



FieldServer

QuickServer Start-up Guide

FS-QS-1010/1011/12X0/12X1



APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after July 2016.

Technical Support

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

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1 EQUIPMENT SET-UP

QuickServer is a high performance, cost effective Building and Industrial Automation multi-protocol gateway providing protocol translation between serial, Ethernet, and LonWorks¹ 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 SUPPLIED EQUIPMENT

QuickServer Gateway

- Preloaded with the two selected drivers (on the FS-QS-1X11 and FS-QS-12X1 one of those drivers is LonWorks). A sample configuration file is also pre-loaded onto the QuickServer.
- 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 www.sierramonitor.com/customer-care/resource-center.

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:
 - QuickServer 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 QuickServer
 - Additional components as required - See Driver Manual Supplement for details



¹ LonWorks is a registered trademark of Echelon Corporation

3 CERTIFICATIONS

3.1 BTL Mark – BACnet² Testing Laboratory



BACnet is a registered trademark of ASHRAE. ASHRAE does not endorse, approve or test products for compliance with ASHRAE standards. Compliance of listed products to requirements of ASHRAE Standard 135 is the responsibility of the BACnet International. BTL is a registered trademark of the BACnet International.

The BTL Mark 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](#).

3.2 LonMark Certification



LonMark International is the recognized authority for certification, education, and promotion of interoperability standards for the benefit of manufacturers, integrators and end users. LonMark International has developed extensive product certification standards and tests to provide the integrator and user with confidence that products from multiple manufacturers utilizing LonMark devices work together. FieldServer Technologies has more LonMark Certified gateways than any other gateway manufacturer, including the ProtoCessor, ProtoCarrier and ProtoNode for OEM applications and the full featured, configurable gateways.

² BACnet is a registered trademark of ASHRAE

4 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: 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.

4.1 Dimensions

4.1.1 Dimension Drawing FS-QS-1X10-XXXX

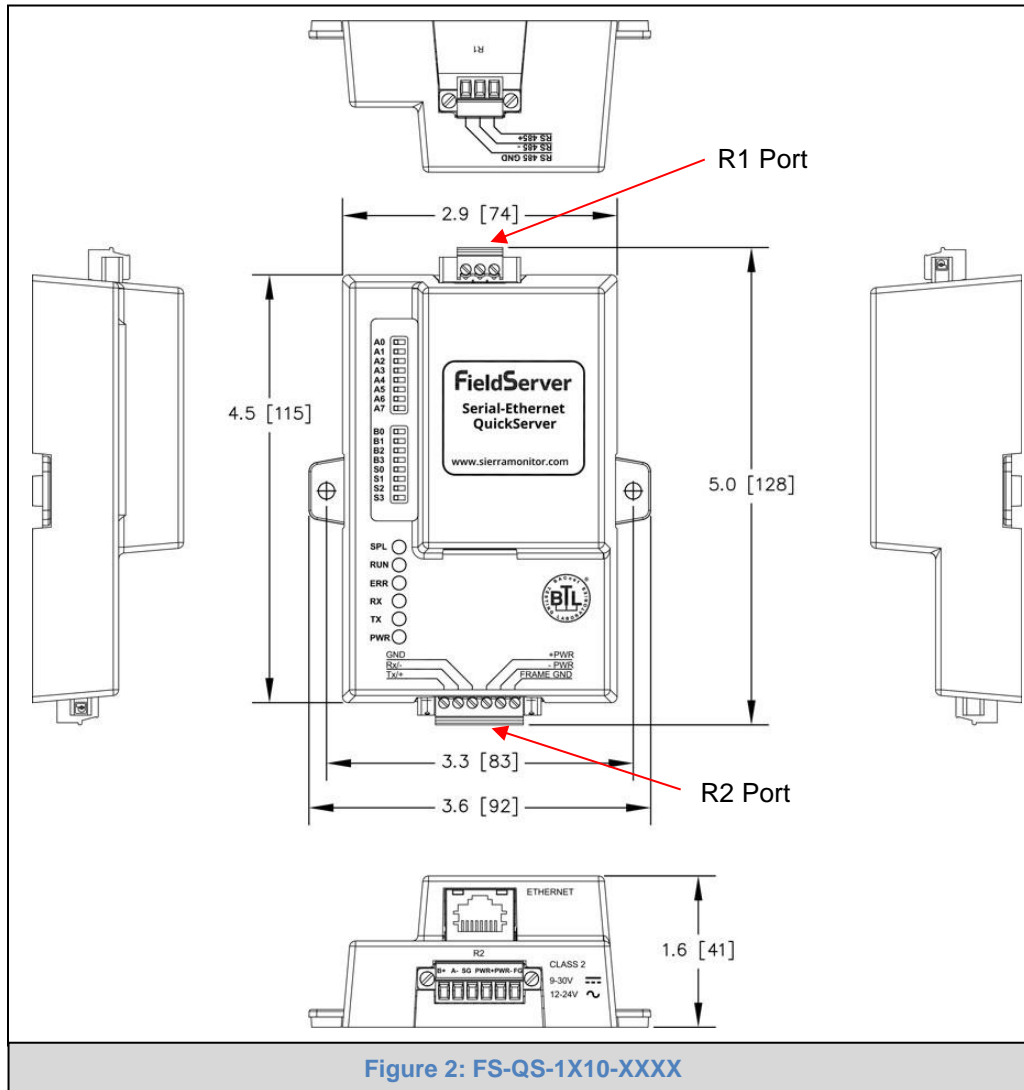


Figure 2: FS-QS-1X10-XXXX

4.1.2 Dimension Drawing FS-QS-1XX1-XXXX

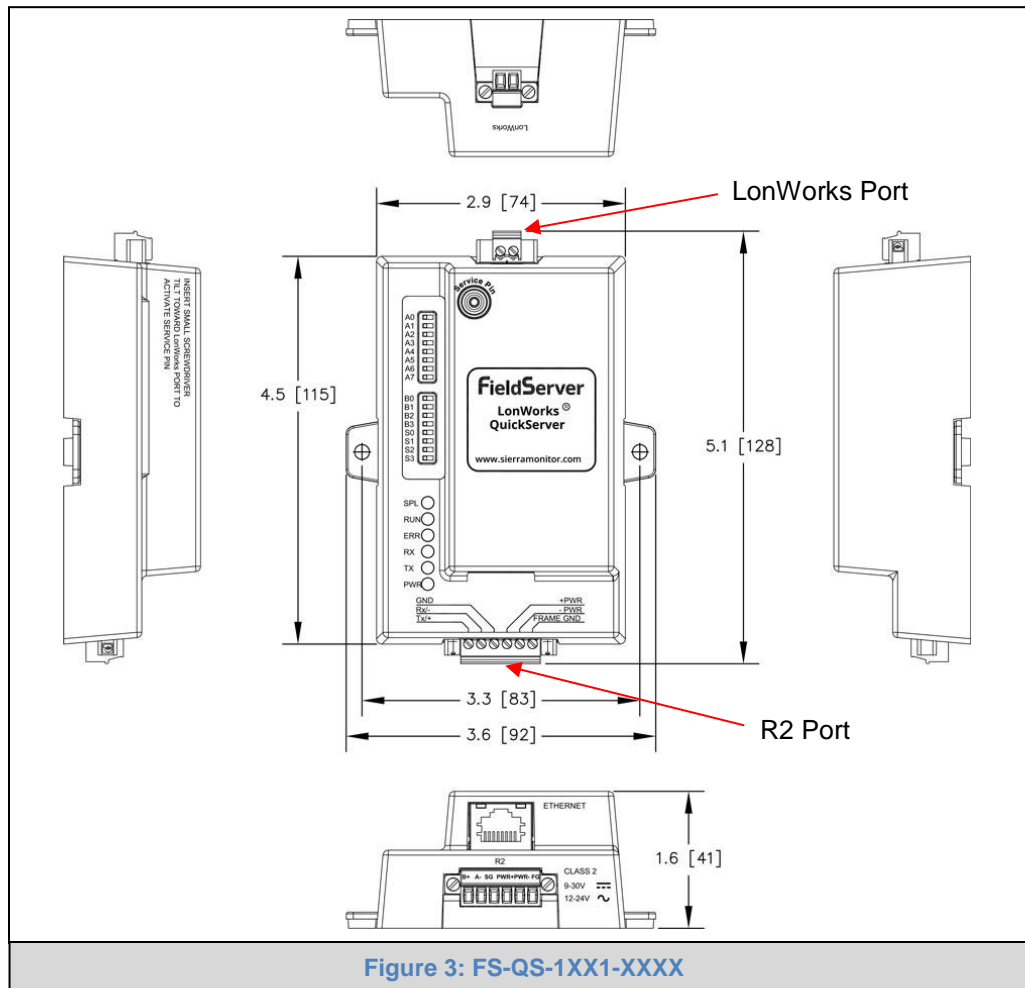


Figure 3: FS-QS-1XX1-XXXX

4.1.3 Dimension Drawing FS-QS-123X Models with RS-422

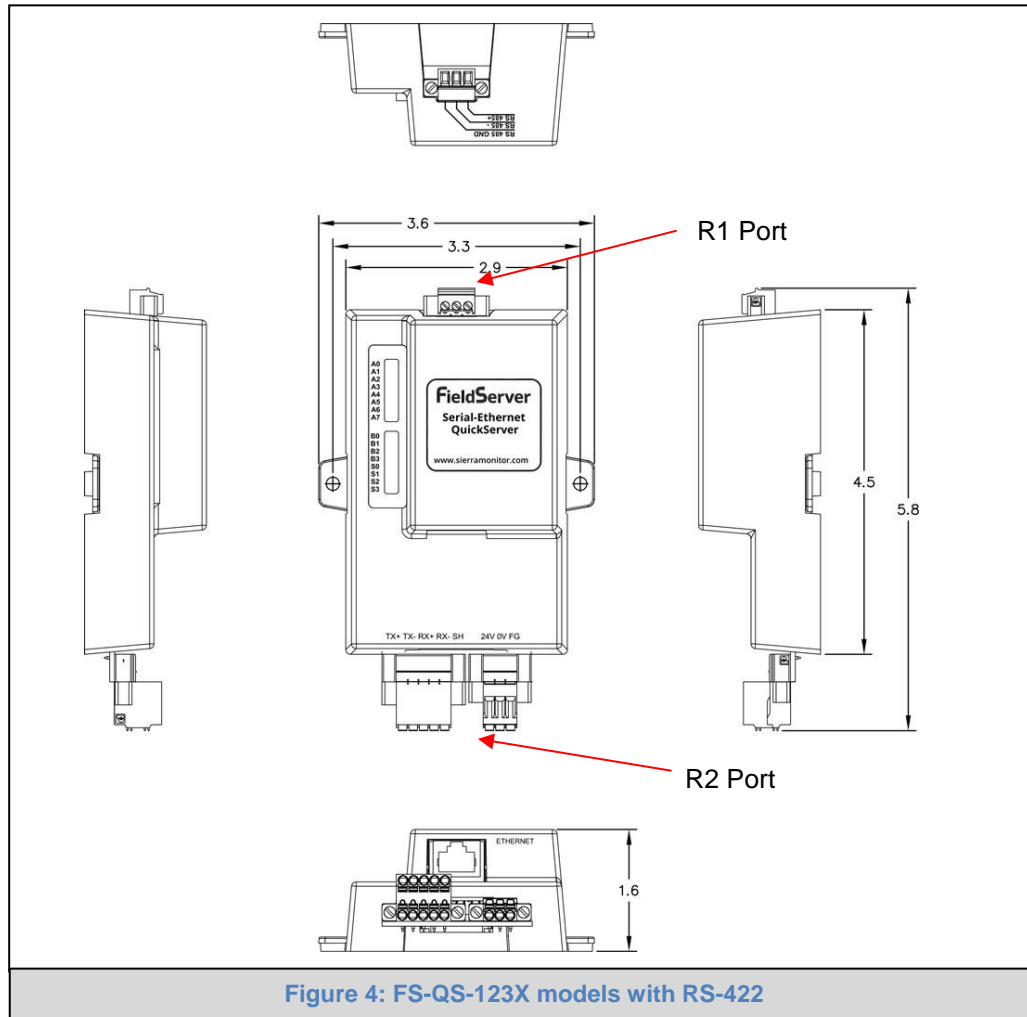
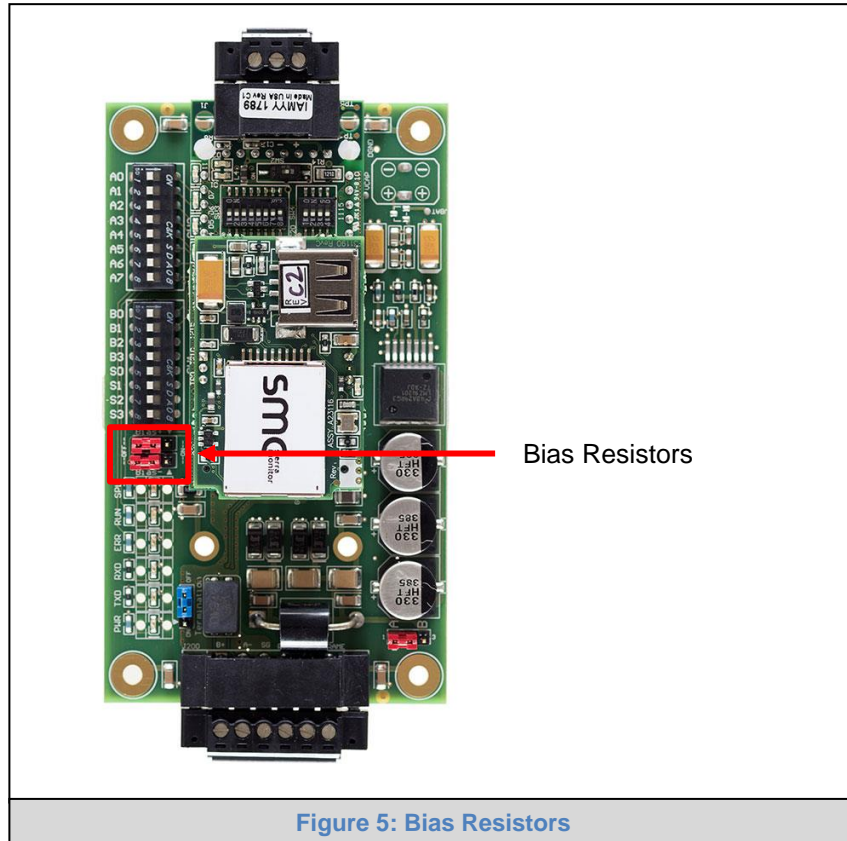


Figure 4: FS-QS-123X models with RS-422

4.2 Wiring

4.2.1 Bias Resistors

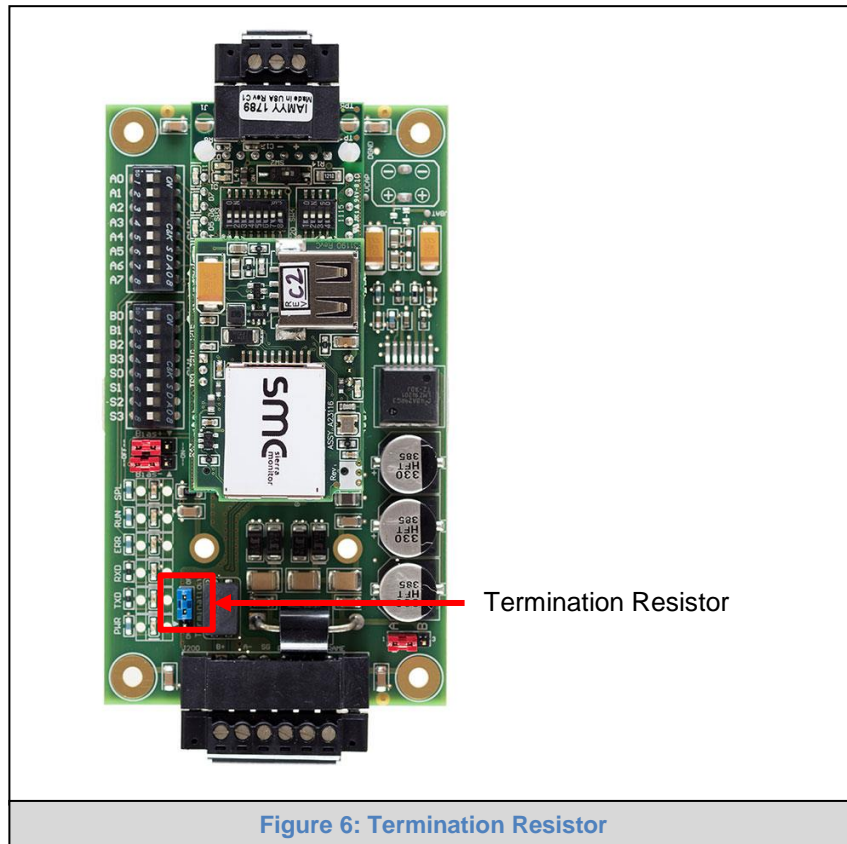


The QuickServer bias resistors are used to keep the RS-485 bus to a known state, when there is no transmission on the line (bus is idling), to help prevent false bits of data from being detected. The bias resistors typically pull one line high and the other low - i.e. far away from the decision point of the logic.

In the RS-485 carrier, the bias resistor is 510 ohms which is in line with the BACnet spec. It should only be enabled at one point on the bus (on the Brian field port were there are very weak bias resistors of 100k). Since there are no jumpers, many Brains can be put on network without running into the bias resistor limit which is < 500 ohms.

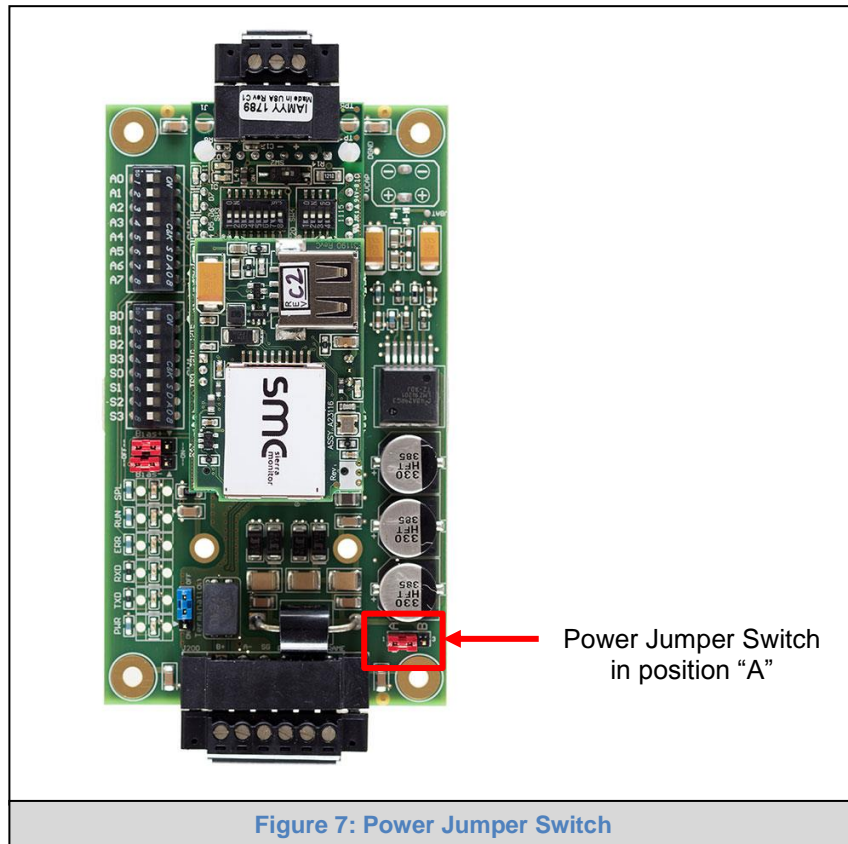
NOTE: See www.ni.com/support/serial/resinfo.htm for additional pictures and notes.

4.2.2 Termination Resistor



Termination resistors are also used to reduce noise. These pull the two lines of an idle bus together. However, they would override the effect of any bias resistors, if connected.

4.2.3 Power Jumper Settings



The QuickServer Carrier Board power jumper is set to position A by default, but can be changed to position B for other power supply requirements.

Position A: The Carrier makes use of a full-wave rectifying bridge. Can be used for 12-24 VAC input or 9 – 30 VDC input. At 9 VDC this becomes marginal.

Position B: The Carrier makes use of a half-wave rectifying bridge. Best position for Grounded AC Transformers and for using DC voltage down to 9VDC.

4.3 Specifications³



	FS-QS-1010-XXXX/FS-QS-12X0-XXXX⁴	FS-QS-1011-XXXX/FS-QS-12X1-XXXX
Available Ports	6-pin Phoenix connector: RS-485 or RS-232 or RS-422 +/- ground port, power +/- frame ground port 3-pin RS-485 Phoenix connector: RS-485 +/- ground port Ethernet-10/100 port	6-pin Phoenix connector: RS-485 or RS-232 or RS-422 +/- ground port, power +/- frame ground port 2-pin FTT-10 LonWorks port Ethernet-10/100 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	Input Voltage: 9-30VDC or 12-24VAC Input Power Frequency: 50/60 Hz. Power Rating: 2.5 Watts Current Draw: @ 12V, 279 mA
Approvals	TUV approved to UL 916 Standard RoHS Compliant FCC Part 15 Compliant DNP compliant CE Mark BTL Mark	TUV approved to UL 916 Standard, RoHS Compliant, FCC Part 15 Compliant, DNP compliant, LonMark Certification SPID: 80:00:95:46:00:84:04:01 Profiles: 0000 - Node object (1) 0001 - Open Loop Sensor Object (5) 0003 - Open Loop Actuator Object (5)
Power Requirements⁵	Multi-mode power adapter: 9-30VDC or 12 - 24VAC	
Physical Dimensions (WxDxH)⁴	5.05 x 2.91 x 1.6 in. (12.82 x 7.39 x 4.06 cm) ⁶	
Weight⁴	0.4 lbs (0.2 Kg)	
Operating Temperature	-40°C to 75°C (-40°F to 167°F)	
Surge Suppression	EN61000-4-2 ESD EN61000-4-3 EMC EN61000-4-4 EFT	
Humidity	5 - 90% RH (non-condensing)	

Figure 8: Specifications

“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 FieldServer could void the user's authority to operate the equipment under FCC rules.”

³ Specifications subject to change without notice

⁴ XXXX at the end of the part number identifies the code for the specific drivers included in the QuickServer. ([Appendix D.4](#))

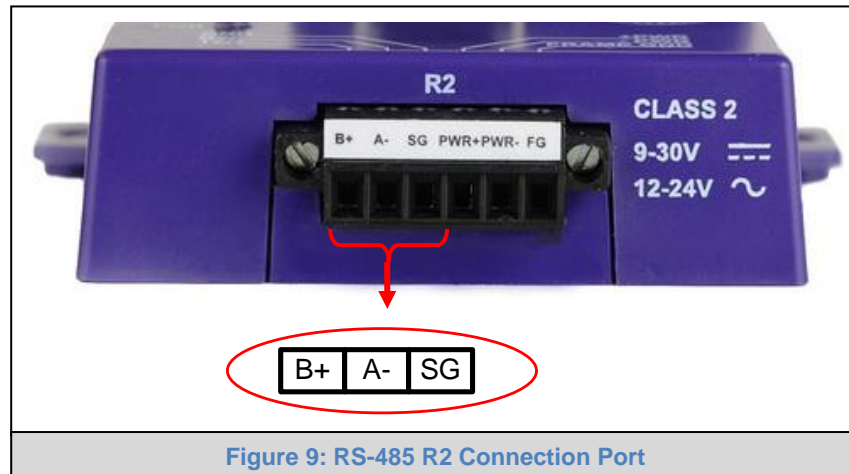
⁵ Excluding external power supply

⁶ Excluding mounting tabs

5 INSTALLING THE QUICKSERVER

5.1 RS-485

5.1.1 RS-485 Connection R2 port



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

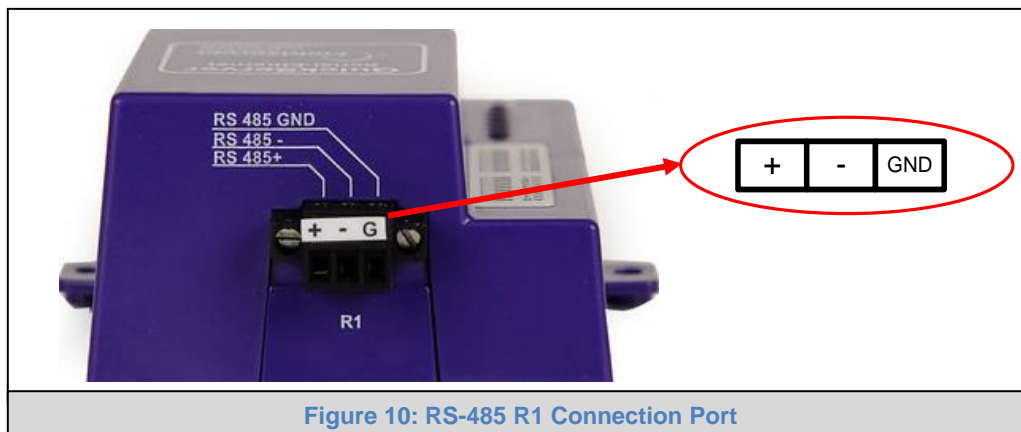
The following Baud Rates are supported on the R2 Port:

4800, 9600, 19200, 38400, 57600, 115200

For connection to RS-232 or RS-422, please refer to [Appendix A.1](#).

5.1.2 RS-485 Connection R1 Port (only on non-LonWorks QuickServers)

Connect to the 3-pin connector as shown.



The following Baud Rates are supported on the R1 Port:

110, 300, 600, 1200, 2400, 4800, 9600, 19200, 20833, 28800, 38400, 57600, 76800, 115200

5.2 QuickServer LonWorks (FS-QS-1XX1-XXXX)

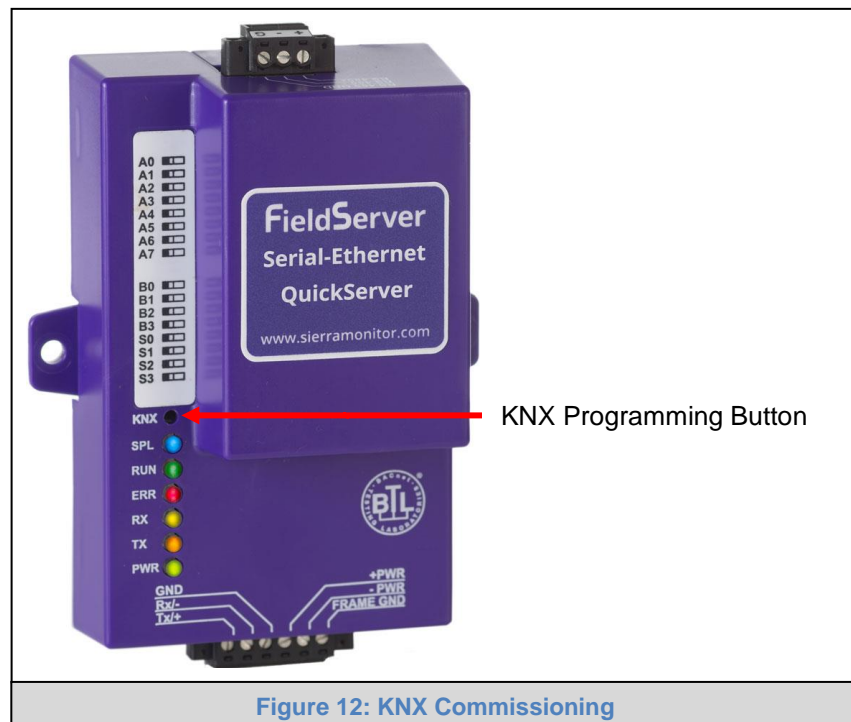
Connect the QuickServer to the LonWorks terminal using a twisted pair non-shielded cable.



To commission the QuickServer LonWorks port, insert a small screwdriver in the commissioning hole on the face of the QuickServer's enclosure to access the Service Pin. See the instructions on the QuickServer as to which way to toggle the screwdriver during commissioning.

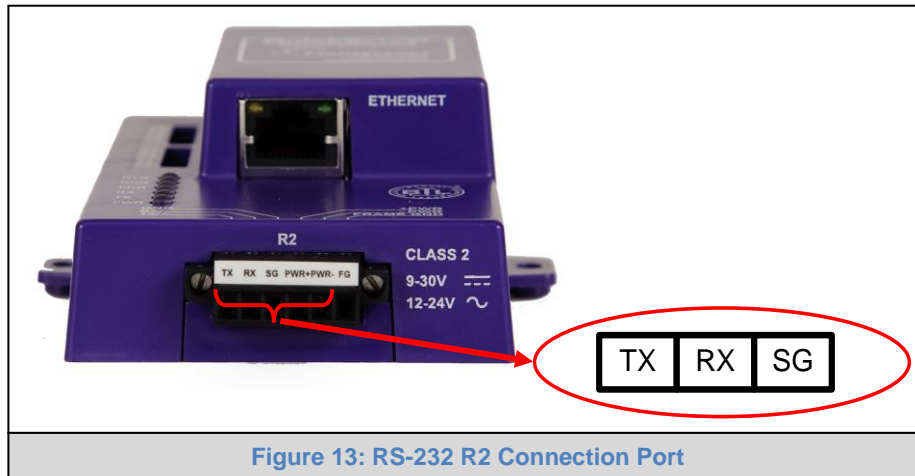
5.3 QuickServer KNX (FS-QS-124X-XXXX)

Connect the QuickServer to the KNX bus using the standard KNX twisted pair cable.



To commission the QuickServer as a KNX device in ETS Software, insert a small pin into the KNX commissioning hole on the face of the QuickServer to access the button.

5.4 RS-232 Connection R2 Port (only available on FS-QS-122X Models)



Refer to [Appendix A2](#) for further hardware connection options.

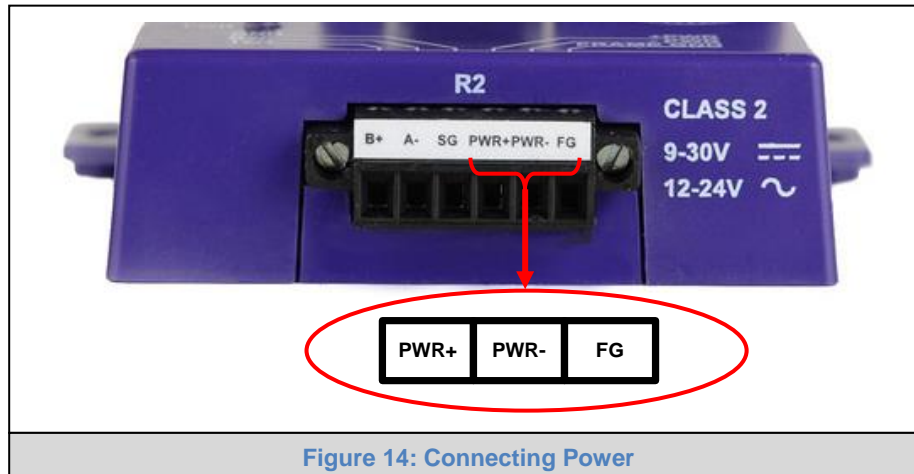
The following Baud Rates are supported on the R2 Port:

4800, 9600, 19200, 38400, 57600, 115200

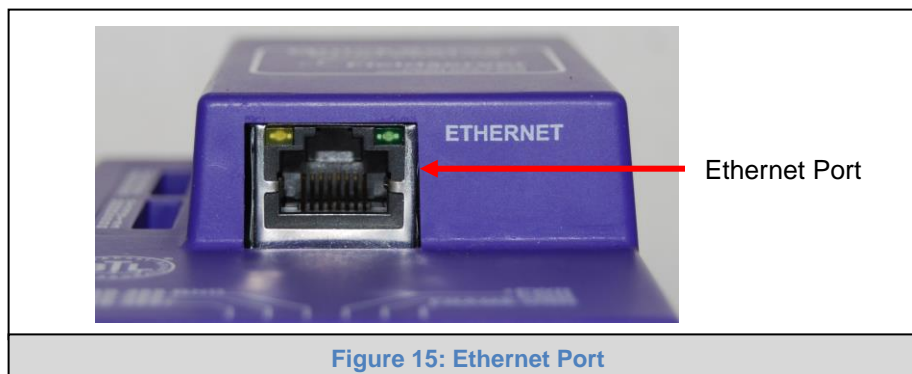
6 OPERATION

6.1 Power up the device

Apply power to the device. Ensure that the power supply used complies with the specifications provided in. Ensure that the cable is grounded using the “Frame GND” terminal. The QuickServer is factory set for 9-30VDC or 12-24VAC.



6.2 Connect the PC to the QuickServer over the Ethernet port



- Connect an Ethernet cable between the PC and QuickServer or connect the QuickServer and the PC to the Hub/switch using a straight CAT5 cable.
- The Default IP Address of the QuickServer 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.

6.3 Connecting to the QuickServer

6.3.1 Using the Toolbox application to discover and connect to the QuickServer

- Install the Toolbox application from the USB drive or get it from the Sierra Monitor website: www.sierramonitor.com/customer-care/resource-center?filters=software-downloads
- Use the Toolbox application to find the QuickServer, and launch the Web GUI.

NOTE: If the connect button is greyed out, the QuickServer's IP Address must be set to be on the same network as the PC. (**Section 6.4**)

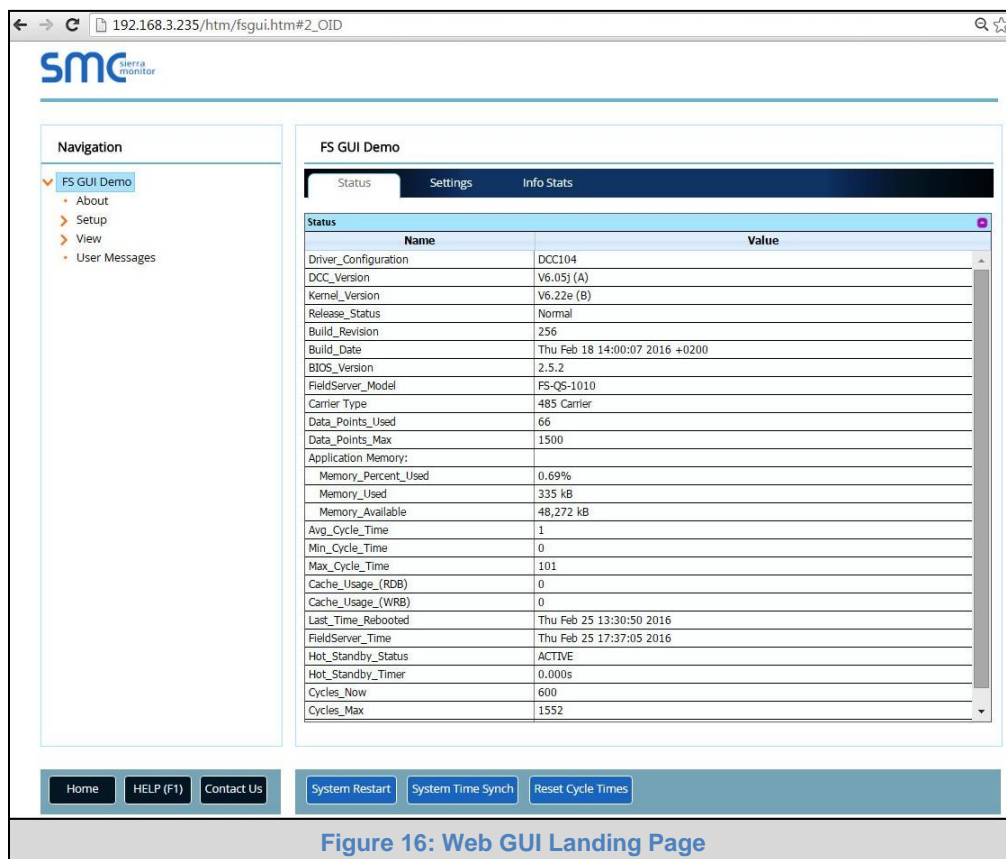
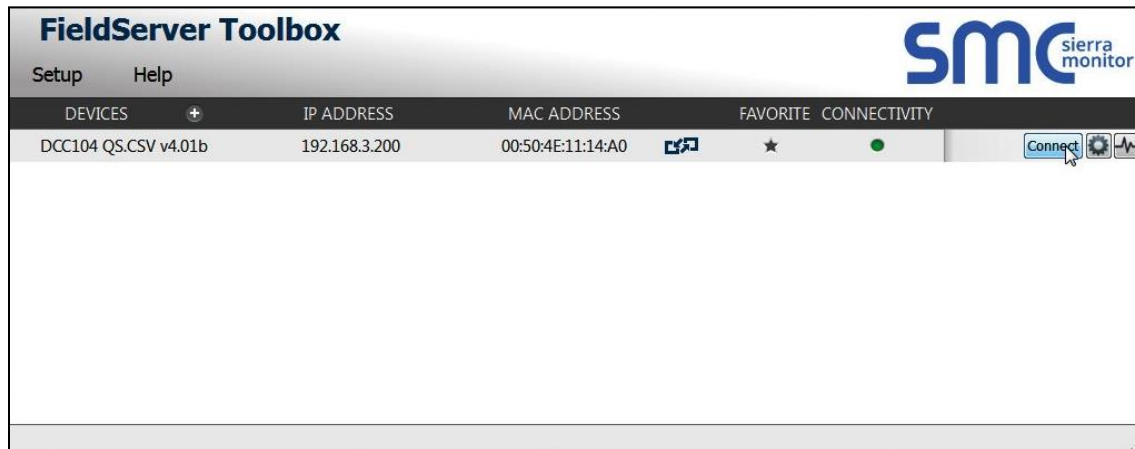
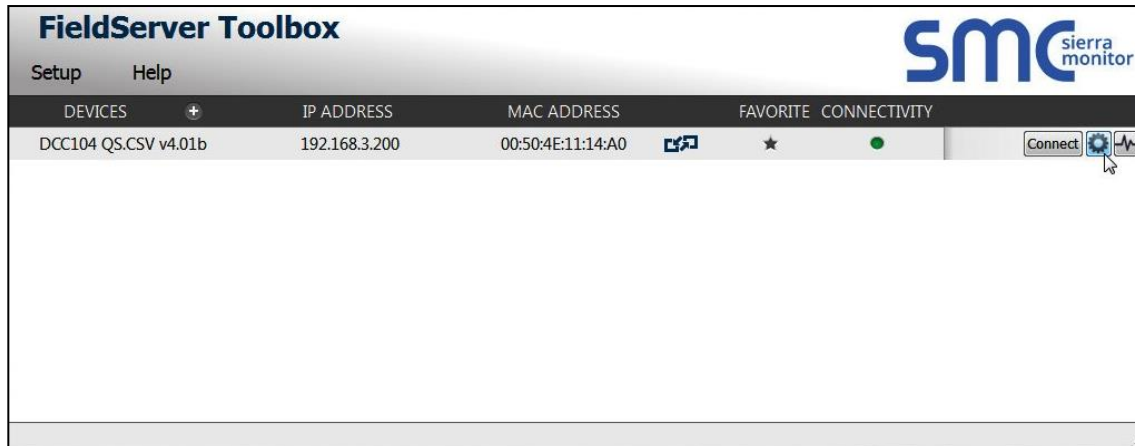


Figure 16: Web GUI Landing Page

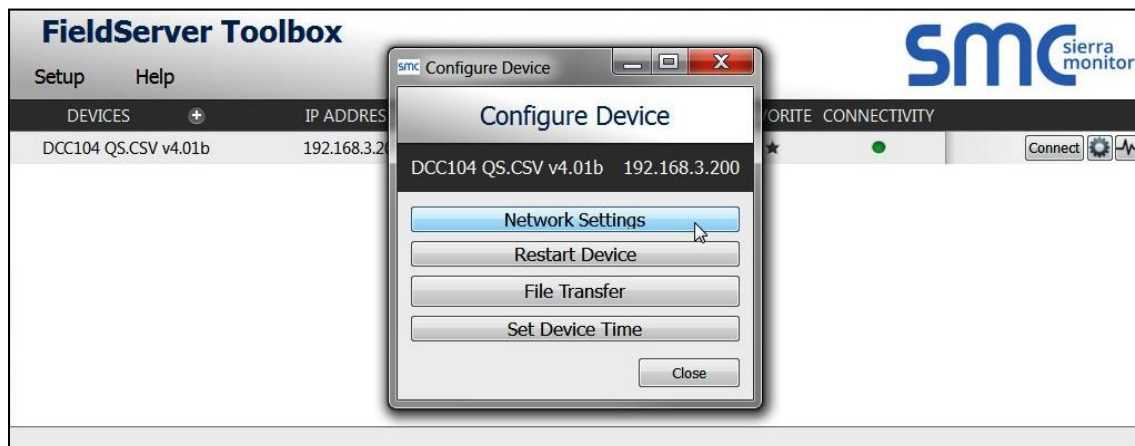
6.4 Set IP Address of the QuickServer

6.4.1 Using the Toolbox Application to set the IP Address

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



- Select Network Settings.



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

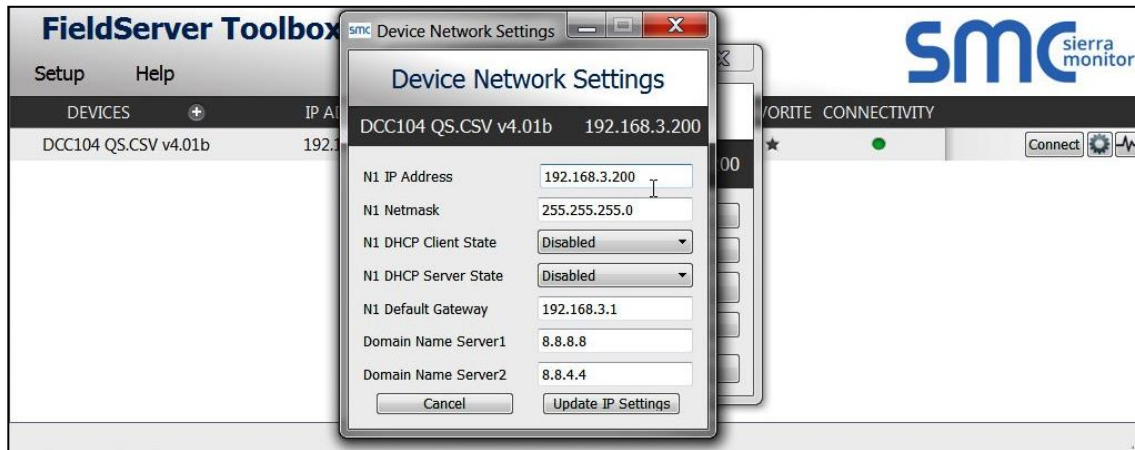
NOTE: If the QuickServer is connected to a router, the IP Gateway of the QuickServer should be set to the IP Address of that router.

- 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)
 - DNS 1 & 2 (Domain Name Server fields)

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

NOTE: If DNS settings are not known, setting DNS1 to "8.8.8.8" and DNS2 to "8.8.4.4" is recommended.

- Click “Update IP Settings”, then click on the “Change and Restart” to restart the Gateway and activate the new IP Address. Note that if the GUI was open in a browser, the browser will need to be pointed to the new IP Address of the QuickServer before the GUI will be accessible again.



6.4.2 Using the Web GUI to set the IP Address

- From the GUI main home page, click on setup and then Network Settings to enter the Edit IP Address Settings menu.
- Modify the IP Address (N1 IP Address field) of the QuickServer 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 FieldServer is connected to a router, the IP Gateway of the FieldServer should be set to the same IP Address of the router.

- Click Update IP Settings, then click on the System Restart to restart the Gateway and activate the new IP Address. Note that if the GUI was open in a browser, the browser will need to be pointed to the new IP Address of the QuickServer before the GUI will be accessible again.

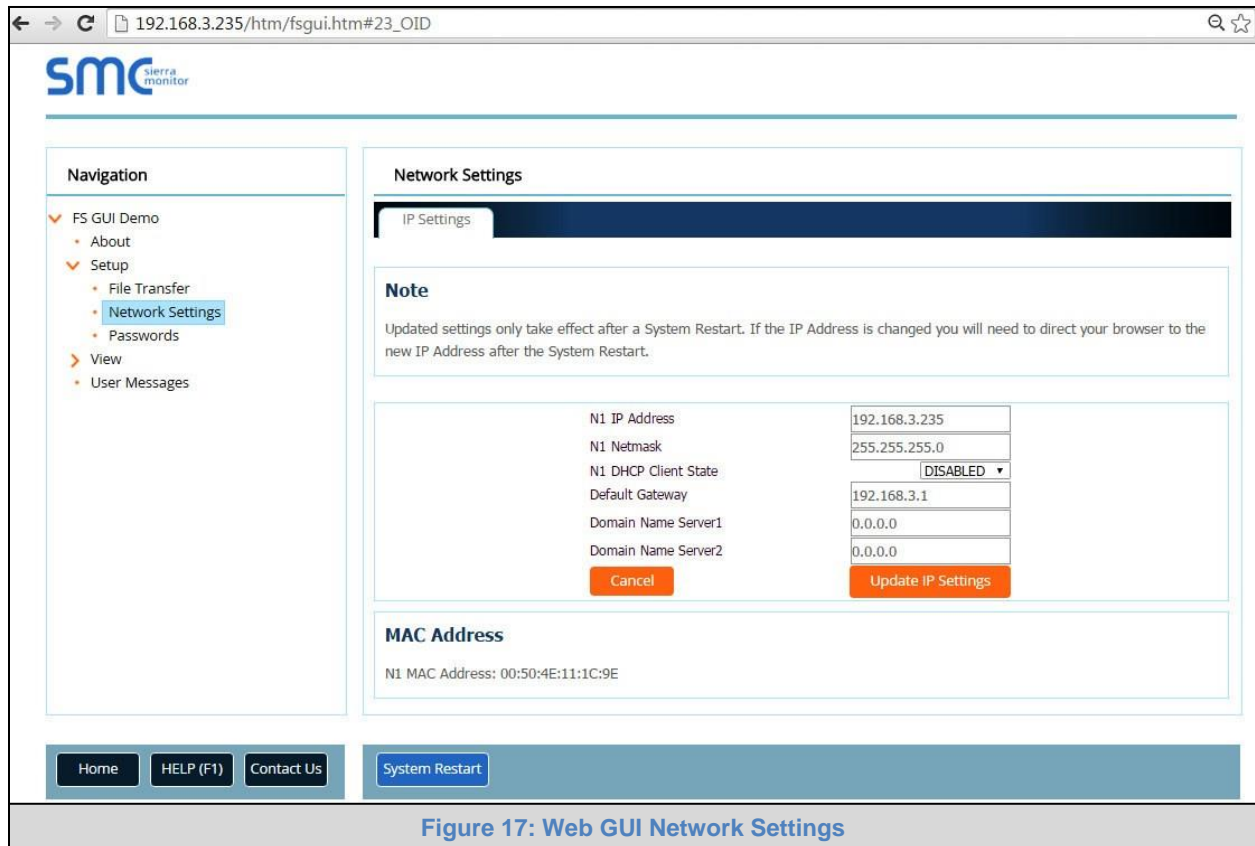


Figure 17: Web GUI Network Settings

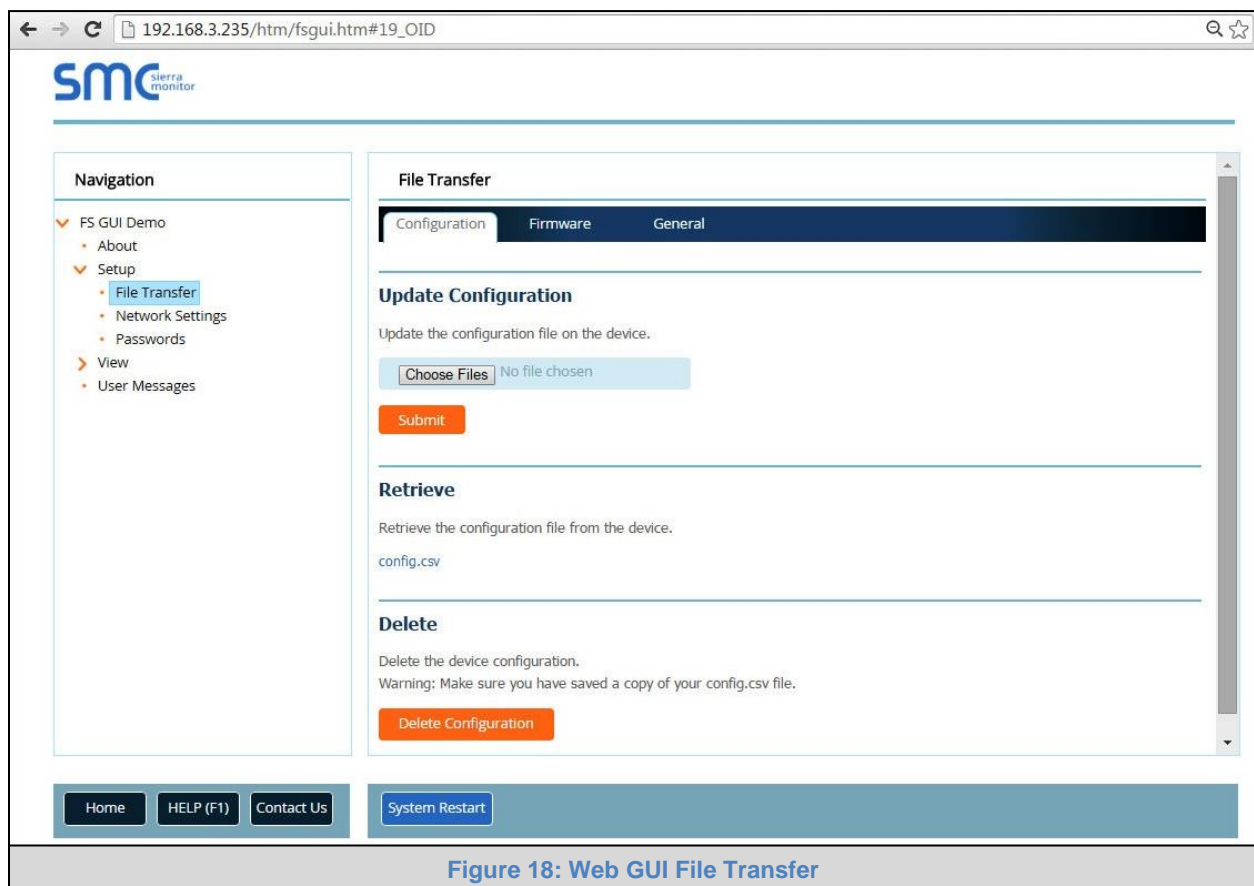
7 CONFIGURING THE QUICKSERVER

7.1 Retrieve the Sample Configuration File

The configuration of the QuickServer is provided to the QuickServer's operating system via a comma-delimited file called "CONFIG.CSV".

If a custom configuration was ordered, the QuickServer will be programmed with the relevant device registers in the Config.csv file for the first time start-up. If not, the product is shipped with a sample config.csv that shows an example of the drivers ordered.

- In the main menu of the FS-GUI screen, go to "Setup", then "File Transfer", and finally "Retrieve".
- Click on "config.csv", and open or save the file.



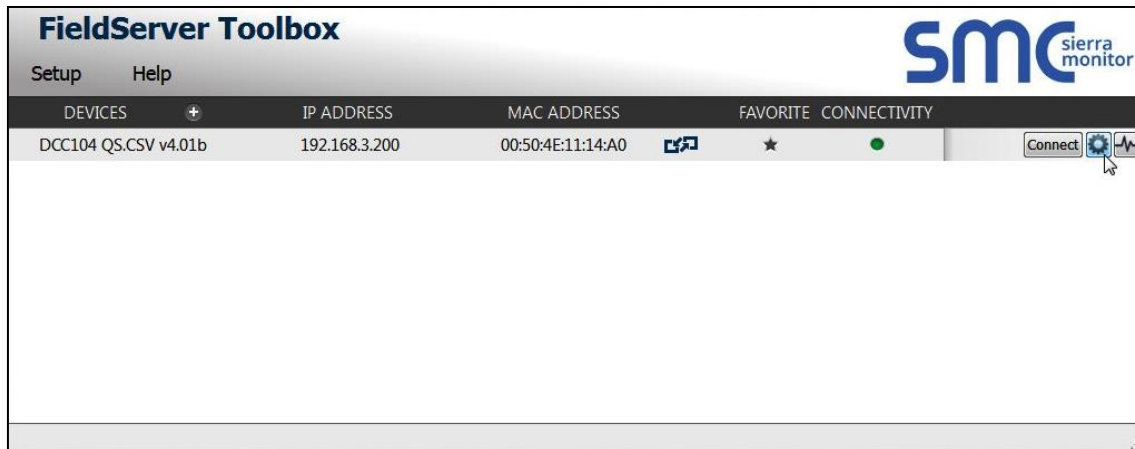
7.2 Change the Configuration File to Meet the Application

Refer to the FieldServer Configuration Manual in conjunction with the Driver supplements for information on configuring the QuickServer.

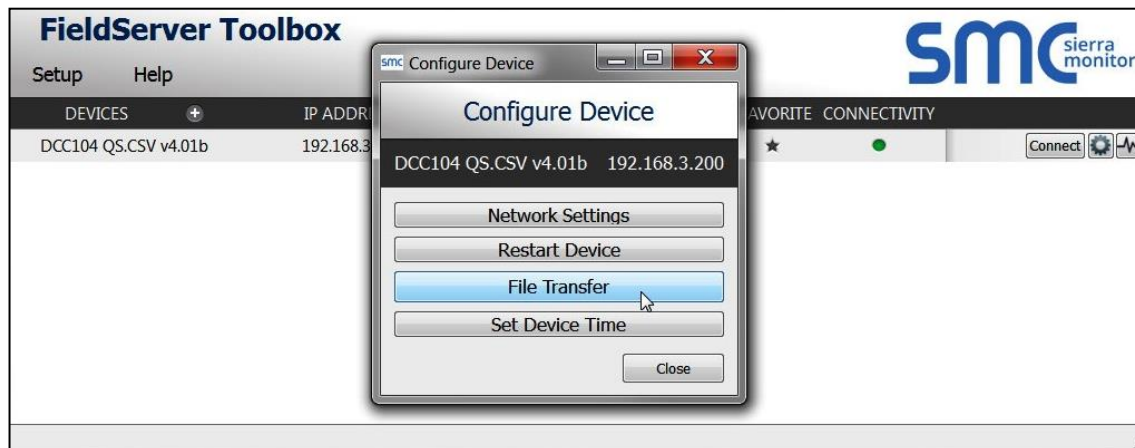
7.3 Load the Updated Configuration file

7.3.1 Using the Toolbox application to load a configuration file

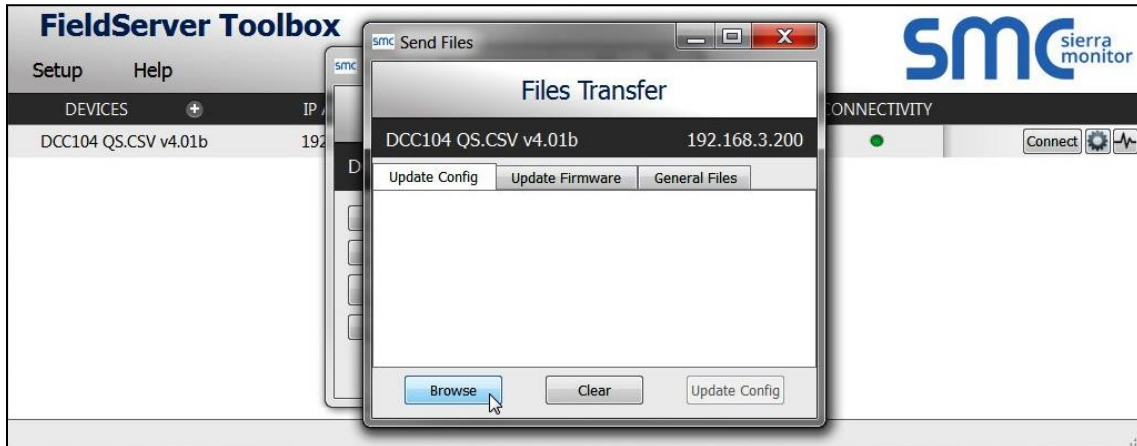
- From the Toolbox main page, click on the setup icon (the gear picture).



- Select File Transfer.



- Browse and select the .csv file, open, then click “Update Config”.



- Once download is complete, click the Restart Button (or simply cycle power to the QuickServer) to put the new file into operation. Note that it is possible to do multiple downloads to the QuickServer before resetting it.

7.3.2 Using the Web GUI to Load a Configuration File

- In the main menu of the FS-GUI screen, click “Setup”, then “File Transfer” and finally “Update”.
- Browse and select the .csv file, open, then click “Submit”.

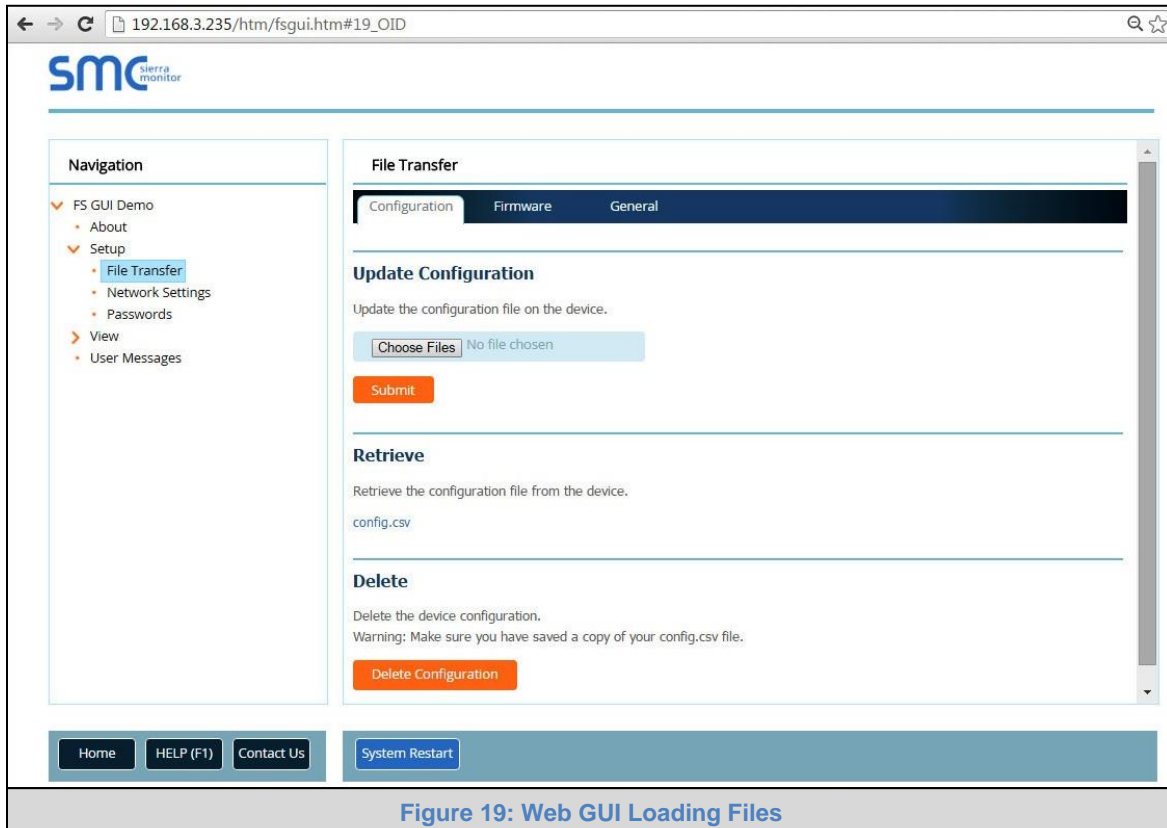


Figure 19: Web GUI Loading Files

- Once download is complete, a message bar will appear confirming that the configuration was updated successfully.
- Click the System Restart Button to put the new file into operation. Note that it is possible to do multiple downloads to the QuickServer before resetting it.

7.3.3 Retrieve the Configuration File for Modification or Backup

To get a copy of the configuration file for modifying or backing up a configuration on a local computer, do the following:

- In the main menu of the FS-GUI screen, click “Setup”, then “File Transfer”.

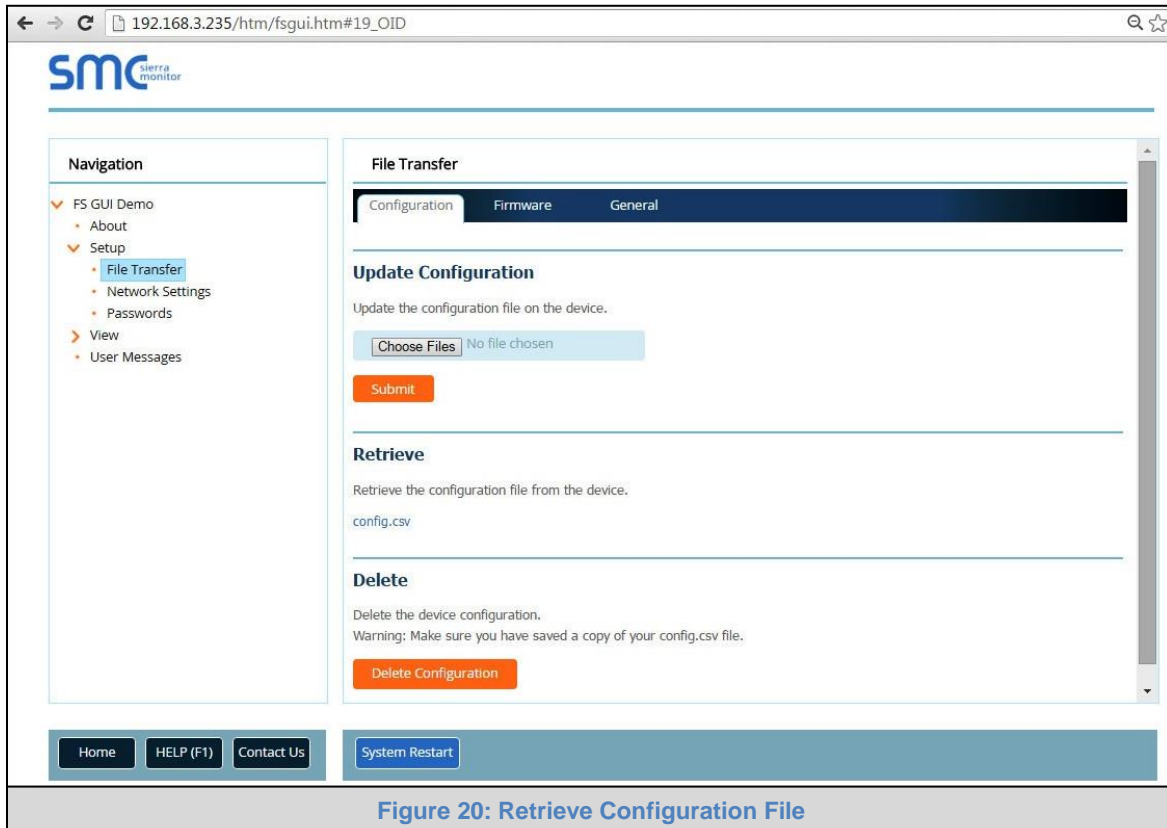


Figure 20: Retrieve Configuration File

- Click the “config.csv” link under the “Retrieve” heading in the middle section of the screen.
 - The file will automatically download to the web browser’s default download location.
- Edit or store the file as desired.

NOTE: Before using any backup configuration file to reset the configuration settings, check that the backup file is not an old version.

7.4 Test and Commission the QuickServer

- Connect the QuickServer to the third party device(s), and test the application.
- From the main menu of FS-GUI click on “View”, then “Connections” to see the number of messages on each protocol.

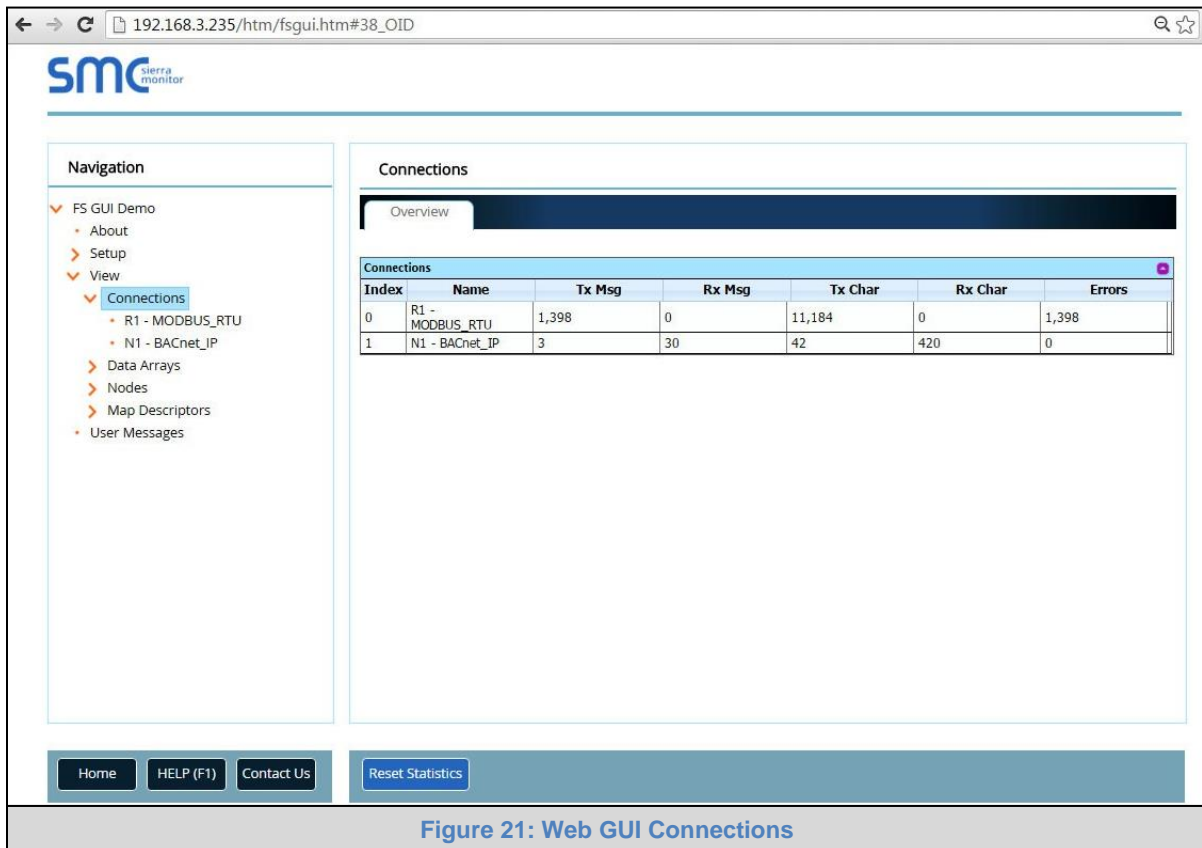


Figure 21: Web GUI Connections

- For troubleshooting assistance refer to [Appendix B](#), or any of the troubleshooting Appendices in the related Driver Supplements and Configuration Manual. Sierra Monitor also offers a Technical support page on the Sierra Monitor website at www.sierramonitor.com/customer-care/resource-center, which contains a significant number of resources and documentation that may be of assistance.

Appendix A Useful Features

Appendix A.1. RS-422 Connection R2 Port (only available on the FS-QS-123X models)

RS-422 is a full duplex multi-drop multi-master differential bus. It can be wired to conform to a RS-485 network when less wiring/cabling is used (due to being less expensive to install), but then it becomes a half-duplex multi-drop multi-master differential bus. RS-422 is used for dedicated peer to peer high speed communication when low bus latency is required i.e. very few devices on the bus. Its usage is very specific to client installations/requirements.

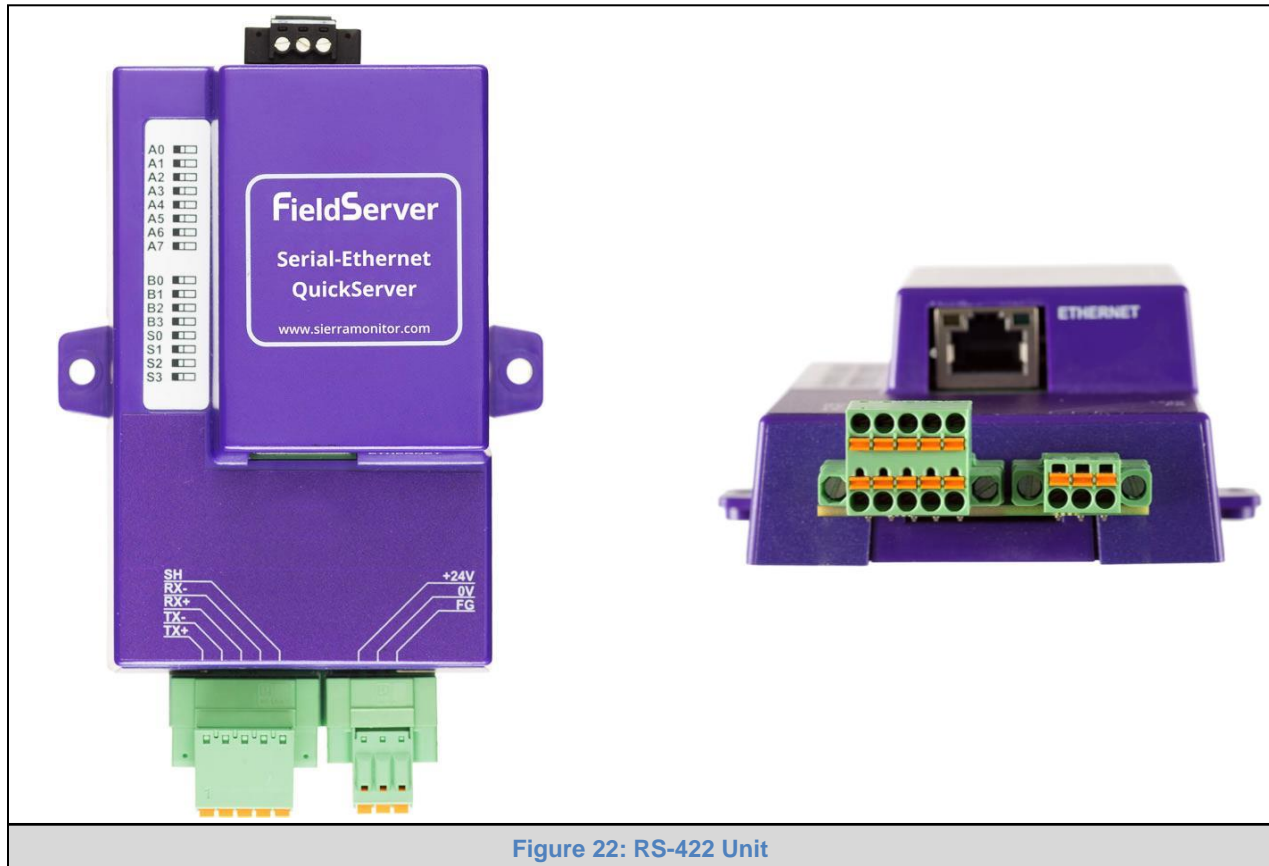
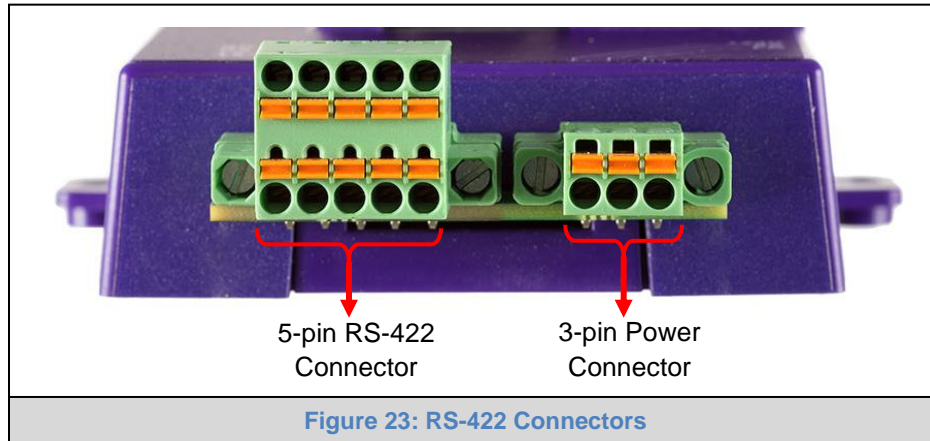


Figure 22: RS-422 Unit

NOTE:

- The RS-232 looks similar to the RS-485 but does not have the blue jumper. The blue jumper is used to enable the termination resistor for the RX signals (120 ohms), while the red jumpers are used to enable the bias resistors for RX signals (510 ohms). In the case of Rockwell/Tetrapak, all jumpers are always required to be in default position i.e. not enabled. For other clients, the bias resistors should always be in the on state.
- The part number on the back of the box will identify the port.

Appendix A.1.1. Connection and Operation of the RS-422 QuickServer



RS-422 Connector

- Pin 1-2:* TX +/- (Differential TX outputs: All + signals must be connected to each other, and same applies to - signals; no +/- signals may be crossed)
- Pin 3-4:* RX +/- (Differential RX inputs: All + signals must be connected to each other, and same applies to - signals, no +/- signals may be crossed)
- Pin 5:* SHD (Shield connection, must be connected on at least one side of the bus, but not necessarily on both sides)

POWER Connector

Please note that AC voltage is not supported on the RS-422 carrier, and that DC voltage range is ~20VDC to ~28VDC.

- Pin 1:* +24V (DC power requires this pin be used for the positive voltage)
- Pin 2:* 0V (DC power requires this pin is used for ground / return voltage)
- Pin 3:* FG (This pin needs to be connected to EARTH or noise free reference point i.e. CHASSIS)

Appendix A.2. KNX Connection R2 Port

The KNX QuickServer is used to transfer data to and from devices using KNX protocol. The KNX driver enables data access from KNX networks to other FieldServer protocols. Most KNX data-point types are supported, allowing communication to almost any kind of KNX device in an installation, such as temperature sensors, shutters, light switches, actuators, alarms, etc. This allows BMS systems to access a KNX network using direct read and write or with KNX configured groups. This setup does not require the use of ETS4 to configure the QuickServer KNX gateway. The KNX protocol is a connectionless protocol and therefore supports multiple clients and multiple servers. The QuickServer is intended to act as a Passive Client on the KNX bus and makes information available to other protocols.



Figure 24: KNX Unit

The KNX Connector consist of a KNX + and KNX- terminal. Each terminal corresponds to the red KNX+ and gray KNX- bus connections on a KNX bus.

The following Baud Rates are supported on the R2 Port:
4800, 9600, 19200, 38400, 57600, 115200

Appendix A.3. M-Bus Connection R2 Port

The M-Bus driver allows the FieldServer to transfer data to and from devices using M-Bus protocol. The Fieldbus connection is included with the FieldServer. The M-Bus QuickServer Gateway is configurable to act as both a Master and a Slave M-Bus device.

The M-Bus Connector consist of a + and – terminal. Most M-Bus Devices are not polarity sensitive, although the polarity of the M-Bus Connector is indicated on the device diagram, should it be a requirement. The M-Bus devices communicating with the FieldServer must be configured according to the manufacturer's instructions (e.g. primary address and readout data).



Figure 25: M-Bus R2 Port

The following baud rates are supported on the R2 Port:
300, 600, 1200, 2400, 4800, 9600, 19200, 38400

Appendix A.4. Enhanced Network Security

For enhanced network security, one can disable RuiNet access to a FS-GUI capable FieldServer by use of the RUI_Enable FieldServer parameter. Adding the following to the configuration file will disable RuiNet Access.

```
FieldServer
Title           , RUI_Enable
FieldServer Name , Disabled // Enabled -- is the default if not specified
```

NOTE: In order to take a FieldServer Diagnostics log, RuiNet access has to be enabled again.

Appendix A.5. SSL/TLS for Secure Connection

SSL/TLS (Secure Sockets Layer/Transport Layer Security) is a security technology for establishing an encrypted connection between a server and a client. This allows the secure transfer of data across untrusted networks.

These functions are supported on the following:

FS-QS-1010 or **FS-QS-1210** with a serial number starting with 14 or later (indicating the year it shipped).

FS-QS-1011 or **FS-QS-1211** with a serial number starting with 15 or later (indicating the year it shipped).

Minimum BIOS requirement: 2.6.1

Appendix A.5.1. Configuring FieldServer as a SSL/TLS Server

The following example sets the FieldServer to accept a secure Modbus/TCP connection on port 1502.

Appendix A.5.1.1. Simple Secure Server Configuration

Add TLS_Port parameter in the connections section of the configuration file and set to a port number between 1 – 65535.

```
Connections
Adapter , Protocol , TLS_Port
N1 , Modbus/TCP , 1502
```

This configuration sets the FieldServer to accept any incoming connection but will not request a client's certificate for verification. This means that the FieldServer end point communication will be encrypted but not authenticated.

The FieldServer will send an embedded self-signed certificate if one is requested by a connecting client.

If a remote client requires a certificate, then request the smc_cert.pem certificate from Sierra Monitor Technical Support and update the remote client's authority as per vendor instructions.

Appendix A.5.1.2. Limiting Client Access

In addition to TLS_Port parameter also add Validate_Client_Cert in the connections section of the configuration file and set it to "Yes".

Connections				
Adapter	Protocol	TLS_Port	Validate_Client_Cert	
N1	Modbus/TCP	1502	Yes	

The configuration above sets the FieldServer to request and verify a client's certificate against its internal authority file before accepting connection. By default, this means the FieldServer will only accept connections from other FieldServers.

In order to load an authority file so that the FieldServer will accept connections from a chosen list of remote clients, configure the FieldServer with the following connection settings:

Connections				
Adapter	Protocol	TLS_Port	Validate_Client_Cert	Cert_Authority_File
N1	Modbus/TCP	1502	Yes	my_authorized_clients.pem

This configuration has the FieldServer accept connections from clients who have the correct certificate. The authority file is a collection of client certificates in PEM format. This file can be edited using any text file editor.

NOTE: Cert_Authority_File is useful only if Validate_Client_Cert is set to 'Yes'.

To Upload the Authority File to the FieldServer:

- Enter the IP address of the FieldServer into a web browser.
- Choose the 'Setup' option in the Navigation Tree and Select 'File Transfer'.
- Choose the 'General' tab.
- Click on the 'Browse' button and select the PEM file you want to download.
- Click on 'Submit'.
- When it says "The file was uploaded successfully", click on the 'System Restart' button.

Appendix A.5.1.3. Certificate Validation Options

If connections must be limited to only a particular domain (vendor devices), include Check_Remote_Host to specify the domain/host name.

Connections					
Adapter	Protocol	TLS_Port	Validate_Client_Cert	Cert_Authority_File	Check_Remote_Host
N1	Modbus/TCP	1502	Yes	my_authorized_clients.pem	SMC

The configuration above tells the FieldServer to only accept connections that have the correct certification and is coming from the specified host.

The Check_Remote_Host value is synonymously known as common name, host name or domain etc. The common name can be obtained by the following methods:

- Ask the certificate issuer for the host name.
- Use online tools to decode the certificate (for example: <https://www.sslshopper.com/certificate-decoder.html>).
- If the program openssl is installed on the local PC, then run the following command to get the common name: `openssl x509 -in certificate.pem -text -noout`

Appendix A.5.1.4. Set up Server Certificate

Make sure the certificate is in PEM format. Otherwise, convert it to PEM format (reference the link below). support.ssl.com/Knowledgebase/Article

Configure the FieldServer to use a custom certificate as shown below:

Connections			
Adapter	Protocol	TLS_Port	Server_Cert_File
N1	Modbus/TCP	1502	my_server_cert.pem

Appendix A.5.2. Configuring FieldServer as SSL/TLS Client

The following Node configurations set the FieldServer to open a secure Modbus/TCP connection to Server at IP Address 10.11.12.13 on port 1502.

Appendix A.5.2.1. Simple Secure Client Configuration

Add Remote_Node_TLS_Port parameter in the nodes section of the configuration file and set to a port number between 1 – 65535.

```
Nodes
Node_Name , Node_ID , Protocol , Adapter , IP_Address , Remote_Node_TLS_Port
PLC_11 , 11 , Modbus/TCP , N1 , 10.11.12.13 , 1502
```

The above configurations set the FieldServer to connect to a remote server but not request a server's certificate for verification. This means the FieldServer end point communication will be encrypted but not authenticated.

If requested by a remote server, the FieldServer will send an embedded self-signed certificate.

Appendix A.5.2.2. Limit Server Access

Add Validate_Server_Cert parameter to client node.

```
..... , Remote_Node_TLS_Port , Validate_Server_Cert
..... , 1502 , Yes
```

The above configuration sets the FieldServer to request and verify server's certificate against its internal authority file before finalizing the connection. By default, this means the FieldServer will only establish connections to other FieldServers.

```
..... , Remote_Node_TLS_Port , Validate_Server_Cert , Cert_Authority_File
..... , 1502 , Yes , my_authorized_servers.pem
```

The above configuration sets the FieldServer to use a specified PEM file to allow custom server connections.

Authority file is simply a collection of server certificates in PEM format. This file can be edited using any text file editor (e.g notepad) then copy and paste public PEM formatted server certificate. Now FieldServer will connect to server if it can find server's certificate in authority file.

NOTE: Cert_Authority_File is useful only if Validate_Client_Cert is set to 'Yes'.

To download Certificate to the FieldServer refer to **Section** .

Appendix A.5.2.3. Certificate Validation Options

Use the Check_Remote_Host element as described in **Section** .

Appendix A.5.2.4. Set up Client Certificate

Make sure the certificate is in PEM format. Otherwise, convert it to PEM format (reference the link below).

support.ssl.com/Knowledgebase/Article

Configure the FieldServer to use a custom certificate as shown below:

```
..... , Client_Cert_File
..... , my_client_cert.pem
```

Appendix B Troubleshooting Tips

Appendix B.1. Communicating with the QuickServer 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 QuickServer. The Default IP Address of the QuickServer 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 QuickServer are on the same IP Network, or assign a Static IP Address to the PC on the 192.168.2.0 network.
- If using Windows XP or later, ensure that the firewall is disabled.
- Ensure that all other Ethernet cards active on the PC, especially wireless adapters are disabled.
- Refer to the FieldServer Troubleshooting Guide which can be found at www.sierramonitor.com/customer-care/resource-center for further information.

Appendix B.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 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 webpage, under Customer Care: Resource Center, Software Downloads: www.sierramonitor.com/customer-care/resource-center?filters=software-downloads
- Extract the executable file and complete the installation.

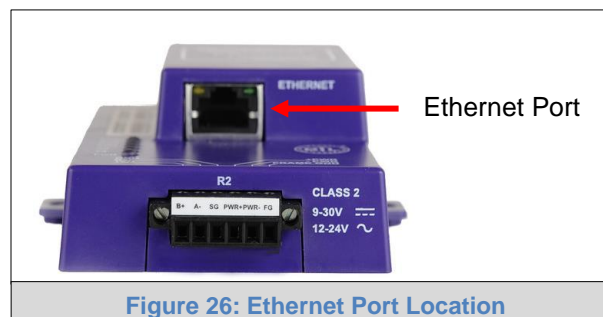

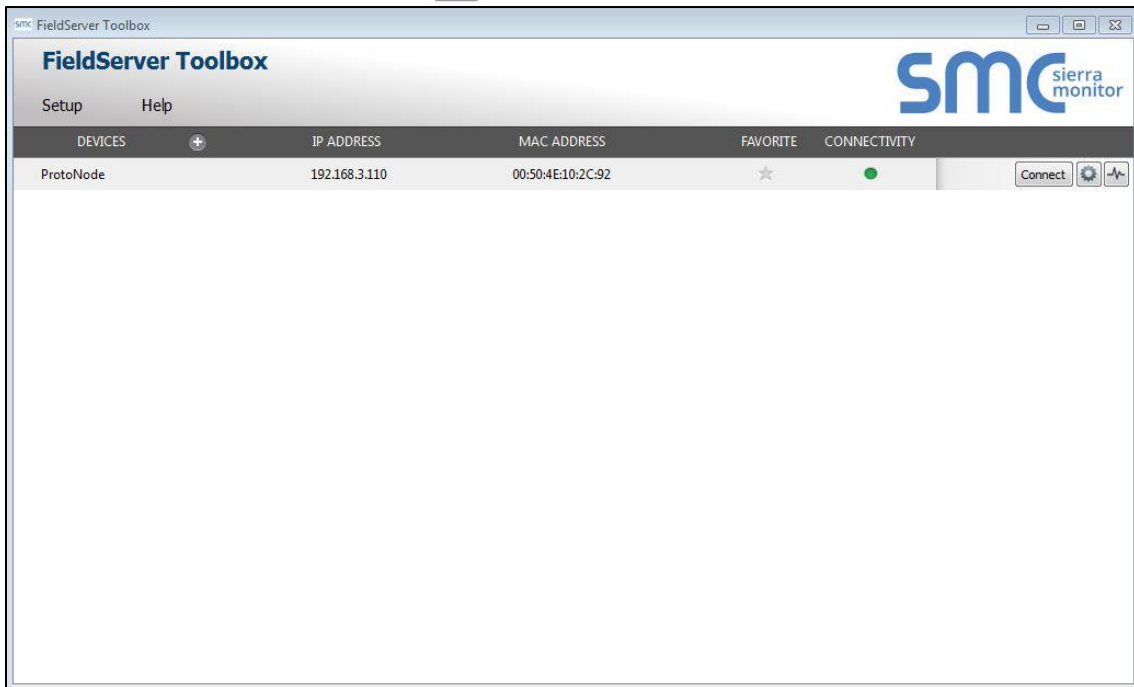


Figure 26: Ethernet Port Location

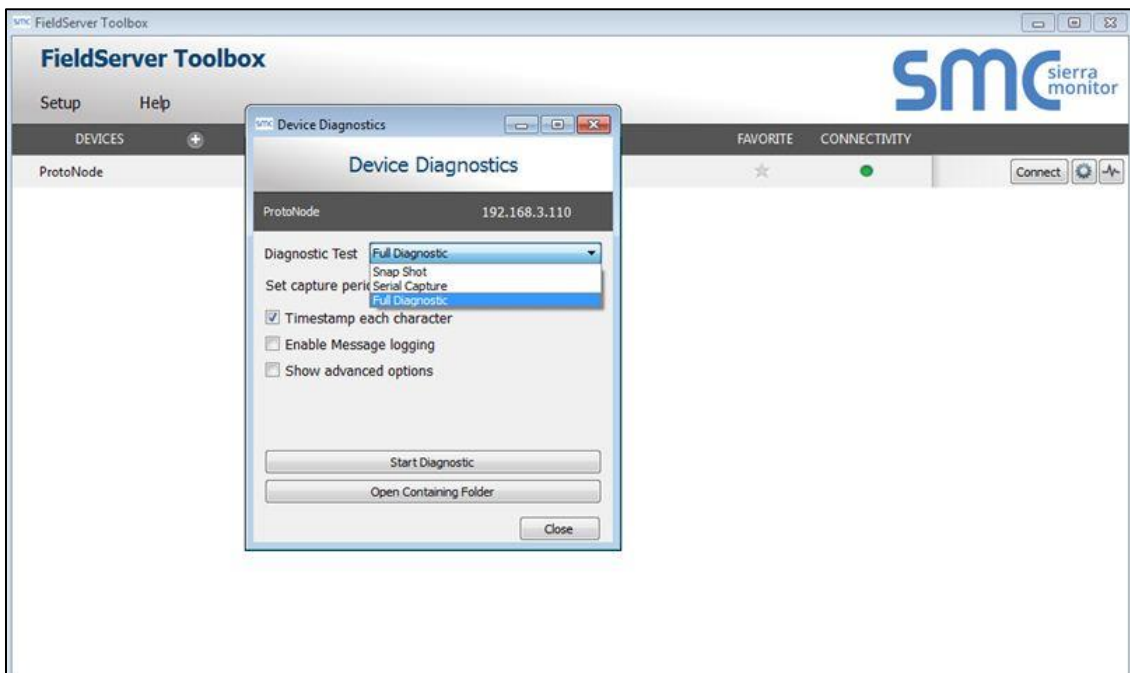
- Disable any wireless Ethernet adapters on the PC/Laptop.
- Disable firewall and virus protection software if possible.
- Connect a standard CAT5 Ethernet cable between the PC and QuickServer.
- Double click on the FS Toolbox Utility.

Step 1: Take a Log

- Click on the diagnose icon  of the desired device

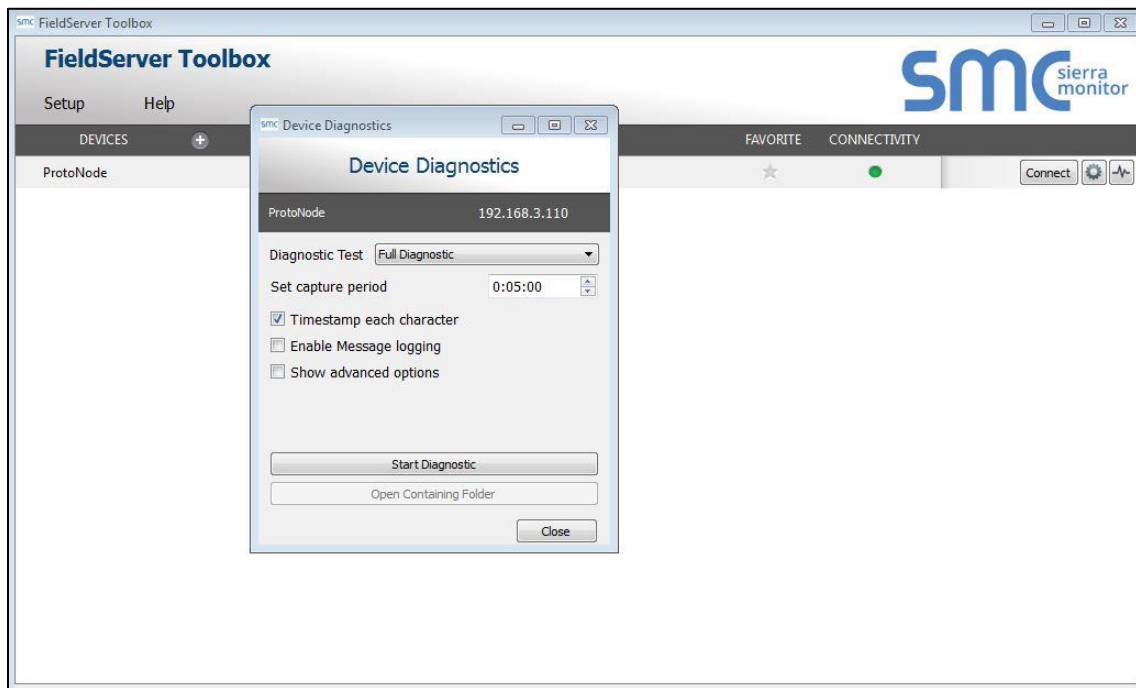


- Select "Full Diagnostic"



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

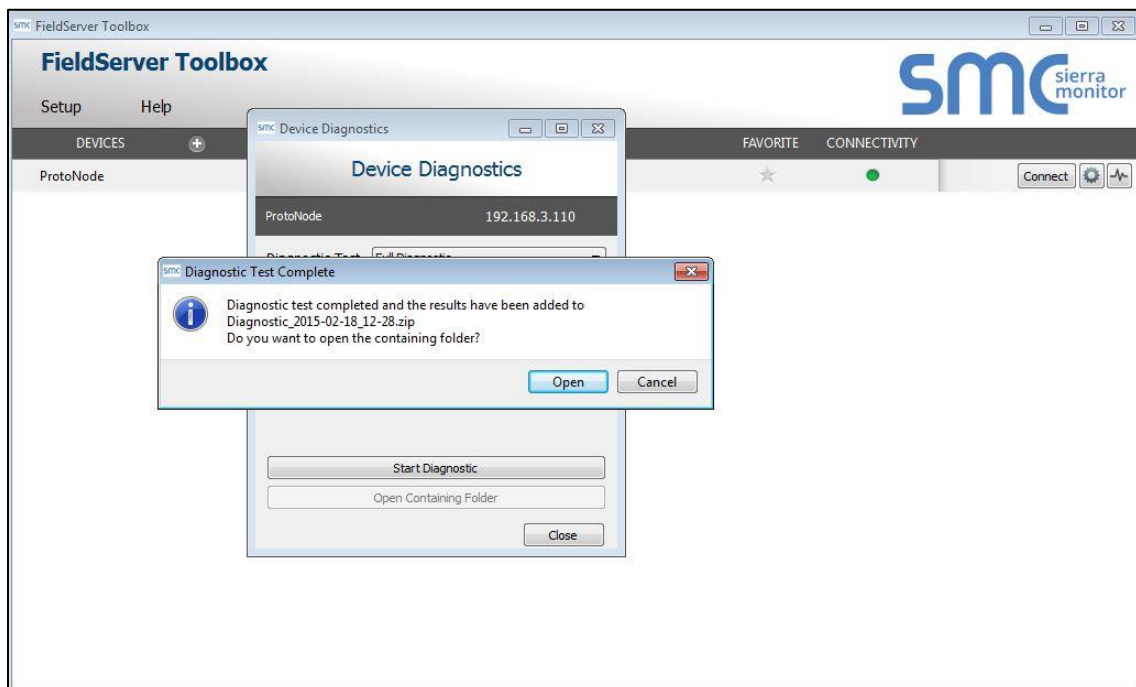
- Click on “Start Diagnostic”



- When the capture period is finished, 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



- Click “Open” to launch explorer and have it point directly at the correct folder
- Email the diagnostic zip file to support@sierramonitor.com

Diagnostic_2014-07-17_20-15.zip 2014/07/17 20:16 zip Archive 676 KB

Appendix B.3. 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 B.4. Passwords

Access to the FieldServer can be restricted by enabling a password. There are 2 access levels defined by 2 account names: Admin and User.

- The Admin account has unrestricted access to the FieldServer.
- The User account can view any FieldServer information, but cannot make any changes or restart the FieldServer.

The password needs to be a minimum of eight characters and is **case sensitive**.

If the password is lost, click cancel on the password authentication popup window, and e-mail the password recovery token to support@sierramonitor.com to receive a temporary password from the Sierra Monitor support team. This will allow access to the FieldServer in order to set a new password.

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.

Appendix D Reference

Appendix D.1. LED Functions

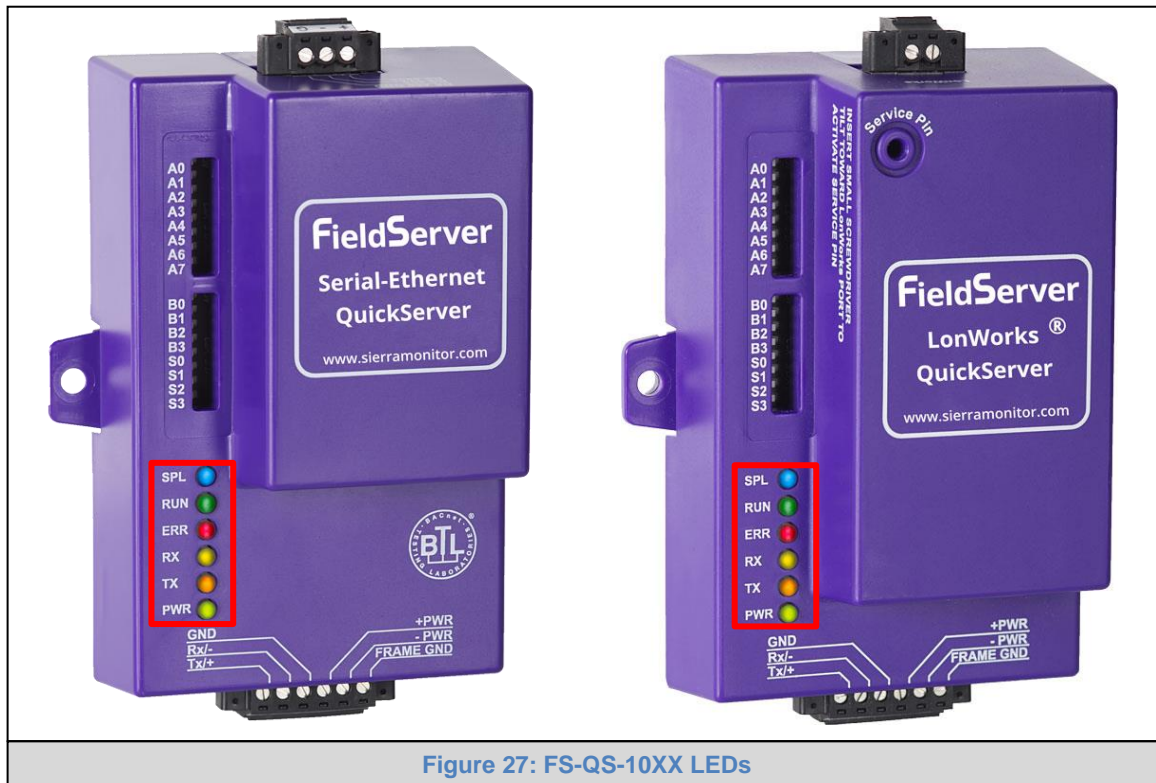
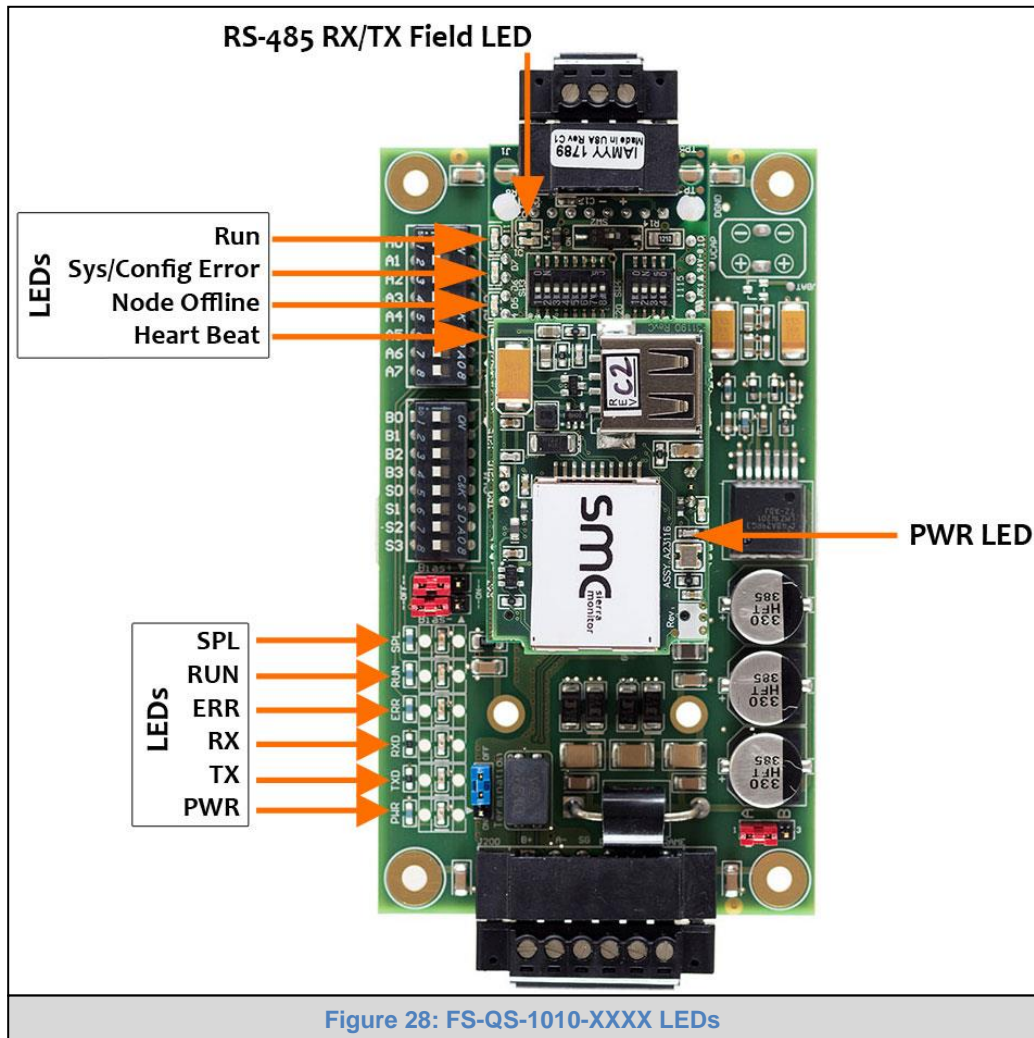


Figure 27: FS-QS-10XX LEDs

Light	Description
SPL	SPL LED will be on when a configured node in the QuickServer is detected as being offline. See Node overview screen of the FS-GUI for further details. For LonWorks units , LED will light until the unit is commissioned on the LonWorks network.
RUN	RUN LED will flash 20 seconds after power up, signifying normal operation. The QuickServer will be able to access FS-GUI (refer to Section 6.3 for more information) 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 error screen of the FS-GUI interface to FieldServer Technologies for evaluation.
RX	On normal operation of FS-QS-10XX, the RX LED will flash when a message is received on the field port of the QuickServer.
TX	On normal operation of FS-QS-10XX, the TX LED will flash when a message is sent on the field port of the QuickServer.
PWR	This is the power light and should show steady green at all times when the QuickServer is powered.

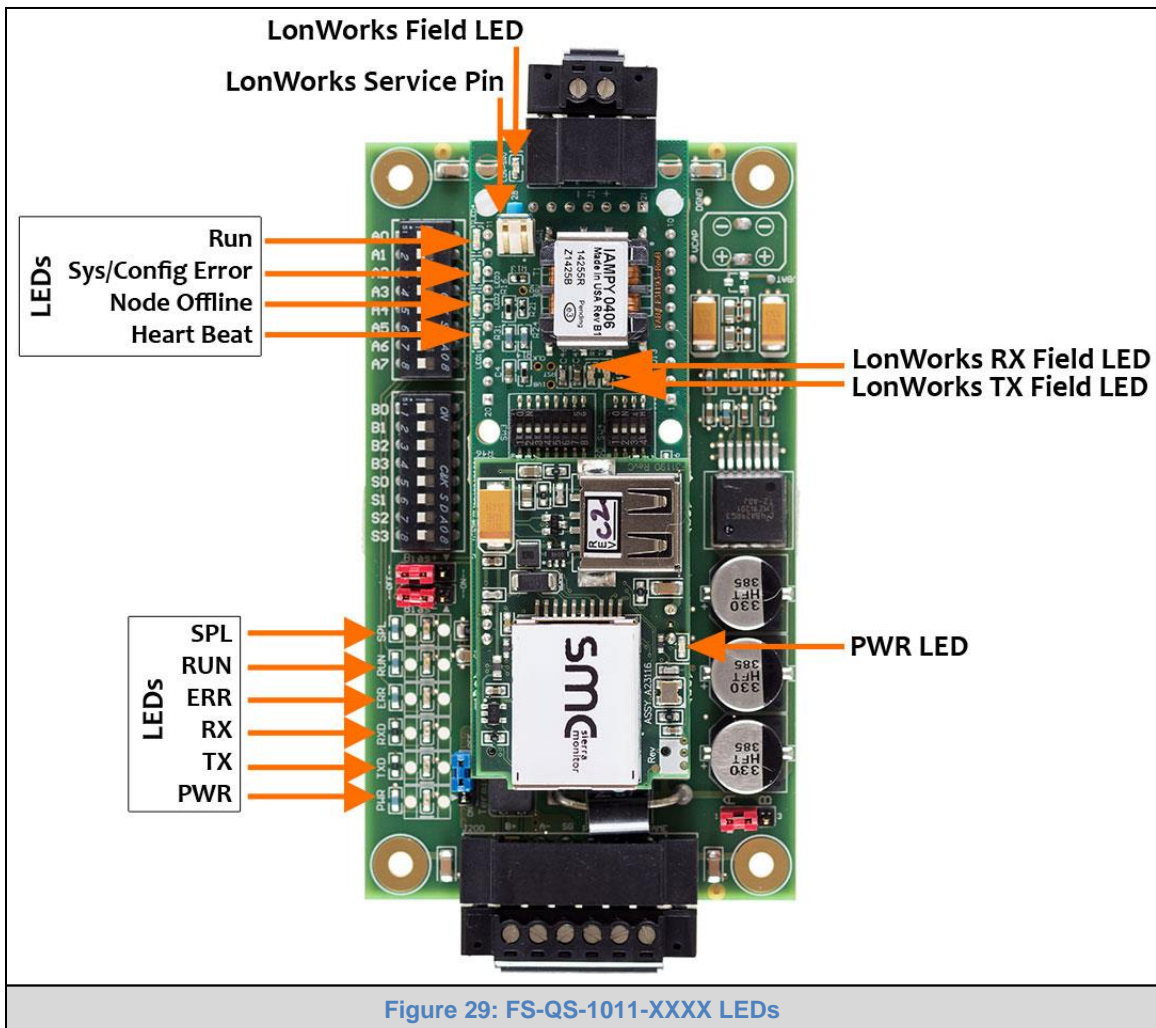
Appendix D.2. FS-QS-1010-XXXX LED Functions



LED	Description
Run	The Run LED will start flashing 20 seconds after power indicating normal operation. The Heart Beat LED has the same functionality but flashes more rapidly.
Sys/Config Error	The Sys/Config Error 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 unit. If this occurs, immediately report the related “system error” shown in the error screen of the GUI interface to Sierra Monitor for evaluation.
Node Offline	The Node Offline LED will turn on and stay solid if there is no communication with the device.
RX	The RX LED will flash when a message is received on the field port.
TX	The TX LED will flash when a message is sent on the field port.
PWR	This is the power light and should show steady green at all times when the unit is powered.

Appendix D.3. FS-QS-1011-XXXX LED Functions

NOTE: The lid on top of the QuickServer has to be removed in order to see the LED's.



LED	Description
Run	The Run LED will start flashing 20 seconds after power indicating normal operation. The Heart Beat LED has the same functionality but flashes more rapidly.
Sys/ Config Error	The Sys/Config Error 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 unit. If this occurs, immediately report the related "system error" shown in the error screen of the GUI interface to Sierra Monitor for evaluation.
Node Offline	The Node Offline LED will turn on and stay solid if there is no communication with the device.
RX	The RX LED will flash when a message is received on the field port.
TX	The TX LED will flash when a message is sent on the field port.
LonWorks	The LonWorks LED will flash until the unit is commissioned, then it will stay off.
PWR	This is the power light and should show steady green at all times when the unit is powered.

Appendix D.4. QuickServer FS-QS-101X DCC

Driver	Code
BACnet/IP – BACnet MS/TP	0285
BACnet/IP – LonWorks	0131
JCI Metasys N2 ⁷ – LonWorks	0097
JCI Metasys N2– BACnet MS/TP	0309
JCI Metasys N2– BACnet/IP	0122
Modbus RTU – BACnet MS/TP	0367
Modbus RTU – BACnet/IP	0104
Modbus RTU – JCI Metasys N2	0038
Modbus RTU – LonWorks	0085
Modbus TCP – BACnet/IP	0237
Modbus TCP – LonWorks	0154
Modbus TCP – BACnet MS/TP	0419
Modbus TCP – JCI Metasys N2	0117
SNMP – BACnet/IP	0333
SNMP – LonWorks	0337
SNMP – JCI Metasys N2	0150
Add BACnet MS/TP - LonWorks	0345

Appendix D.5. Compliance with UL Regulations

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

- 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 ProtoNode/Net
- 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.

⁷ Metasys is a registered trademark of Johnson Controls Inc.