (see **Section** 6.4.2 and **Section** 6.5 for additional information about KNX and BACnet fields).

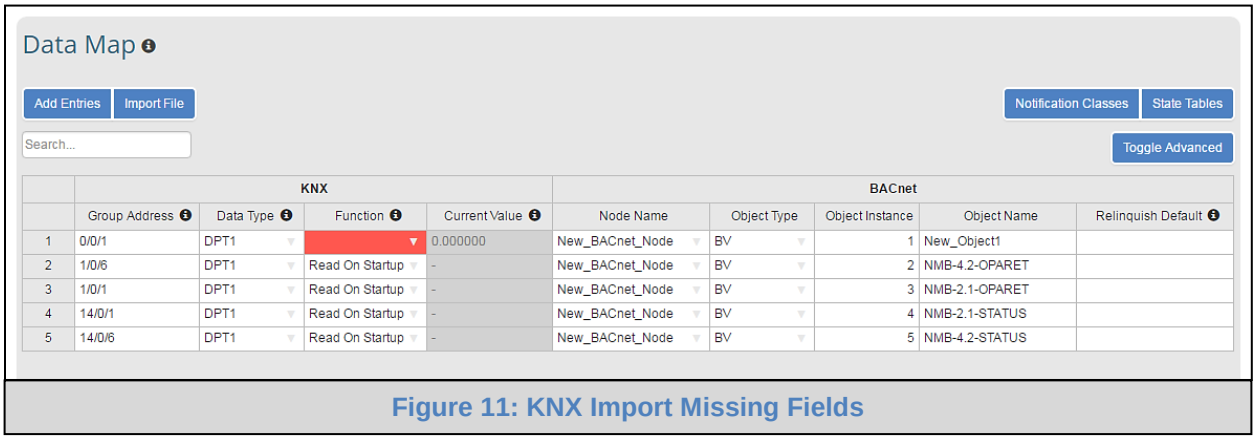


Figure 11: KNX Import Missing Fields

6.4.2 KNX Mapping Method 2: Setup on Web Configurator GUI

- In the Web Configurator GUI, click the "Data Map" section to configure the KNX data point mapping.

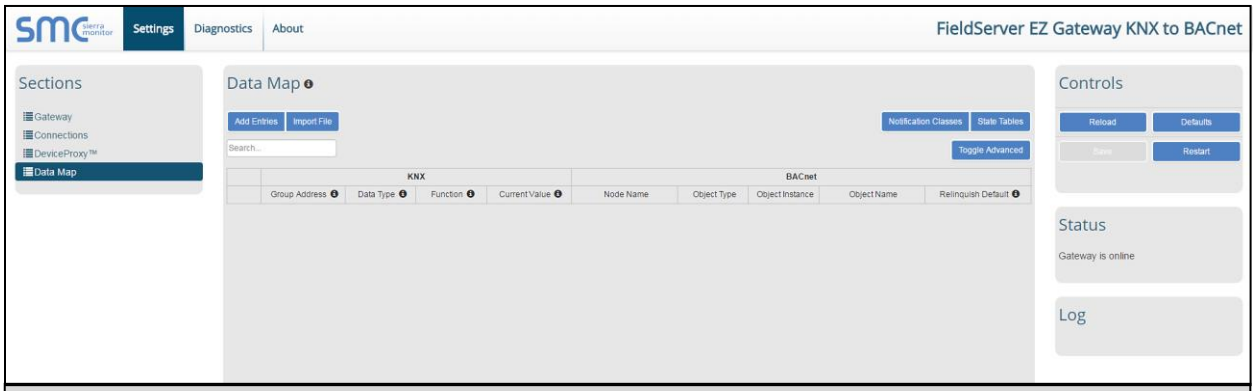


Figure 12: Mapping BACnet Addresses to the KNX Registers

- To bring in spreadsheet data, copy the appropriate cells and paste into the Data Map table.
  - The correct number of rows will automatically be added to the table
- Otherwise, click "Add Entries" and select the desired number of mappings (rows of the table).
  - For advanced table editing options, see **Section 6.5.1**.

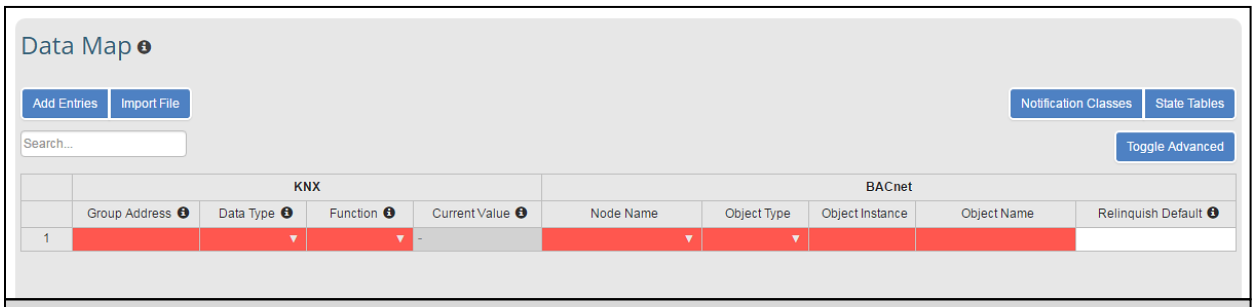


Figure 13: Creating an Item on the Data Map

- Fill in the neccessary data entry fields under the KNX heading, including:
  - Group Address – KNX Group Address that will be served as a BACnet object
  - Data Type – The type of KNX data; click ℹ to view a table describing the supported types (**Appendix B.3**)
  - Function – Read or write type; click ℹ to view a table describing the supported types
  - Scan Interval – Seconds between poll requests; defaults at 2 if left blank

NOTE: Scan Interval is only available to edit when "Read Continuously" is selected in the function field.

  - Current Value – KNX data value read from 'Group Address'
  - Write Group Address – Allows writing up to two KNX addresses from one BACnet object

NOTE: Click the Toggle Advanced button to see all KNX fields. Otherwise Scan Interval and Write Group Address will not appear.

NOTE: Certain fields show the information icon (ℹ). Click on this icon to get additional informaiton about the corresponding field.

6.5 BACnet Network Mapping

For every row of KNX parameters in the data map, a corresponding set of BACnet parameters must also be defined.

NOTE: Click Toggle Advanced button to see all BACnet fields. Otherwise some fields are hidden.

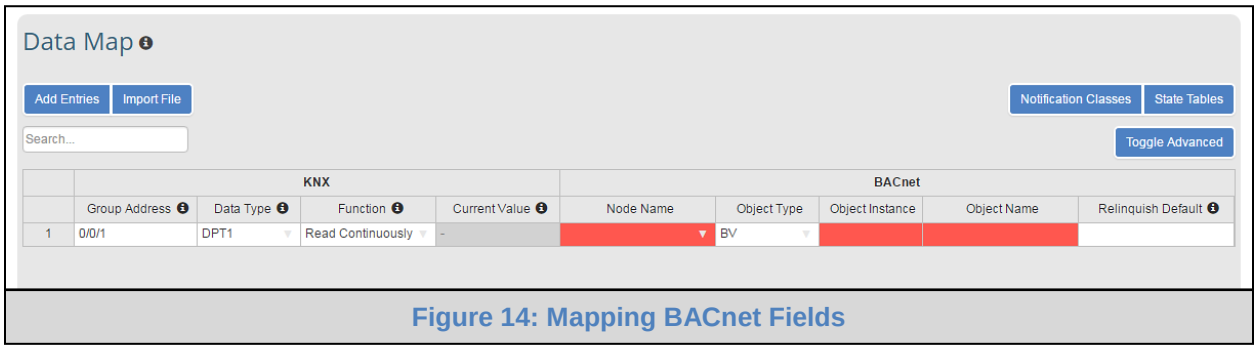


Figure 14: Mapping BACnet Fields

- Fill in the neccessary data entry fields under the BACnet heading, including:
  - Node Name – Reference name for BACnet device
  - Object Type – Data structure for BACnet Object
  - Object Instance – Reference number for BACnet Object
  - Object Name – Name of each individual BACnet Object or point

NOTE: Certain fields show the information icon (ⓘ). Click this icon to get additional informaiton on the corresponding field.

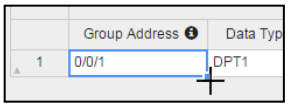
NOTE: Not all BACnet Fields are described in this manual. For additional information about any BACnet element, refer to the BACnet/IP or BACnet MS/TP driver manuals.

NOTE: Click the ⓘ next to the Data Map heading to see a list of all keyboard functions.

6.5.1 Table Editing Options

The DeviceProxy™, Data Mapping and Notification tables allow special table editing options listed below:

- **Drag and drop** – When clicking on a field/cell in the table, a blue dot will appear in the bottom right corner of the field/cell. By scrolling over this dot the arrow cursor will become a crosshair. By clicking this corner of the cell and dragging below the bottom of the table, additional rows are created. Release while highlighting cells below to populate with the same values as the originally highlighted cell.



- **Right click menu** – When right clicking on a field/cell the following menu will appear, allowing: inserting a row, removing a row, undo-ing the last edit and redo-ing the last undo.

NOTE: Click the ⓘ next to the DeviceProxy and Data Map headings to see a list of all keyboard functions.

6.6 Alarm Settings

- Click the “Notification Classes” button to the upper right of the Data Map Table to enter the Notification Claesses window.
- Fill in all fields.

Figure 15: Defining Parameters of Notification Class

NOTE: Click the ⓘ next to the Notification Classes heading to see a list of all keyboard functions and shortcuts.

- Click Apply Changes and click the “x” in the upper right corner to exit the window.
- Select Toggle Advanced button to make alarm elements visible.
- Fill in Notification Class, High Alarm, Low Alarm and Input Alarm State for each desired entry.

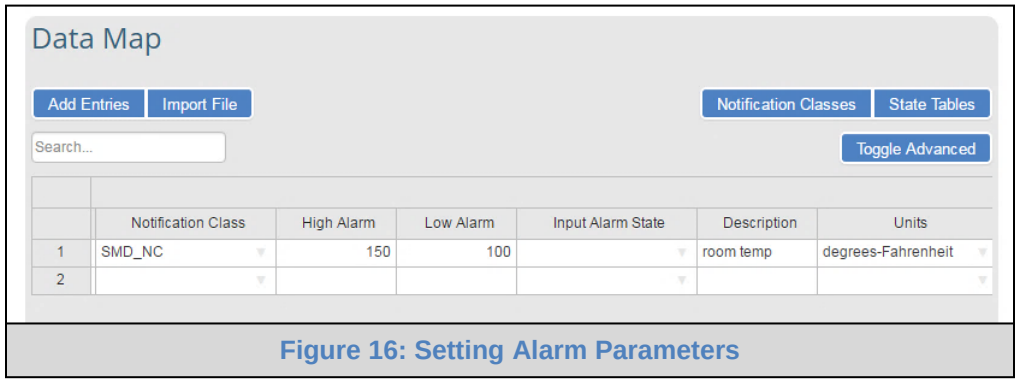


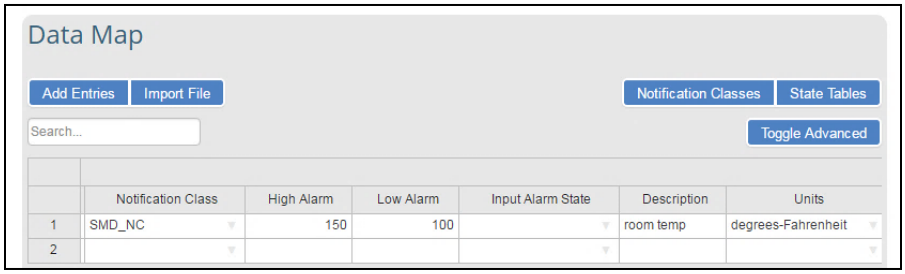
Figure 16: Setting Alarm Parameters

NOTE: For additional information about notification class elements, refer to the BACnet/IP or BACnet MS/TP driver manuals.

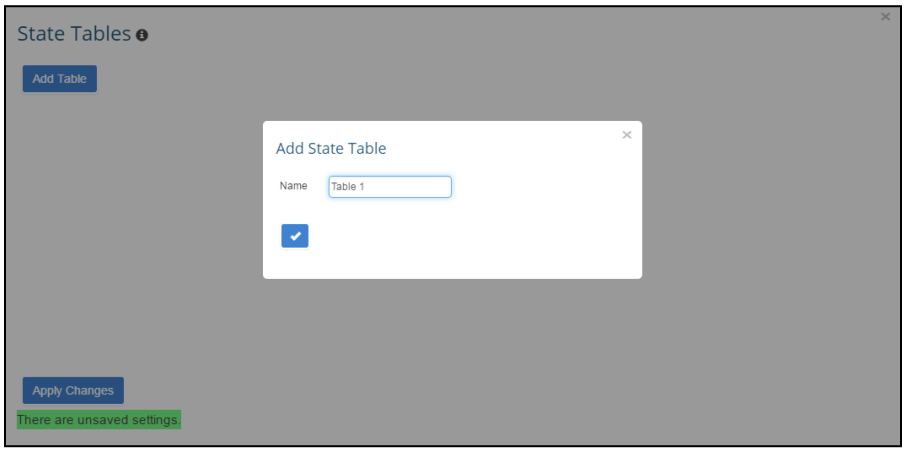
- Once finished, click Save in the Controls Panel.

6.7 State Tables

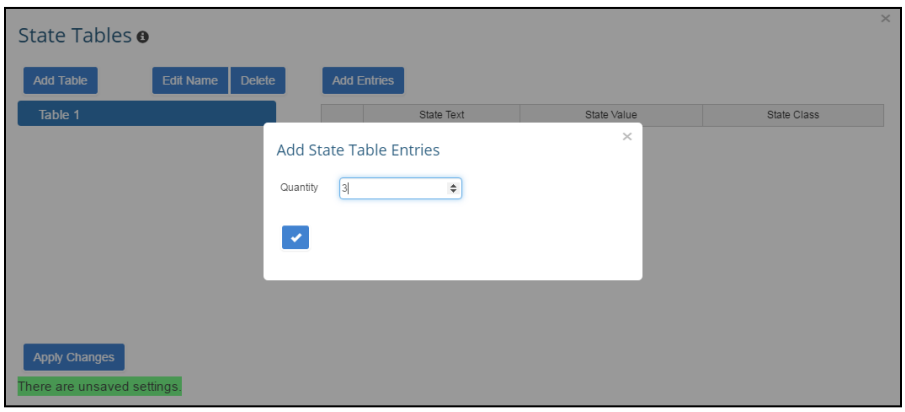
- To setup state tables click the “State Tables” button in the upper right corner of the Data Map.



- Once the State Tables window is open, click the “Add Table” button.
- Name the table and click the check mark.



- Click on the new table entry, shown down the left side of the window.
- Click the “Add Entries” button to add the number of required entries (rows) for the table.



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

- Once all needed tables are created, click the “Apply Changes” button in the bottom left corner of the State Tables window.

NOTE: The Apply Changes button will be disabled unless all state value fields are filled in with valid values.

6.8 Save KNX to BACnet Mapping

- Once all of the mappings and settings are defined, click Save to record information for later use.
- Click Restart to load the new configuration.

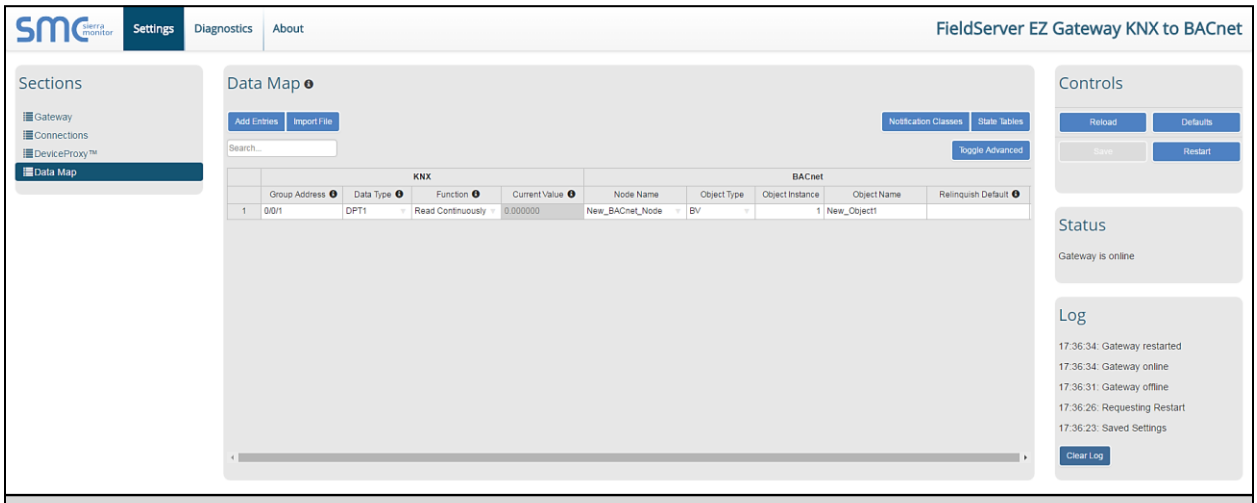


Figure 17: Saved Data Map

NOTE: Saving is prevented until all required fields in the table are validated. Highlighted fields go through validation and go from red to clear once a valid answer is entered. Once all highlighted data entry fields are clear, the status will change and saving is allowed. However, all fields should be filled out for accurate mapping.

6.9 Test and Commission the EZ Gateway

- Connect the EZ Gateway to the third party device(s), and test the application.
- Click on the “Diagnostic” tab to view the FS-GUI Diagnostic screen.
- From the main menu of the FS-GUI click on “View” under Navigation, then “Connections” to see the number of messages on each protocol.

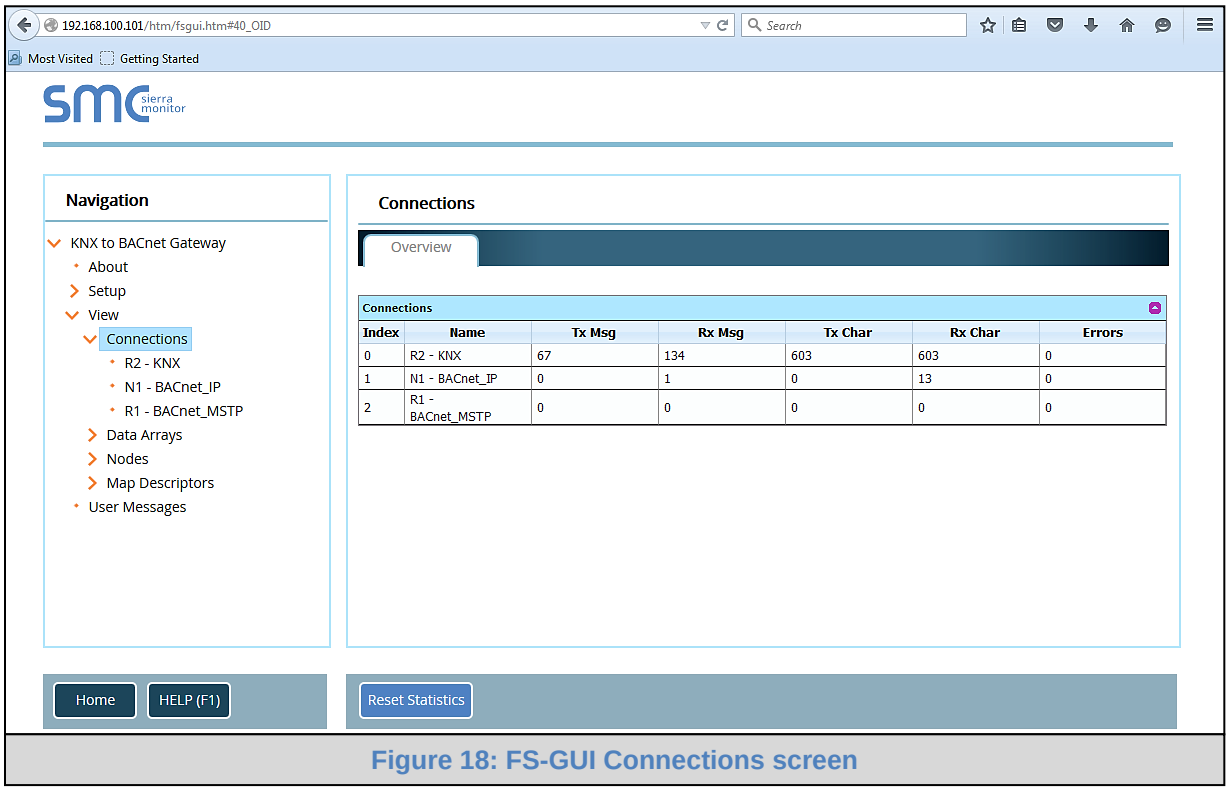


Figure 18: FS-GUI Connections screen

NOTE: For troubleshooting assistance refer to Appendix A, or any of the troubleshooting Appendices in the related Driver Supplements and Configuration Manual. Sierra Monitor Corporation also offers a technical support page on the Sierra Monitor Corporation website at www.sierramonitor.com, which contains a significant number of resources and documentation that may be of assistance.

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.
- If using Windows XP or later, ensure that the firewall is disabled.

Appendix A.2. 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 will allow us to rapidly diagnose 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 web at http://www.sierramonitor.com/customer-care/resource-center.

- Ensure that FieldServer Toolbox is Loaded on the PC that is currently being used, or download FieldServer-Toolbox.zip on the Sierra Monitor Corporation webpage, under Customer Care-Resource Center, Software Downloads: http://www.sierramonitor.com/customer-care/resource-center?filters=software-downloads
- Extract the executable file and complete the installation.

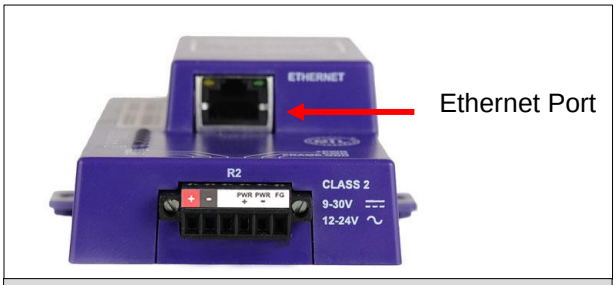
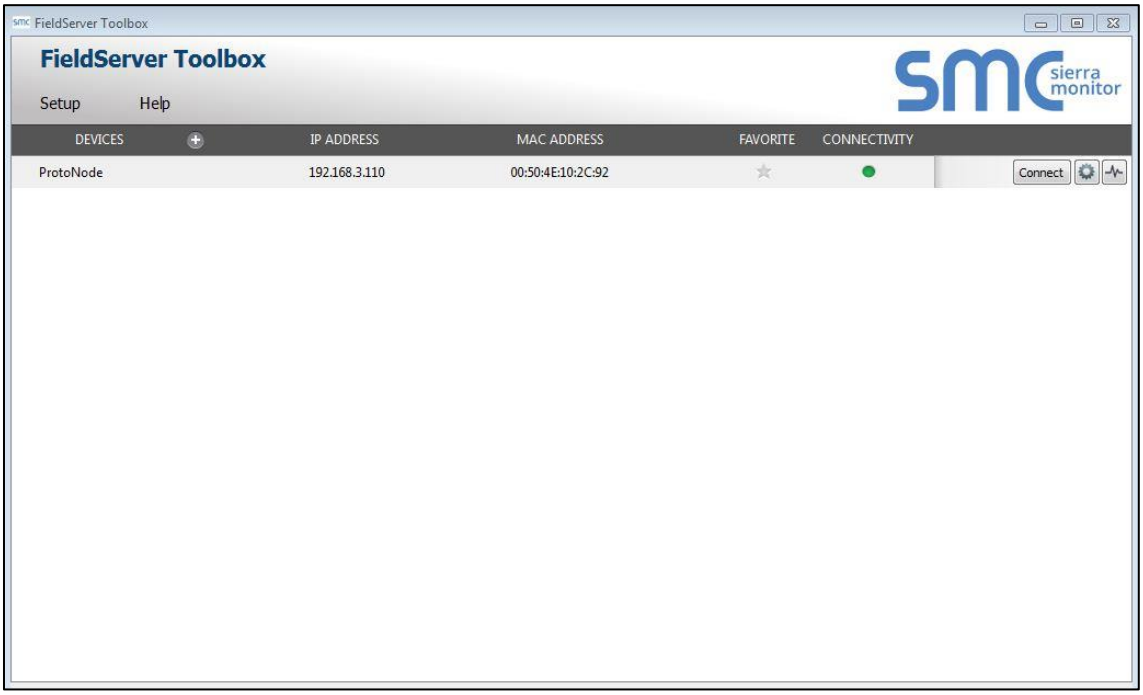


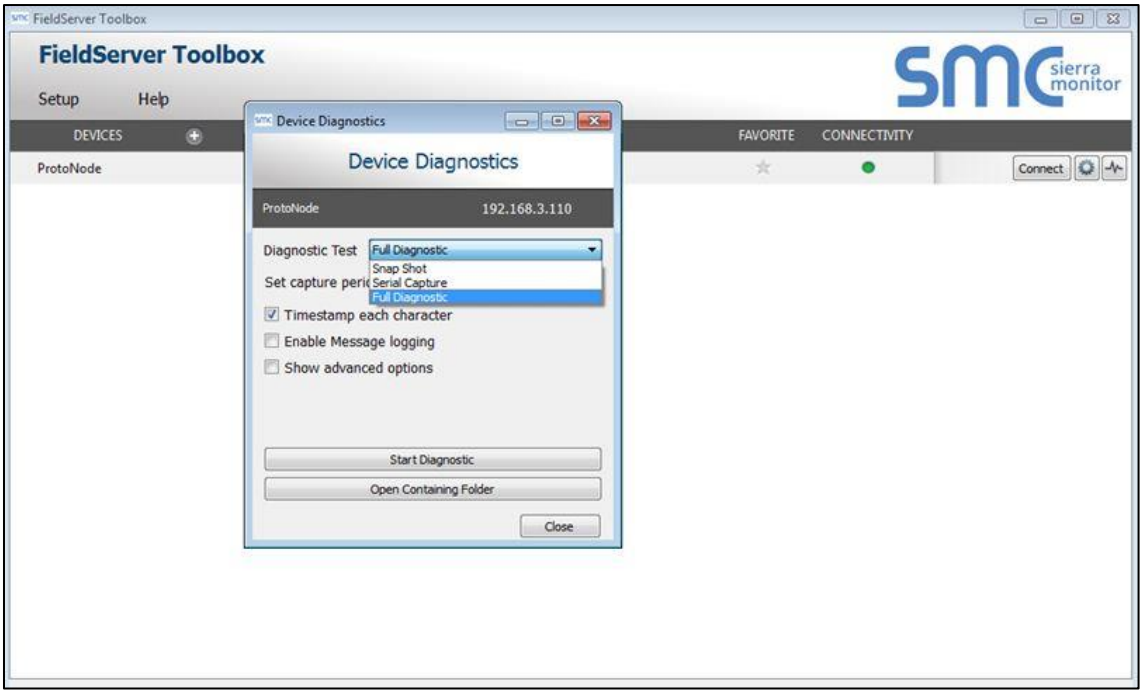
Figure 19: Ethernet Port Location

- Disable firewall and virus protection software if possible.
- 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

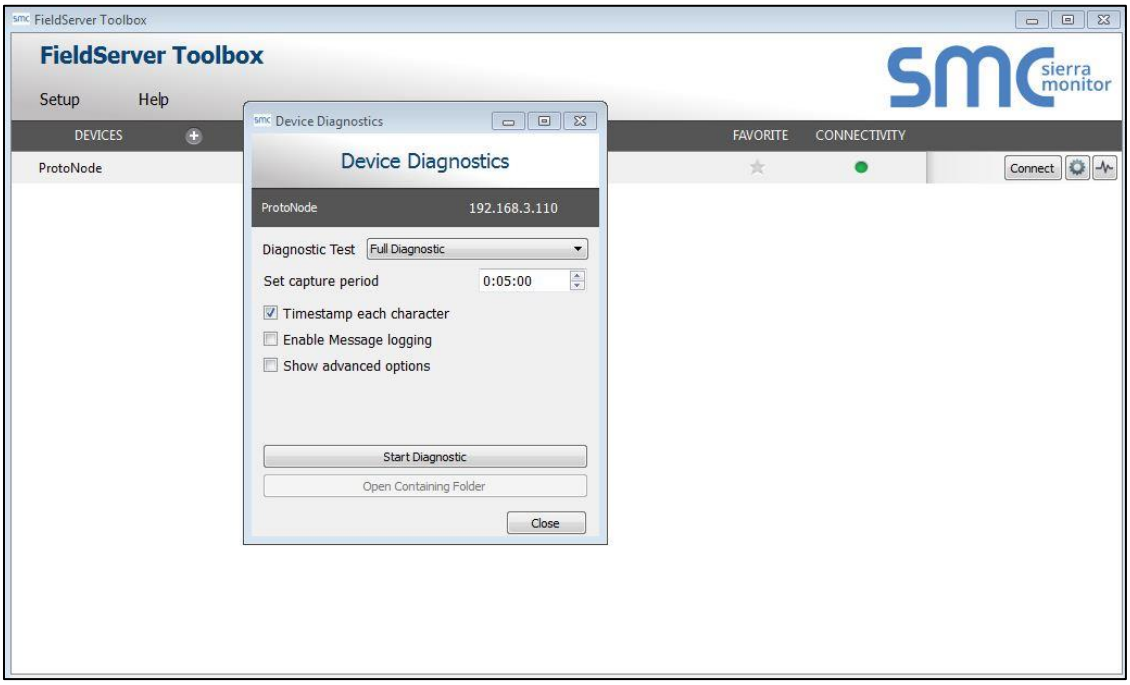


  - Select full Diagnostic



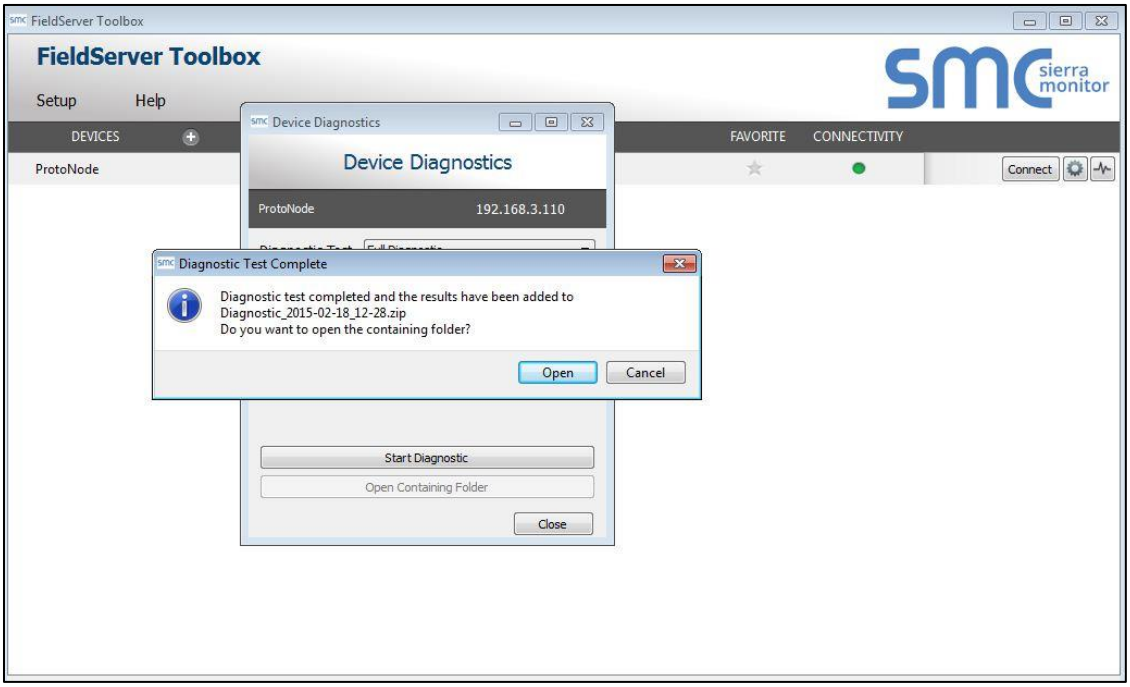
NOTE: If desired, the default capture period can be changed.

- 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.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 (i.e.: 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 20: LED location

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 Configurator GUI (**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 of FS-EZX-KNX-BAC, the RX LED will flash when a message is received on the field port of the EZ Gateway.
TX	On normal operation of FS-EZX-KNX-BAC, 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 A.5. KNX Commissioning

Figure 21: KNX Port location

The KNX Administrator will request that the installer hit the service pin at the correct step of the commissioning process. Insert a small screwdriver or other device into the KNX port to activate the service pin when prompted.

Appendix B. Reference

Appendix B.1. Specifications[2]

	FS-EZX-MOD-BAC
Available Ports	One 6-pin Phoenix connector with: KNX 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: 9-30VDC or 12-24VAC 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".

[2] 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. Supported KNX Data Types

Below are listed all of the supported KNX data types and their descriptions:

KNX Data Types	Description
DPT1	1-bit Binary Switch
DPT2	2-bit Step Control
DPT3	4-bit Dimming
DPT4	8-bit Set
DPT5	8-bit Unsigned Value
DPT6	8-bit Signed Value
DPT7	16-bit Unsigned Value
DPT8	16-bit Signed Value
DPT9	16-bit Float
DPT12	32-bit Unsigned Value
DPT13	32-bit Signed Value
DPT14	32-bit Float
DPT15	32-bit Access
DPT17	8-bit Scene Number
DPT18	8-bit Scene Control
DPT20	8-bit Enum Value

NOTE: See KNX driver manual for additional information.

Appendix B.4. Dimension Drawing FS-EZX-KNX-BAC

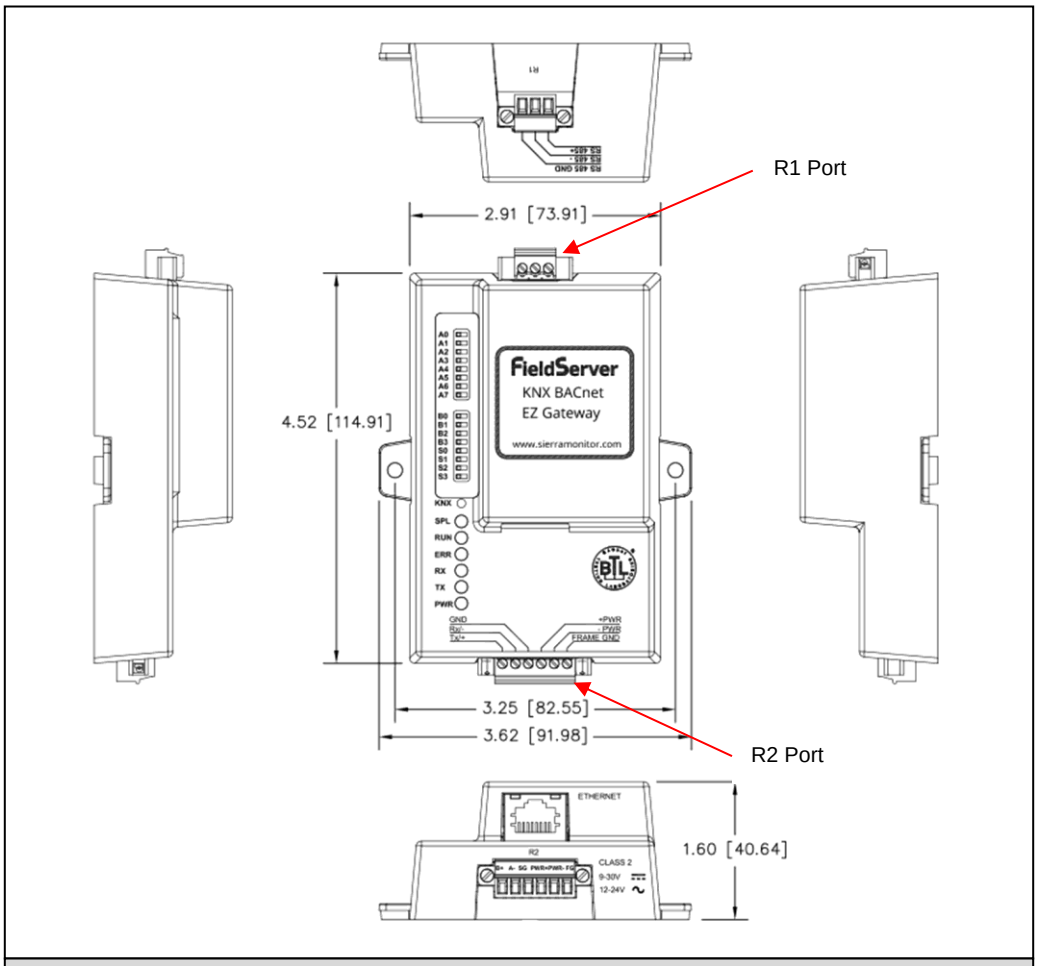


Figure 22: EZ Gateway Dimension Drawing

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.