



## Operating Manual

# ProtoNode FPC-N64 for Interfacing Hunter Fans Products



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# Technical Support

Thank you for purchasing the ProtoNode for Huntner Fans.

Please call Huntner Fans for technical support of the ProtoNode product.

MSA Safety does not provide direct support. If Huntner Fans needs to escalate the concern, they will contact MSA Safety for assistance.

Support Contact Information:

Customer Service:

Phone: (888) 830-1326

Website: <https://www.hunterfan.com/>

# Quick Start Guide

1. Record the information about the unit. ([Section 2.1 Record Identification Data](#))
2. Check that the ProtoNode and customer device COM settings match. ([Section 2.3 Configuring Device Communications](#))
3. **If connecting to a serial device:**  
Connect the ProtoNode 3 pin RS-485 R1 port to the RS-485 network connected to each of the devices. ([Section 3.1 Device Connections to ProtoNode](#))
4. **If using a serial field protocol:**  
Connect the ProtoNode 3 pin RS-485 R2 port to the field protocol cabling ([Section 3.2 Wiring Field Port to RS-485 Serial Network](#)).
5. Connect power to ProtoNode 3 pin power port. ([Section 4 Power up the Gateway](#))
6. Connect a PC to the ProtoNode via Ethernet cable. ([Section 5 Connect the PC to the Gateway](#))
7. Setup Web Server Security and login via web browser. ([Section 6 Setup Web Server Security](#))
8. Configure the ProtoNode to connect to the local network. ([Section 7 Setup Network](#))
9. Integrate the ProtoNode with the FieldServer Manager or opt out. ([Section 8.1 Choose Whether to Integrate the FieldServer Manager](#))
10. Use a web browser to access the ProtoNode Web Configurator page to select the profile of the device attached to the ProtoNode and enter any necessary device information. Once the device is selected, the ProtoNode automatically builds and loads the appropriate configuration. ([Section 9 Configure the ProtoNode](#))

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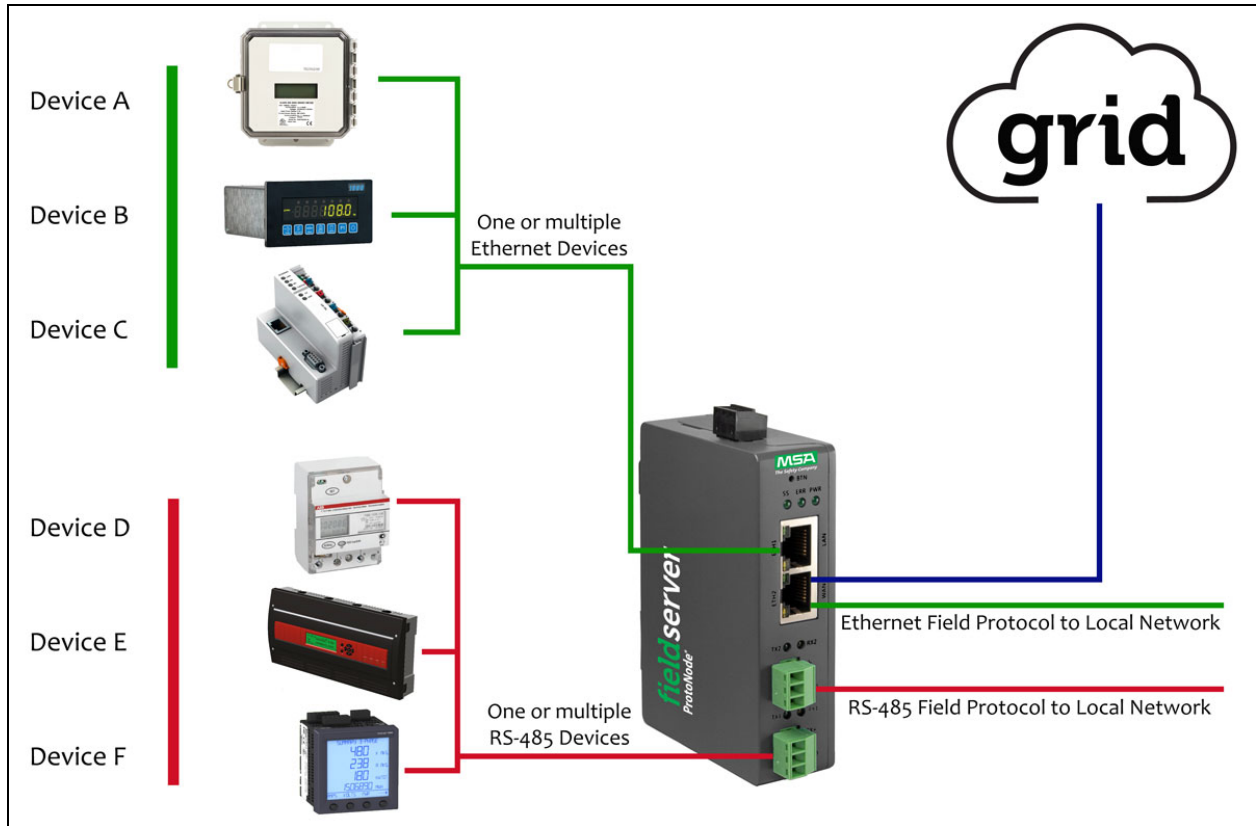
# 1 Introduction

## 1.1 ProtoNode Gateway

The ProtoNode wireless gateway is an external, high performance building automation multi-protocol gateway that is preconfigured to automatically communicate between Hunter Fans devices (hereafter simply called “device”) connected to the ProtoNode and automatically configures them for BACnet/IP, BACnet MS/TP, Metasys N2 and Modbus RTU.

It is not necessary to download any configuration files to support the required applications. The ProtoNode is pre-loaded with tested profiles/configurations for the supported devices.

### FPC-N64 Connectivity Diagram:



The ProtoNode can connect with the MSA Grid – FieldServer Manager. The FieldServer Manager allows technicians, the OEM's support team and MSA Safety's support team to remotely connect to the ProtoNode. The FieldServer Manager provides the following capabilities for any registered devices in the field:

- Remotely monitor and control devices.
- Collect device data and view it on the Dashboard and the MSA Smart Phone App.
- Create user defined device notifications (alarm, trouble and warning) via SMS and/or Email.
- Generate diagnostic captures (as needed for troubleshooting) without going to the site.

For more information on the FieldServer Manager, see the [MSA Grid - FieldServer Manager Start-up Guide](#).

## 2 Setup for ProtoNode

### 2.1 Record Identification Data

Each ProtoNode has a unique part number located on the side or the back of the unit. This number should be recorded, as it may be required for technical support. The numbers are as follows:

Model	Part Number
ProtoNode	FPC-N64-2045

- FPC-N64 units have the following 4 ports: 2 Ethernet + RS-485 + RS-485/RS-232

### 2.2 Point Count Capacity and Registers per Device

The total number of registers presented the device(s) attached to the ProtoNode cannot exceed:

Part number	Total Registers
FPC-N64-2045	1,500

Devices	Point Count Per Device
Yaskawa	20
Mitsubishi	60
TRAK	24

### 2.3 Configuring Device Communications

#### 2.3.1 Set Node-ID for Any Device Attached to the ProtoNode

- Set Node-ID for any device attached to ProtoNode. The Node-ID needs to be uniquely assigned between 1 and 255.
- Document the Node-ID that is assigned. The Node-ID assigned is used for deriving the Device Instance for BACnet/IP and BACnet MS/TP. ([Section 9.5 BACnet: Setting Node\\_Offset to Assign Specific Device Instances](#))

**NOTE:** The Metasys N2 field protocol Node-ID is automatically set to be the same value as the Node-ID of the device.

#### 2.3.2 Set IP Address for Any Ethernet Device Connected to the ProtoNode

- **Ensure any device is set to Modbus TCP/IP to communicate with the ProtoNode.**
- The device needs to be on the same IP subnet as the ProtoNode and the configuration PC.
- Record the following device information to start the setup:
  - IP Address
  - IP port
  - TCP\_ID

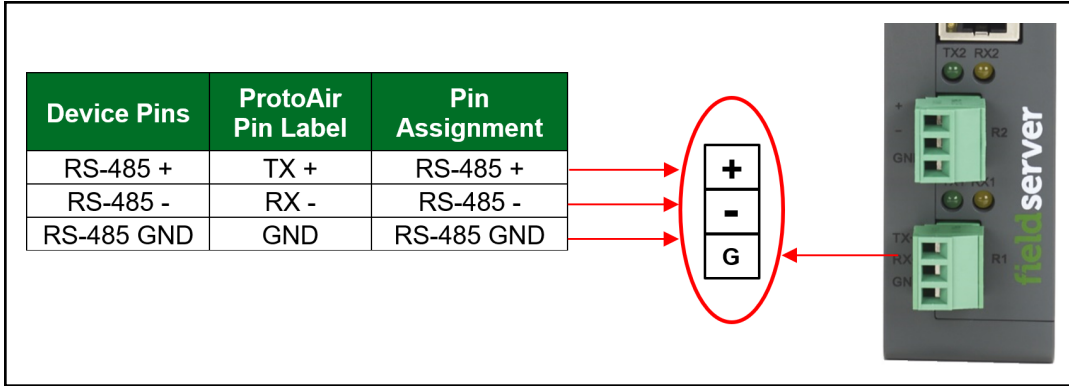
**NOTE:** This information is required for [Section 9.3 Setting Active Profiles](#).

### 3 Interfacing ProtoNode to Devices

#### 3.1 Device Connections to ProtoNode

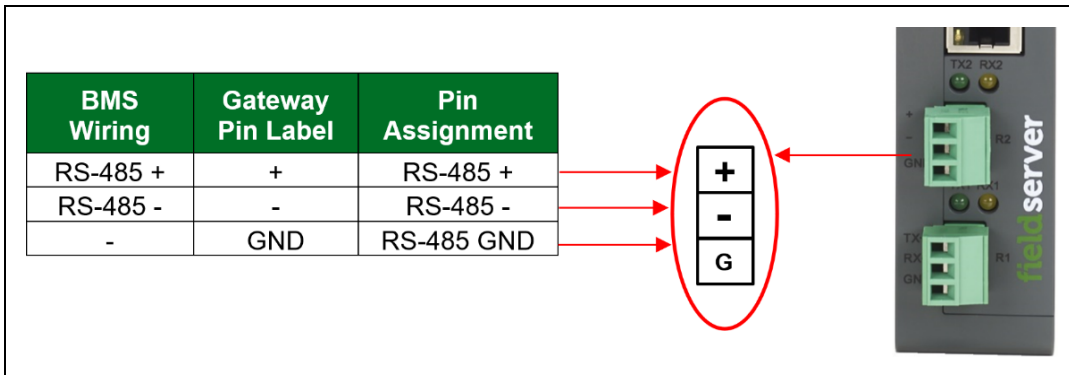
The ProtoNode has a 3-pin Phoenix connector for connecting RS-485 devices on the R1 port.

**NOTE:** Use standard grounding principles for RS-485 GND.



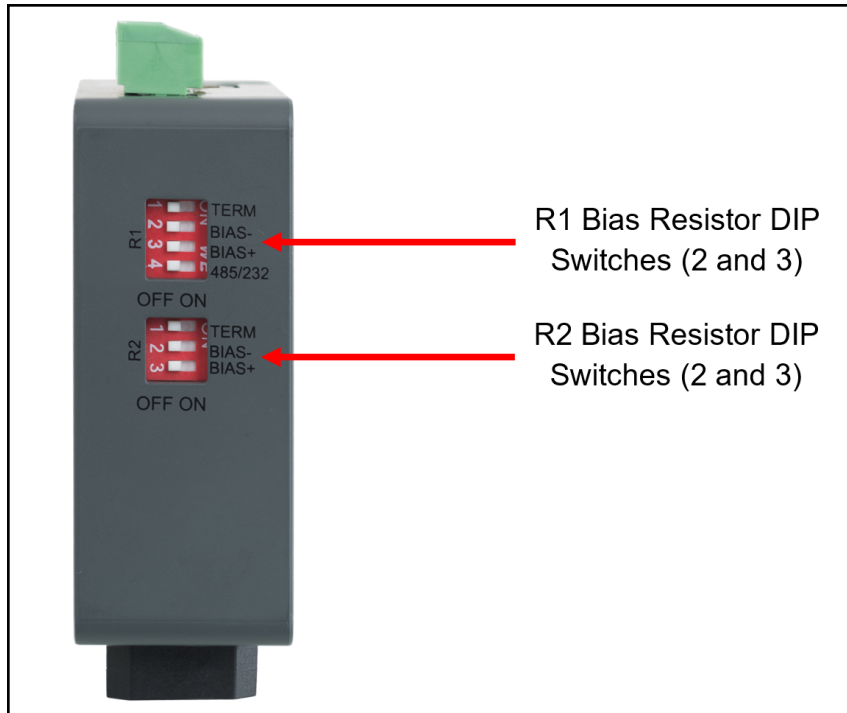
#### 3.2 Wiring Field Port to RS-485 Serial Network

- Connect the RS-485 network wires to the 3-pin RS-485 connector on the R2 port.
  - RS-485 is part of the RS-485 interface and must be connected to the corresponding terminal on the BMS. If the cable is shielded, the shield must be connected only at one end and to earth ground – it will help suppress the electromagnetic field interference. (Connecting the shield at both ends will likely produce current loops, which could produce noise or interference that the shield was intended to block).
- See [Section 5.1 Connecting to the Gateway via Ethernet](#) for information on connecting to an Ethernet network.





### 3.3 Bias Resistors



To enable Bias Resistors, move both the BIAS- and BIAS+ dip switches to the right in the orientation shown above.

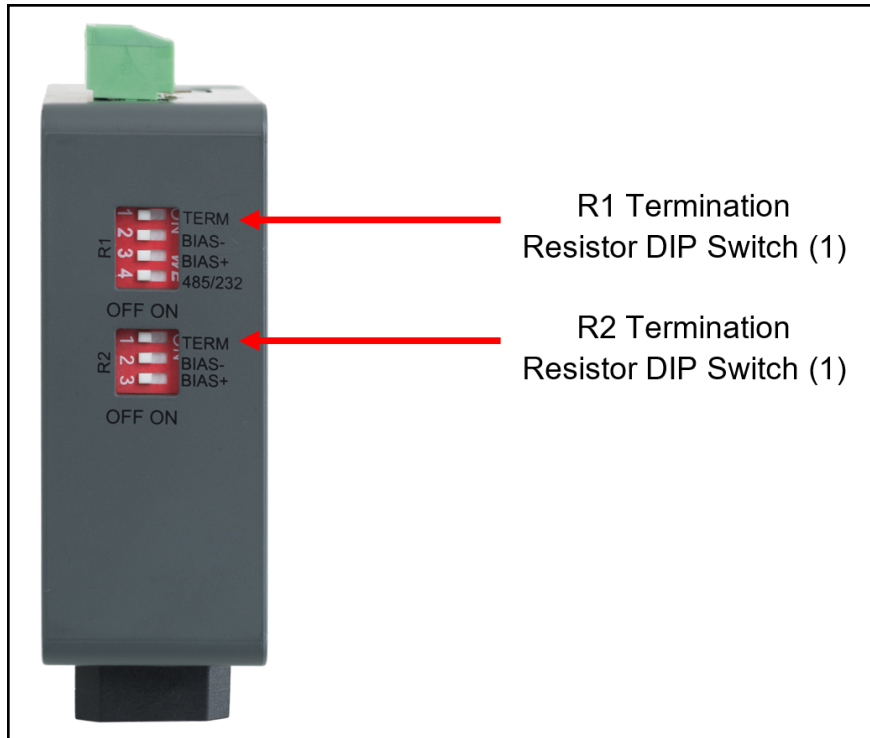
The bias resistors are used to keep the RS-485 bus to a known state, when there is no transmission on the line (bus is idling), to help prevent false bits of data from being detected. The bias resistors typically pull one line high and the other low - far away from the decision point of the logic.

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 (for example, on the field port where there are very weak bias resistors of 100k). Since there are no jumpers, many ProtoNodes can be put on the network without running into the bias resistor limit which is < 500 ohms.

**NOTE:** See the [Termination and Bias Resistance Enote](#) for additional information.

**NOTE:** If the gateway is already powered on, DIP switch settings will not take effect unless the unit is power cycled.

### 3.4 Termination Resistor



If the gateway is the last device on the serial trunk, then the End-Of-Line Termination Switch needs to be enabled. **To enable the Termination Resistor, move the TERM dip switch to the right in the orientation shown in above.**

Termination resistor is also used to reduce noise. It pulls the two lines of an idle bus together. However, the resistor would override the effect of any bias resistors if connected.

**NOTE:** The R1 and R2 DIP Switches apply settings to the respective serial port.

**NOTE:** If the gateway is already powered on, DIP switch settings will not take effect unless the unit is power cycled.

## 4 Power up the Gateway

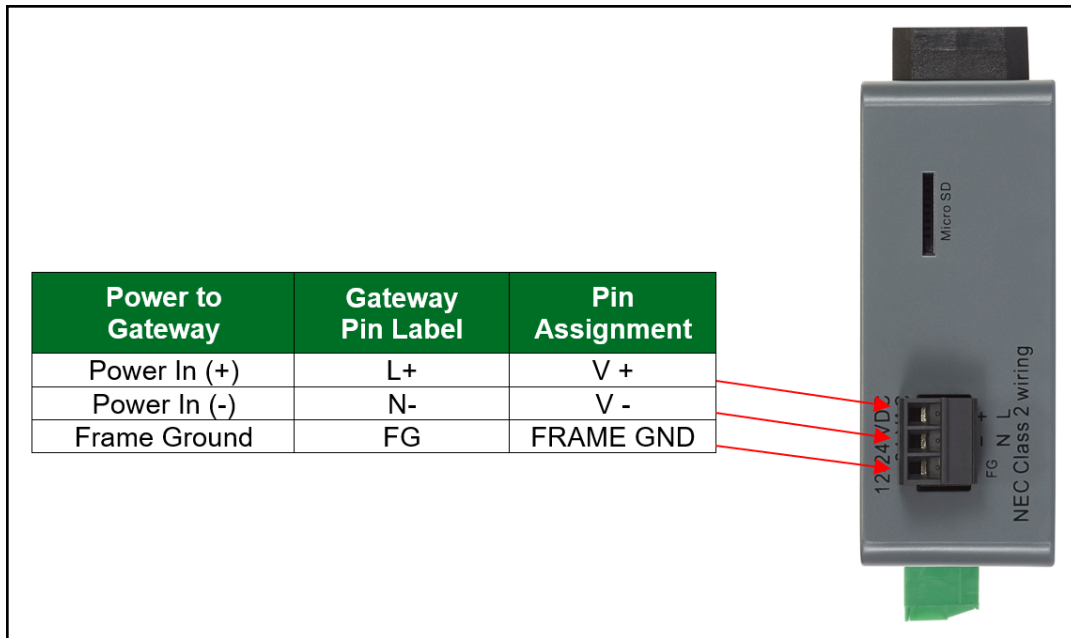
Check power requirements in the table below:

Power Requirement for ProtoNode External Gateway		
	Current Draw Type	
ProtoNode Family	12VDC	24VDC/AC
FPC – N64 (Typical)	250mA	125mA
<b>NOTE: These values are ‘nominal’ and a safety margin should be added to the power supply of the host system. A safety margin of 25% is recommended.</b>		

Apply power to the ProtoNode as shown below. Ensure that the power supply used complies with the specifications provided in [Section 12.4 Specifications](#).

- The gateway accepts 9-30VDC or 24VAC on pins L+ and N-.
- Frame GND should be connected to ensure personnel safety and to limit material damages due to electrical faults. Ground planes are susceptible to transient events that cause sudden surges in current. The frame ground connection provides a safe and effective path to divert the excess current from the equipment to earth ground.

**NOTE: Floating AC Power Supplies are supported.**

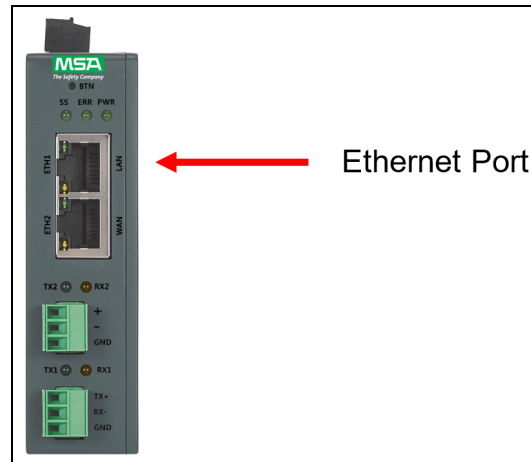


## 5 Connect the PC to the Gateway

**NOTE:** If the Dual Ethernet FieldServer is a client on ETH1 and a server on ETH2 using the same protocol, the TCP or UDP ports need to be unique among the ETH1 and ETH2 ports.

### 5.1 Connecting to the Gateway via Ethernet


Connect a Cat-5 Ethernet cable (straight through or cross-over) between the local PC and ProtoNode ETH1 (LAN Port).



#### 5.1.1 Changing the Subnet of the Connected PC

The default IP Address for the ProtoNode is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and ProtoNode are on different IP networks, assign a static IP Address to the PC on the 192.168.1.xxx network.

For Windows 10:

- Use the search field in the local computer's taskbar (to the right of the windows icon ) and type in "Control Panel".
- Click "Control Panel", click "Network and Internet" and then click "Network and Sharing Center".
- Click "Change adapter settings" on the left side of the window.
- Right-click on "Local Area Connection" and select "Properties" from the dropdown menu.
- Highlight  **Internet Protocol Version 4 (TCP/IPv4)** and then click the Properties button.
- Select and enter a static IP Address on the same subnet. For example:

<input checked="" type="radio"/> Use the following IP address:	
IP address:	192 . 168 . 1 . 11
Subnet mask:	255 . 255 . 255 . 0
Default gateway:	

- Click the Okay button to close the Internet Protocol window and the Close button to exit the Ethernet Properties window.

## 6 Setup Web Server Security

### 6.1 Navigate to the Login Page

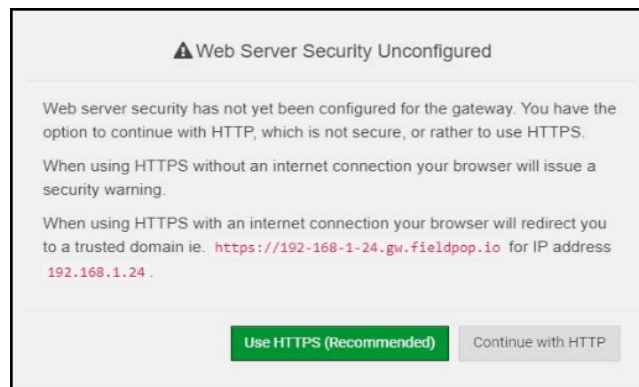
- Open a web browser and connect to the FieldServer's default IP Address. The default IP Address of the FieldServer is **192.168.1.24**, Subnet Mask is **255.255.255.0**.

**NOTE:** If the IP Address of the ProtoNode has been changed, the IP Address can be discovered using the FS Toolbox utility. See Section **10.1 Lost or Incorrect IP Address** for instructions.

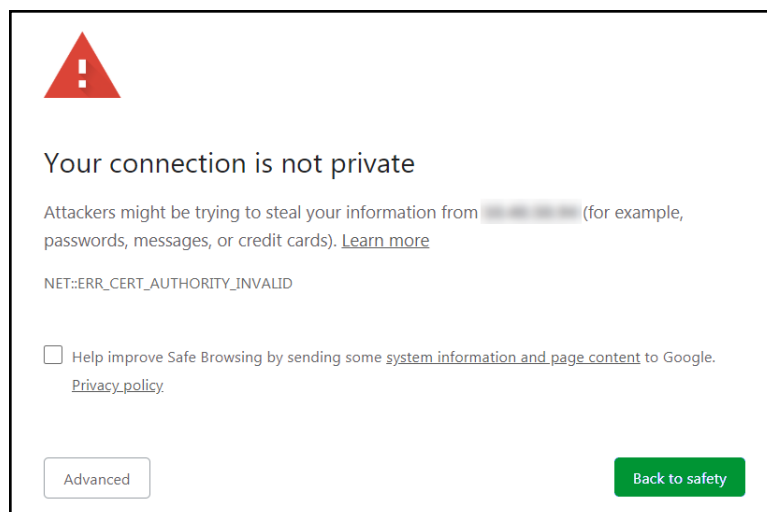
### 6.2 Login to the FieldServer

The first time the FieldServer GUI is opened in a browser, the IP Address for the gateway will appear as untrusted. This will cause the following pop-up windows to appear.

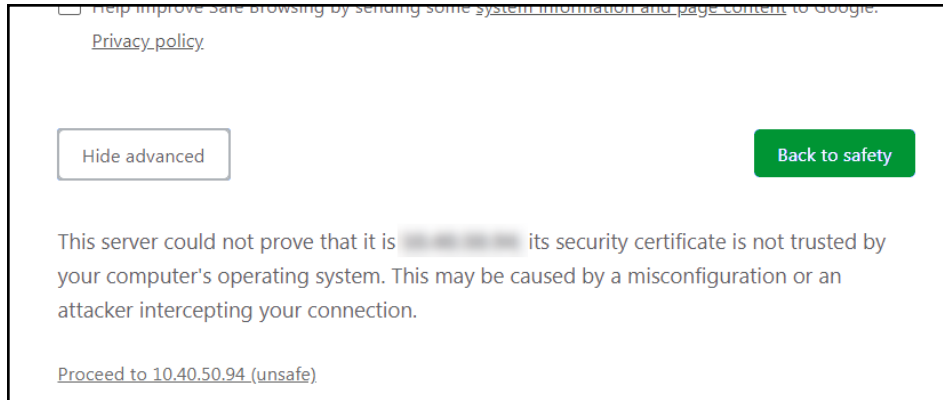
- When the Web Server Security Unconfigured window appears, read the text and choose whether to move forward with HTTPS or HTTP.



- When the warning that "Your connection is not private" appears, click the advanced button on the bottom left corner of the screen.

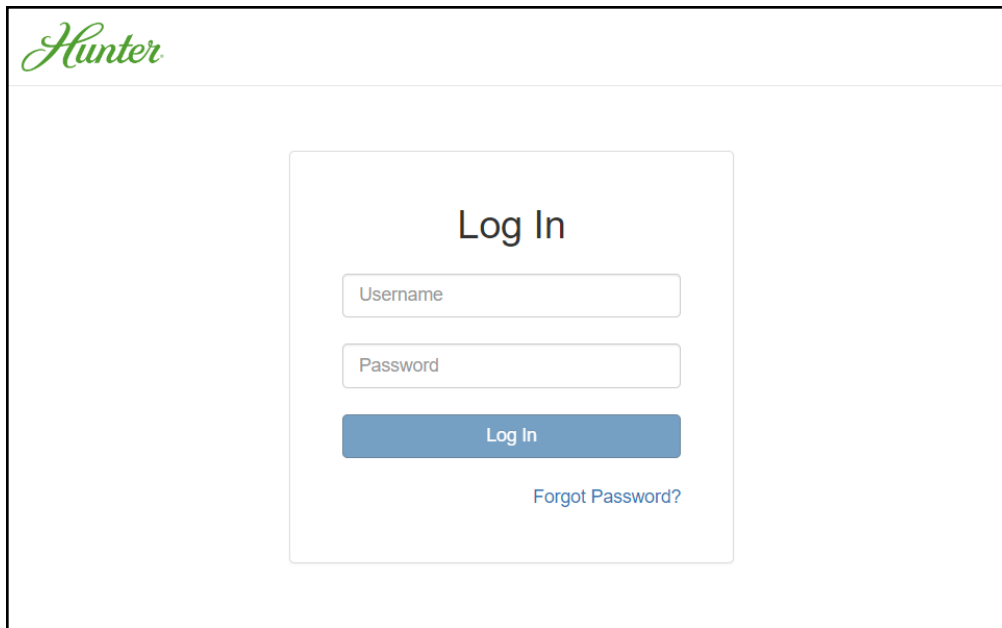


- Additional text will expand below the warning, click the underlined text to go to the IP Address. In the example below this text is “Proceed to <FieldServer IP> (unsafe)”.



- When the login screen appears, put in the Username (default is “admin”) and the Password (found on the label of the FieldServer).

**NOTE:** There is also a QR code in the top right corner of the FieldServer label that shows the default unique password when scanned.




**NOTE:** A user has 5 attempts to login then there will be a 10-minute lockout. There is no timeout on the FieldServer to enter a password.

**NOTE:** To create individual user logins, go to Section [11.7 Change User Management Settings](#).

### 6.3 Select the Security Mode

On the first login to the FieldServer, the following screen will appear that allows the user to select which mode the FieldServer should use.

**Web server security is not configured**



Please select the web security profile from the options below.

Note that browsers will issue a security warning when browsing to a HTTPS server with an untrusted self-signed certificate.

**Mode**

- HTTPS with default trusted TLS certificate (requires internet connection to be trusted)
- HTTPS with own trusted TLS certificate
- HTTP (not secure, vulnerable to man-in-the-middle attacks)

**Save**

**NOTE:** Cookies are used for authentication.

**NOTE:** To change the web server security mode after initial setup, go to [Section 11.6 Change Web Server Security Settings After Initial Setup](#).

The sections that follow include instructions for assigning the different security modes.

### 6.3.1 HTTPS with Own Trusted TLS Certificate

This is the recommended selection and the most secure. **Please contact your IT department to find out if you can obtain a TLS certificate from your company before proceeding with the Own Trusted TLS Certificate option.**

- Once this option is selected, the Certificate, Private Key and Private Key Passphrase fields will appear under the mode selection.

#### Certificate

```
XzyMbQZFIRuJZJPe7CTHLcHORHlowoUFoVTaBMYd4d6VGdNklKazByWKcNOL7mrX
A4IBAQBfM+IPvOx3T/47VEmaiXqE3bx3zEuBFJ6pWPlw7LHf2r2ZoHw+9xb+aNMU
dVYAelhBMTMsnI2ERvQVp0xj3psSv2EJyKXS1bOYNRLsq7UzpwuAdT/Wy3o6vUM5
K+Cwf9qEoQ0LuxDZTIECT67MkcHMiuFi5pk7TRicHnQF/sfOAYOulduHOy9exlk9
FmHFVDIZf/cJUaF+e74EuSph+gEr0lQo2wvmhyc7L22UXse1NoOfUJ2Zq0Eu1Vvtu
JRryaMWIRFEWuuzMGZtKEWVC+8q2JQsVcqiRWM7naoblEhOCMH+sKHJMCxDoXGt
vtZjpZUoAL51YXxWSVcyZdGiAP5e
-----END CERTIFICATE-----
```

#### Private Key

```
sHB0zZoHr4YQSDk2BbYVzZbI0LDuKtc8+JiO3ooGjoTuHnqkeAj/fKfbTAsKeAzw
gKQe+H5UQNk0bdvZfOJrm6daDK2vDmR5k+juUUhEj5N49uplroB97MQgYotzqfT+
THlbgp5t1SIK617k04ObKmHF5l8fck+ru545sVmpeezh0m5j5SURYAZMvbq5daCu
J4l5NIihbEvxRF4UK41ZDMCvujopCbkUWrb1a/3XXnDnM2K9xyz2wze998D6Wk46
+7aOFY9F+7j5lJmnkoS3GYtwCyH5jP+mPP1K6RnuiD019wwwGPb4dtN/RTnfd0eF
GYeVSkI9fxxkxDOFtdWRZbM/rPin4tmO1Xf8HqONVN1x/iaMynOXG4cukoI4+VO
u0rZaUESll2zNkfrn7fAASm5NBWg202Cy9IAYnuujs3aALl5uGBEEK62oTMxlzx
-----END RSA PRIVATE KEY-----
```

#### Private Key Passphrase

- Copy and paste the Certificate and Private Key text into their respective fields. If the Private Key is encrypted type in the associated Passphrase.
- Click Save.
- A “Redirecting” message will appear. After a short time, the FieldServer GUI will open.

### 6.3.2 HTTPS with Default Untrusted Self-Signed TLS Certificate or HTTP with Built-in Payload Encryption

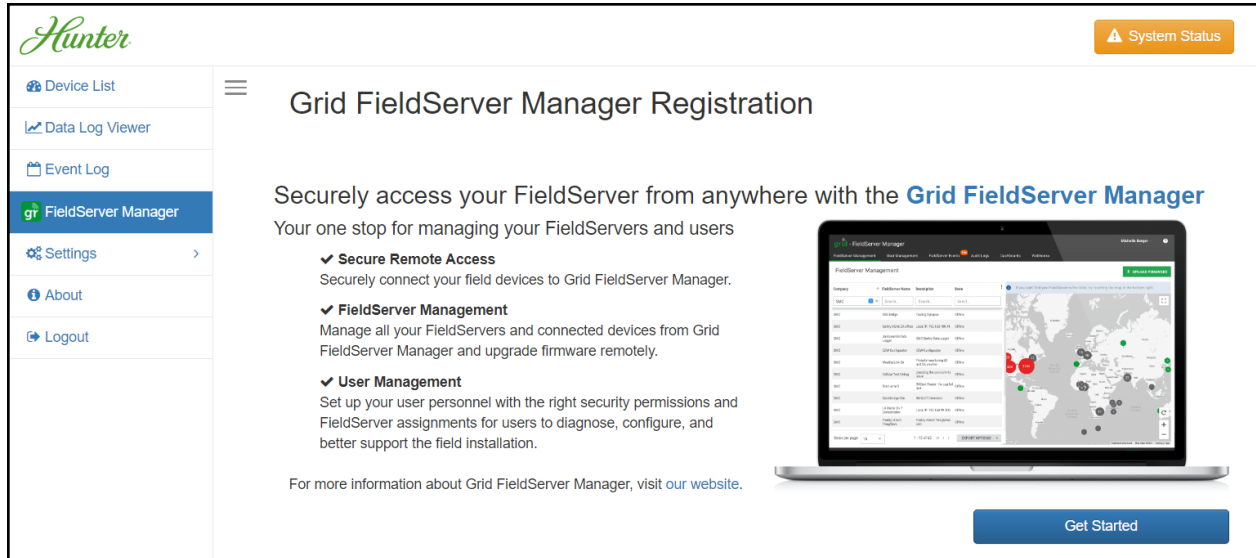
- Select one of these options and click the Save button.
- A “Redirecting” message will appear. After a short time, the FieldServer GUI will open.



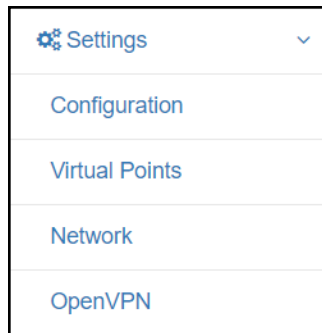
## 7 Setup Network

### 7.1 Navigate to the Network Settings

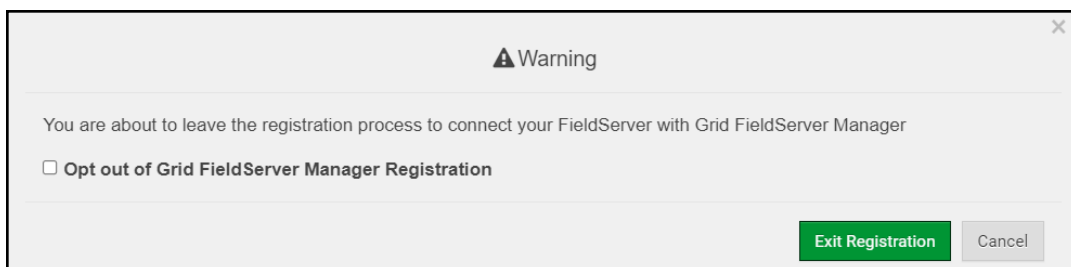
- From the Web App landing page, click the Settings tab on the left side of the screen.



- Click the Network tab that appears to open the Network Settings page.



- A warning message will appear when performing the first-time setup, click the Exit Registration button to continue to the Settings page.



## 7.2 Routing Settings

The Routing settings make it possible to set up the IP routing rules for the FieldServer's internet and network connections.

**NOTE: The default connection is ETH1.**

- Select the default connection in the first row as either ETH 1 or ETH 2.
- Click the Add Rule button to add a new row and set a new Destination Network, Netmask and Gateway IP Address as needed.
- Set the Priority for each connection (1-255 with 1 as the highest priority and 255 as the lowest).
- Click the Save button to activate the new settings.

ETH 1   ETH 2   Routing

Set up the IP routing rules of your FieldServer for internet access and access to other networks.  
If you want to reach another device that is not connected to the local network, you can add a rule to determine on which gateway the device must be routed to.

Interface	Destination Network	Netmask	Gateway IP Address	Priority ?
ETH 1	Default	-	10.40.50.1	255
ETH 1	10.40.50.10	255.255.255.255	10.40.50.1	100
ETH 1	10.40.50.15	255.255.255.255	10.40.50.1	50

+ Add Rule

Cancel   Save

### 7.3 Ethernet 1 and Ethernet 2 Network Settings – LAN Mode

- Check that the Mode is set to LAN, if not click LAN to change the ETH 2 port to LAN mode.
- Enable DHCP to automatically assign IP Settings or modify the IP Settings manually as needed, via these fields: IP Address, Netmask, Gateway, and Domain Name Server1/2.

**NOTE:** If connected to a router, set the Gateway to the same IP Address as the router.

- Click Save to record and activate the new IP Address.
- Connect the FieldServer to the local network or router.

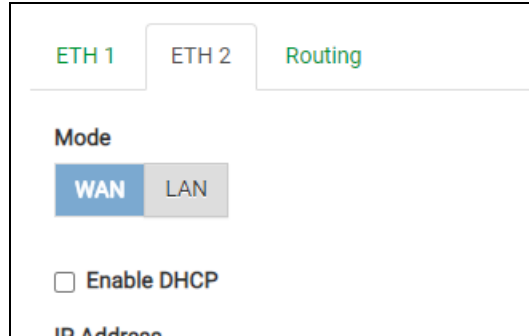
**NOTE:** If the webpage was open in a browser, the browser will need to be pointed to the new IP Address of the FieldServer before the webpage will be accessible again.

The screenshot displays the network configuration interface for Ethernet 2. At the top, there are tabs for 'ETH 1', 'ETH 2', and 'Routing'. The 'Mode' section has 'WAN' and 'LAN' buttons, with 'LAN' selected. Below this is an unchecked checkbox for 'Enable DHCP'. The 'IP Address' field contains '192.168.2.25', 'Netmask' is '255.255.255.0', 'Gateway' is '192.168.2.1', 'Domain Name Server 1 (Optional)' is '8.8.8.8', and 'Domain Name Server 2 (Optional)' is '8.8.4.4'. On the right, a 'Network Status' panel shows 'Connection Status' as 'Connected' with a green checkmark. Other statistics include MAC Address '00:50:4e:60:45:1b', Ethernet Tx Msgs '14,210,944', Ethernet Rx Msgs '77,137,100', and zero dropped messages for both Tx and Rx.

Network Status	
Connection Status	✔ Connected
MAC Address	00:50:4e:60:45:1b
Ethernet Tx Msgs	14,210,944
Ethernet Rx Msgs	77,137,100
Ethernet Tx Msgs Dropped	0
Ethernet Rx Msgs Dropped	0

## 7.4 Ethernet 2 Network Settings – WAN Mode


- Click the blue WAN box to change the ETH 2 port to WAN mode.
  - This prevents all but allowed incoming traffic on the ETH 2 port it does allow a connection to the internet via port 80 & 443



- Scroll below the network settings to get to the firewall options with rules that allow specific incoming traffic (through setting rules) and outgoing options.

**Incoming Firewall (Optional)**  
All incoming network traffic is blocked by default. You can use the incoming firewall rules to allow specified traffic to the FieldServer from the WAN network. ⓘ

**Shorthand tips** When you add rules, you can use the following symbols ▼

IP Address	Netmask (Optional)	Port Range	Description (Optional)
*		80,443,1024	Webpage and FieldServer Toc 

**+ Add Rule**

Cancel **Save**

### NOTE the following options for setting firewall rules:

- Add 1023 to the Port Range field to allow the FieldServer Toolbox access.
- Add 47808 to the Port Range field for BACnet access.
- Add 80 & 443 to the Port Range field for web browser access.
- Use a "\*" as a wild card for IP Address.

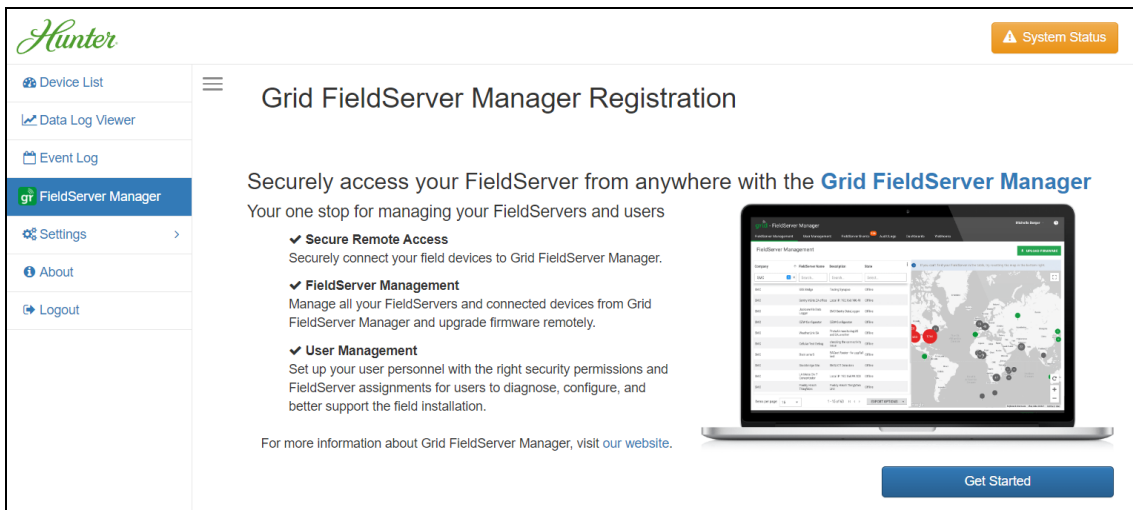
## 8 MSA Grid - FieldServer Manager Setup

The MSA Grid is MSA Safety’s device cloud solution for IIoT. Integration with the MSA Grid - FieldServer Manager enables the a secure remote connection to field devices through a FieldServer and hosts local applications for device configuration, management, as well as maintenance. For more information about the FieldServer Manager, refer to the [MSA Grid - FieldServer Manager Start-up Guide](#).

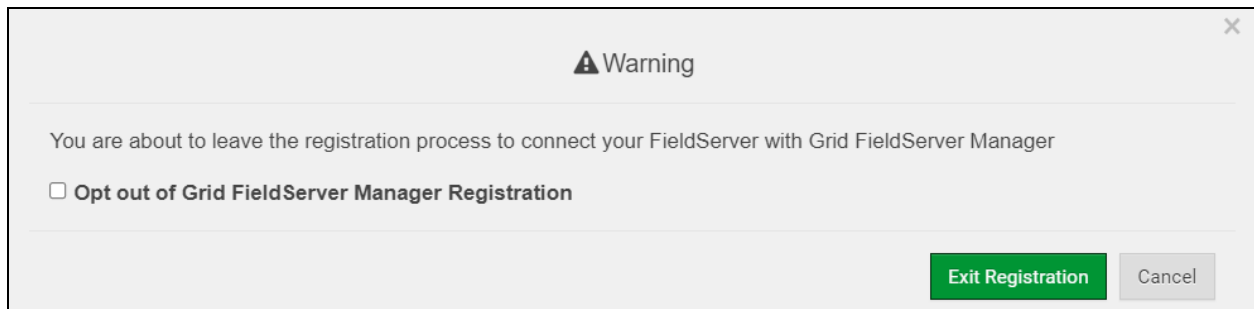
### 8.1 Choose Whether to Integrate the FieldServer Manager

When first logging onto the ProtoNode, the Web App will open on the FieldServer Manager page.

**NOTE:** If a warning message appears instead, go to [Section 11.8 FieldServer Manager Connection Warning Message](#) to resolve the connection issue.



- Either go through the FieldServer Manager setup to integrate cloud functionality to the FieldServer or opt out.
  - For FieldServer Manager setup, continue with instructions in the following sections
  - To opt out of the FieldServer Manager, click on a tab other than the Grid FieldServer Manger tab, click the checkbox next to “Opt out of Grid FieldServer Manager Registration” in the Warning window that appears and click the Exit Registration button
  - To ignore FieldServer Manager setup until the next time the Web App is opened, click a tab other than Grid FieldServer Manager and then click the Exit Registration button with the “Opt out” checkbox unchecked



**NOTE:** If user setup is already complete go to [Section 8.3 Registration Process](#).

## 8.2 User Setup

Before the gateway can be connected to the FieldServer Manager, a user account must be created. Once an invitation has been requested, follow the instructions below to set up login details:

- The “Welcome to the MSA Grid - FieldServer Manager” email will appear as shown below.

**grid** - Fieldserver Manager  
Welcome to FieldServer Manager

FieldServer Management | User Management | FieldServer Events | Audit Logs | Dashboards | Webhooks

FieldServer Management

Company	FieldServer Name	Description	State
SBC	SBC Bridge	Testing Synapse	Office
SBC	Sentry Mobile (in office)	Local IP: 192.168.100.41	Office
SBC	Automotive Data Logger	SBC Sentry Data Logger	Office
SBC	CDM Configurator	CDM Configurator	Office
SBC	WeatherLink SA	Produce monitoring (R and SA weather)	Office
SBC	Cellular Test Setup	Checking the connectivity	Office

UPLOAD FIRMWARE

If you can't find your FieldServer in the table, try searching the map in the bottom right.

Your one stop for managing your FieldServers and users

- ✓ Secure Remote Access
- ✓ FieldServer Management
- ✓ User Management

**COMPLETE REGISTRATION**

Contact Us  
+1 408 262-6611  
[smc-support@msasafety.com](mailto:smc-support@msasafety.com)  
[www.msasafety.com](http://www.msasafety.com)

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**NOTE:** If no email was received, check the spam/junk folder for an email from [notification@fieldpop.io](mailto:notification@fieldpop.io). Contact the manufacturer’s support team if no email is found.

- Click the “Complete Registration” button and fill in user details accordingly.

### Complete Your Registration

Email Address

First Name  
 \*

Last Name  
 \*

Mobile Phone Number  
 \*  
\*Invalid Mobile Number

New Password  
 \*

Confirm Password  
 \*  
\* Please enter new password

By registering my account with MSA, I understand that I am agreeing to the FieldServer Manager [Terms of Service and Privacy Policy](#) \*

\* Mandatory Fields

- Fill in the name, phone number, password fields and click the checkbox to agree to the privacy policy and terms of service.

**NOTE:** If access to data logs using RESTful API is needed, do not include “#” in the password.

- Click “Save” to save the user details.
- Click “OK” when the Success message appears.
- Record the email account used and password for future use.

### 8.3 Registration Process

Once the FieldServer Manager user credentials have been generated, the ProtoNode can be registered onto the server.

- Click the FieldServer Manager tab.

**NOTE:** If a warning message appears instead, go to [Section 11.8 FieldServer Manager Connection Warning Message](#) to resolve the connection issue.

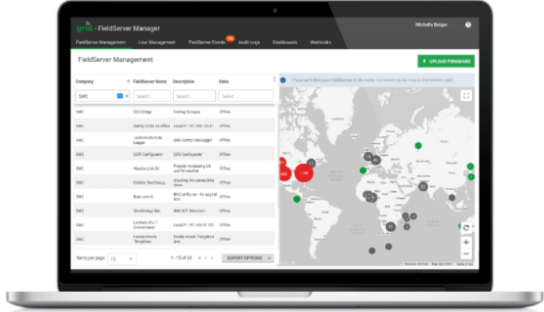
## Grid FieldServer Manager Registration

Securely access your FieldServer from anywhere with the **Grid FieldServer Manager**

Your one stop for managing your FieldServers and users

- ✓ **Secure Remote Access**  
Securely connect your field devices to Grid FieldServer Manager.
- ✓ **FieldServer Management**  
Manage all your FieldServers and connected devices from Grid FieldServer Manager and upgrade firmware remotely.
- ✓ **User Management**  
Set up your user personnel with the right security permissions and FieldServer assignments for users to diagnose, configure, and better support the field installation.

For more information about Grid FieldServer Manager, visit [our website](#).



[Get Started](#)

- Click Get Started to view the FieldServer Manager registration page.



- To register, fill in the user details, site details, gateway details and FieldServer Manager account credentials.
  - Enter user details and click Next

1
2
3
4

Installer Details
Installation Site
FieldServer Details
Account Details

### Installer Details

**Installer Name**   
**Company**   
**Telephone**   
**Email**   
**Installation Date**

- Enter the site details by entering the physical address fields or the latitude and longitude then click Next

### Grid FieldServer Manager Registration

1
2
3
4

Installer Details
Installation Site
FieldServer Details
Account Details

### Installation Site Details

**Search**    
**Site Name**   
**Building**   
**Street Address**   
**Suburb**   
**City**   
**State**   
**Country**   
**Postal Code**   
**Latitude**   
**Longitude**

Map Satellite

Keyboard shortcuts | Map data ©2021 Google | Terms of Use | Report a map error

- Enter Name and Description (required) then click Next

### Grid FieldServer Manager Registration

1 Installer Details      2 Installation Site      3 FieldServer Details      4 Account Details

#### FieldServer Details

**Name**

**Description**

**FieldServer Info**   
Optionally specify any other information relating to the FieldServer i.e., calibration, commissioning or other notes

**Timezone** (GMT -08:00) America/Los\_Angeles ▼

Cancel Previous **Next**

- Click the “Create an Grid FieldServer Manager account” button and enter a valid email to send a “Welcome to MSA Grid – FieldServer Manager” invite to the email address entered

### Grid FieldServer Manager Registration

1 Installer Details      2 Installation Site      3 FieldServer Details      4 Account Details

#### New Users

If you do not have Grid FieldServer Manager credentials, you can create a new Grid FieldServer Manager account now **Create an Grid FieldServer Manager account**

#### Existing Users - Enter FieldServer registration details

#### User Credentials

**Username**

**Password**

Cancel Previous **Register FieldServer**

- Once the device has successfully been registered, a confirmation window will appear. Click the Close button and the following screen will appear listing the device details and additional information auto-populated by the ProtoNode.

## Grid FieldServer Manager Registration

### FieldServer Registered

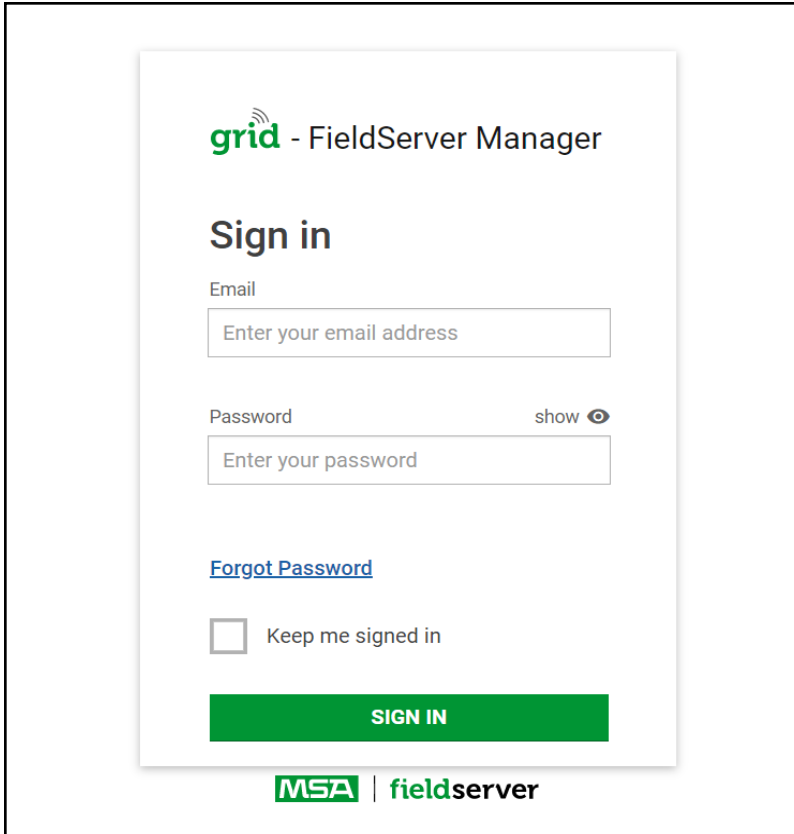
<b>FieldServer Details</b> <b>Name:</b> Test1 <b>Description:</b> FS Test <b>FieldServer Info:</b> <b>Timezone:</b> America/Los_Angeles <b>MAC Address:</b> 00:50:4E:60:13:FE <b>Tunnel Server URL:</b> tunnel.fieldpop.io <b>FieldServer ID:</b> treedancer_KrgPKmLRY <b>Product Name:</b> Core Application - Default <b>Product Version:</b> 5.2.0	<b>Installer Details</b> <b>Installer Name:</b> Test <b>Company:</b> MSA Safety <b>Telephone:</b> (408) 444-4444 <b>Email:</b> contactus@msasafety.com <b>Installation Date:</b> Sep 20, 2021	<b>Installation Site Details</b> <b>Site Name:</b> Site#1 <b>Building:</b> <b>Street Address:</b> 1020 Canal Road <b>Suburb:</b> <b>City:</b> Lafayette <b>State:</b> Indiana <b>Country:</b> United States <b>Postal Code:</b> 47904
---	--	---

[Update FieldServer Details](#)

**NOTE:** Update these details at any time by going to the FieldServer Manager tab and clicking the Update FieldServer Details button.

## 8.4 Login to the FieldServer Manager

After the gateway is registered, go to [www.smccloud.net](http://www.smccloud.net) and type in the appropriate login information as per registration credentials.



The screenshot shows the login interface for the FieldServer Manager. At the top, the logo 'grid' is displayed in green, followed by the text '- FieldServer Manager'. Below this is the heading 'Sign in'. There are two input fields: one for 'Email' with the placeholder text 'Enter your email address', and one for 'Password' with the placeholder text 'Enter your password'. To the right of the password field is a 'show' button with an eye icon. Below the password field is a blue link for 'Forgot Password'. There is a checkbox labeled 'Keep me signed in'. At the bottom of the form is a green button labeled 'SIGN IN'. At the very bottom of the page, the logos for 'MSA' and 'fieldserver' are displayed.

**NOTE:** If the login password is lost, see the [MSA Grid - FieldServer Manager Start-up Guide](#) for recovery instructions.

**NOTE:** For additional FieldServer Manager instructions see the [MSA Grid - FieldServer Manager Start-up Guide](#).

**FieldServer Management**

↑ **UPLOAD FIRMWARE**

Company	FieldServer Name	Description	State
Eggers OEM	Jens's Brain 31	192.168.1.31	Offline
Eggers OEM	Jens MBP Core App	~/git/smc-core-application	Offline
Eggers OEM	Jens's Dell Profile View	~/git/profile-view	Offline
Eggers OEM	hd_test_log_to_fpop	testing_modbus	Offline
Eggers OEM	Mbus demo	testing registration	Offline
SMC	TestWall-PA2port 97	Testwall pa 2 97	Offline
SMC	TestWall-Lon152	Testwall unit	Offline

If you can't find your FieldServer in the table, try resetting the map in the bottom right.

Map showing global distribution of FieldServers with markers and counts:

- 196
- 173
- 226
- 298
- 206
- 105
- AFRICA
- 400
- 1 15
- 359 39
- 114

© 2021 MSA. All rights reserved. **MSA** | fieldserver

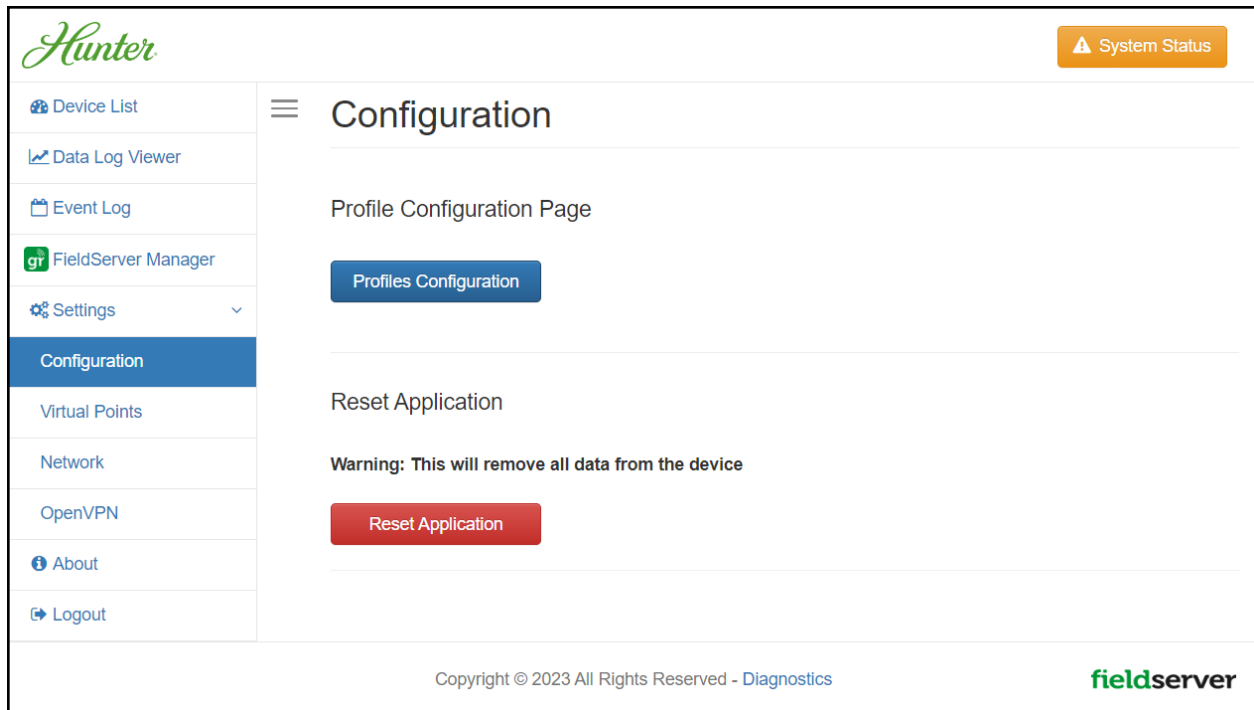
## 9 Configure the ProtoNode

### 9.1 Navigate to the ProtoNode Web Configurator

- From the Web App Device List page, click the Settings tab and then click Configuration.



- Then click the Profiles Configuration button to go to the Web Configurator page.



**NOTE:** For Web App instructions to the System View, Data Log Viewer, Event Logger and Virtual Points functions, see the [MSA Grid - FieldServer Manager Start-up Guide](#).

## 9.2 Select Field Protocol and Set Configuration Parameters

- On the Web Configurator page, the first configuration parameter is the Protocol Selector.

Parameter Name	Parameter Description	Value
protocol_select	<b>Protocol Selector</b> Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2	1 <input type="button" value="Submit"/>
output_adapter	<b>Protocol Output Adapter</b> This sets the output adapter for the protocol translation. Use N1 for LAN port 1 Use N2 for LAN port 2 (N1/N2)	N1 <input type="button" value="Submit"/>
mod_baud_rate	<b>Modbus RTU Baud Rate</b> This sets the Modbus RTU baud rate. (9600/19200/38400/57600)	9600 <input type="button" value="Submit"/>
mod_parity	<b>Modbus RTU Parity</b> This sets the Modbus RTU parity	None <input type="button" value="Submit"/>

HELP (?) Clear Profiles and Restart System Restart Diagnostics & Debugging fieldserver

- Select the field protocol by entering the appropriate number into the Protocol Selector Value. Click the Submit button. Click the System Restart button to save the updated configuration.


**NOTE:** Protocol specific parameters are only visible when the associated protocol is selected.

- Ensure that all parameters are entered for successful operation of the gateway. Find the legal value options for each parameter under the Parameter Description in parentheses.

**NOTE:** If multiple devices are connected to the ProtoNode, set the BACnet Virtual Server Nodes field to “Yes”; otherwise leave the field on the default “No” setting.

### 9.3 Setting Active Profiles

- In the Web Configurator, the Active Profiles are shown below the configuration parameters. The Active Profiles section lists the currently active device profiles. This list is empty for new installations, or after clearing all configurations.



#### Configuration Parameters

Parameter Name	Parameter Description	Value
protocol_select	<b>Protocol Selector</b> Set to 1 for BACnet IP Set to 2 for BACnet MSTP Set to 3 for Metasys N2	<input type="text" value="1"/> <input type="button" value="Submit"/>
output_adapter	<b>Protocol Output Adapter</b> This sets the output adapter for the protocol translation. Use N1 for LAN port 1 Use N2 for LAN port 2 (N1/N2)	<input type="text" value="N1"/> <input type="button" value="Submit"/>
mod_baud_rate	<b>Modbus RTU Baud Rate</b> This sets the Modbus RTU baud rate. (9600/19200/38400/57600)	<input type="text" value="9600"/> <input type="button" value="Submit"/>
mod_parity	<b>Modbus RTU Parity</b> This sets the Modbus RTU parity. (None/Even/Odd)	<input type="text" value="None"/> <input type="button" value="Submit"/>
mod_data_bits	<b>Modbus RTU Data Bits</b> This sets the Modbus RTU data bits. (7 or 8)	<input type="text" value="8"/> <input type="button" value="Submit"/>
mod_stop_bits	<b>Modbus RTU Stop Bits</b> This sets the Modbus RTU stop bits. (1 or 2)	<input type="text" value="1"/> <input type="button" value="Submit"/>
network_nr	<b>BACnet Network Number</b> This sets the BACnet network number of the Gateway. (1 - 65535)	<input type="text" value="50"/> <input type="button" value="Submit"/>
node_offset	<b>BACnet Node Offset</b> This is used to set the BACnet device instance. The device instance will be sum of the Modbus device address and the node offset. (0 - 4194303)	<input type="text" value="50000"/> <input type="button" value="Submit"/>
bac_ip_port	<b>BACnet IP Port</b> This sets the BACnet IP port of the Gateway. The default is 47808. (1 - 65535)	<input type="text" value="47808"/> <input type="button" value="Submit"/>
bac_cov_option	<b>BACnet COV</b> This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable. (COV_Enable/COV_Disable)	<input type="text" value="COV_Disable"/> <input type="button" value="Submit"/>
bac_bbmd_option	<b>BACnet BBMD</b> This enables BBMD on the BACnet IP connection. Use BBMD to enable. Use - to disable. The bdt.ini files also needs to be downloaded. (BBMD/-)	<input type="text" value="-"/> <input type="button" value="Submit"/>
bac_virt_nodes	<b>BACnet Virtual Server Nodes</b> Set to NO if the unit is only converting 1 device to BACnet. Set to YES if the unit is converting multiple devices. (No/Yes)	<input type="text" value="Yes"/> <input type="button" value="Submit"/>

#### Active profiles

Nr	Node ID	Current profile	Parameters
<input type="button" value="Add"/>			

fieldserver



- To add an active profile to support a device, click the Add button under the Active Profiles heading. This will present a drop-down menu underneath the Current profile column.
- Once the Profile for the device has been selected from the drop-down list, enter the value of the device's Node-ID which was assigned in **Section 2.3.1 Set Node-ID for Any Device Attached to the ProtoNode**.
- If the device is connected via Modbus TCP/IP, enter the "ip\_address" and "tcp\_id" under the Parameters heading. These are gathered from settings on the device and correspond to the device IP Address and TCP\_ID. (**Section 2.3.2 Set IP Address for Any Ethernet Device Connected to the ProtoNode**)
- Then press the "Submit" button to add the Profile to the list of devices to be configured.
- Repeat this process until all the devices have been added.
- Completed additions are listed under "Active profiles" as shown below.

Active profiles			
Nr	Node ID	Current profile	Parameters
1	1	MOD_TCP_to_BAC_IP_Mitsubishi	ip_address : 192.168.1.1 tcp_id : 1
2	22	MOD_RTU_to_BAC_IP_Yaskawa	
3	33	MOD_RTU_to_BAC_IP_TRAK	

Buttons: Add, Remove (for each profile), HELP (?), Clear Profiles and Restart, System Restart, Diagnostics & Debugging, fieldserver

#### 9.4 Verify Device Communications

- If using a serial connection, check that TX and RX LEDs are rapidly flashing. See **Section 10.4 LED Functions** for information and images.
- Confirm the software shows good communications without errors (**Section 10.2 Viewing Diagnostic Information**).

## 9.5 BACnet: Setting Node\_Offset to Assign Specific Device Instances

- Follow the steps outlined in **Section 6 Setup Web Server Security** to access the ProtoNode Web Configurator.
- The Node\_Offset field shows the current value (default = 50,000).
  - The values allowed for a BACnet Device Instance can range from 1 to 4,194,303
- To assign a specific Device Instance (or range); change the Node\_Offset value as needed using the calculation below:

$$\text{Device Instance (desired)} = \text{Node\_Offset} + \text{Node\_ID}$$

For example, if the desired Device Instance for the device 1 is 50,001 and the following is true:

- Device 1 has a Node-ID of 1
- Device 2 has a Node-ID of 22
- Device 3 has a Node-ID of 33

Then plug the device 1's information into the formula to find the desired Node\_Offset:

$$50,001 = \text{Node\_Offset} + 1$$

$$\mathbf{50,000 = \text{Node\_Offset}}$$

Once the Node\_Offset value is input, it will be applied as shown below:

- Device 1 Instance = 50,000 + Node\_ID = 50,000 + 1 = 50,001
- Device 2 Instance = 50,000 + Node\_ID = 50,000 + 22 = 50,022
- Device 3 Instance = 50,000 + Node\_ID = 50,000 + 33 = 50,033

Click "Submit" once the desired value is entered.

**BACnet Node Offset**  
This is used to set the BACnet device instance.  
The device instance will be sum of the Modbus device address and the node offset.  
(0 - 4194303)

node\_offset

**Active profiles**

Nr	Node ID	Current profile	Parameters	
1	1	MOD_TCP_to_BAC_IP_Mitsubishi	ip_address : 192.168.1.1 tcp_id : 1	<input type="button" value="Remove"/>
2	22	MOD_RTU_to_BAC_IP_Yaskawa		<input type="button" value="Remove"/>
3	33	MOD_RTU_to_BAC_IP_TRAK		<input type="button" value="Remove"/>

**fieldserver**

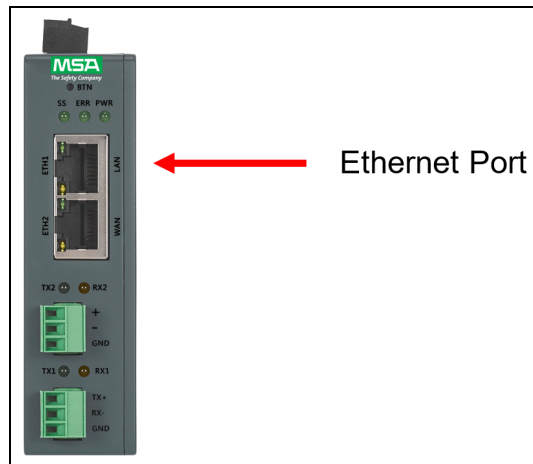
## 9.6 How to Start the Installation Over: Clearing Profiles

- Follow the steps outlined in **Section 6 Setup Web Server Security** to access the ProtoAir Web Configurator.
- At the bottom-left of the page, click the “Clear Profiles and Restart” button.
- Once restart is complete, all past profiles discovered and/or added via Web Configurator are deleted. The unit can now be reinstalled.

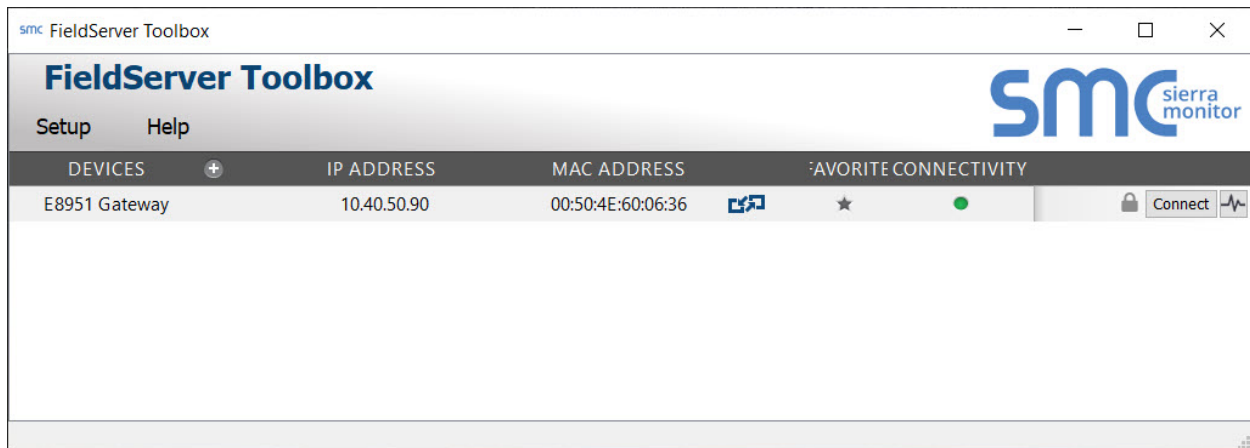
## 10 Troubleshooting

### 10.1 Lost or Incorrect IP Address

- Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer-Toolbox.zip via the MSA Safety website.
- Extract the executable file and complete the installation.

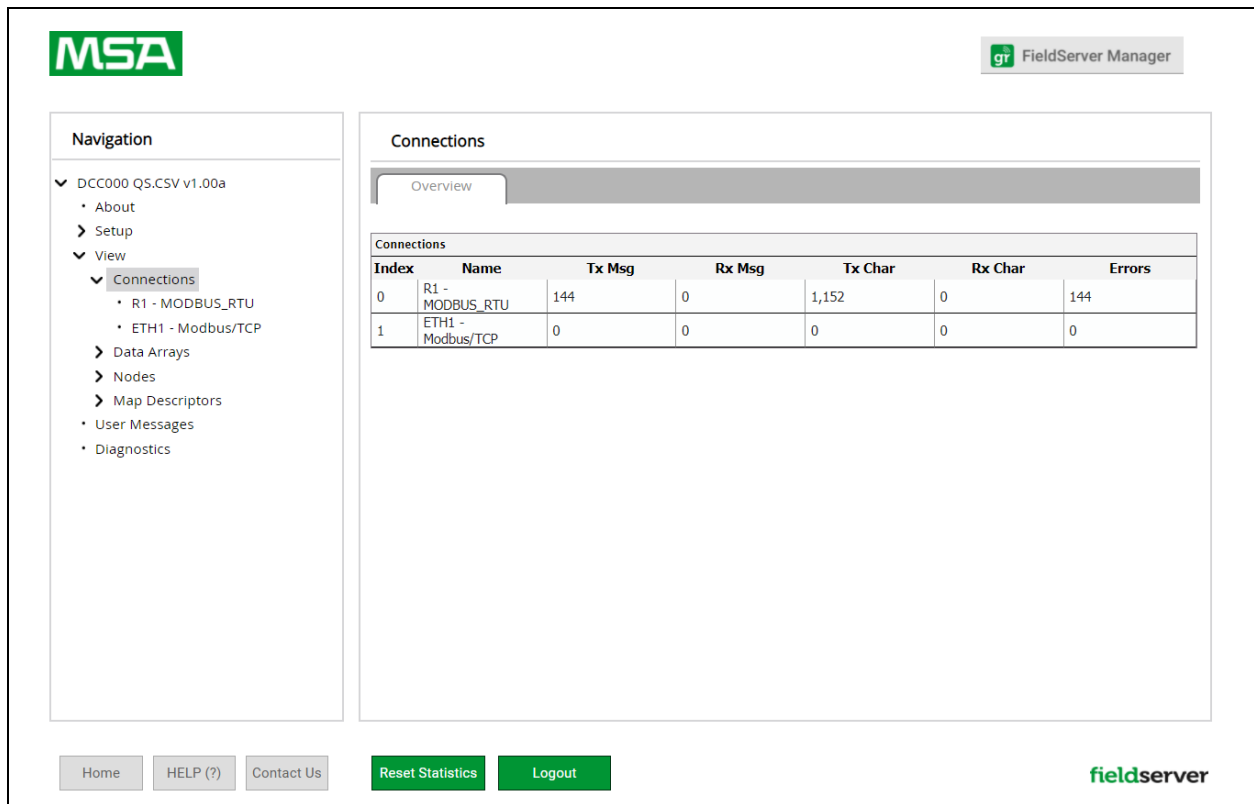


- Connect a standard Cat-5 Ethernet cable between the user's PC and ProtoNode.
- Double click on the FS Toolbox Utility and click Discover Now on the splash page.
- Check for the IP Address of the desired gateway.



## 10.2 Viewing Diagnostic Information

- Type the IP Address of the FieldServer into the web browser or use the FieldServer Toolbox to connect to the FieldServer.
- Click on Diagnostics and Debugging Button, then click on view, and then on connections.
- If there are any errors showing on the Connection page, refer to **Section 10.3 Checking Wiring and Settings** for the relevant wiring and settings.



The screenshot shows the FieldServer Manager web interface. The MSA logo is in the top left, and the FieldServer Manager logo is in the top right. The navigation menu on the left includes: DCC000 QS.CSV v1.00a, About, Setup, View, Connections (selected), R1 - MODBUS\_RTU, ETH1 - Modbus/TCP, Data Arrays, Nodes, Map Descriptors, User Messages, and Diagnostics. The main content area is titled 'Connections' and has an 'Overview' tab selected. Below the tab is a table with the following data:

Index	Name	Tx Msg	Rx Msg	Tx Char	Rx Char	Errors
0	R1 - MODBUS_RTU	144	0	1,152	0	144
1	ETH1 - Modbus/TCP	0	0	0	0	0

At the bottom of the page, there are buttons for Home, HELP (?), Contact Us, Reset Statistics, and Logout. The fieldserver logo is in the bottom right corner.

### 10.3 Checking Wiring and Settings

No COMS on the Modbus RTU side. If the Tx/Rx LEDs are not flashing rapidly then there is a COM issue. To fix this problem, check the following:

- Visual observations of LEDs on the ProtoNode. ([Section 10.4 LED Functions](#))
- Check baud rate, parity, data bits, stop bits.
- Check device address.
- Verify wiring.
- Verify the device was listed in the Web Configurator ([Section 9.3 Setting Active Profiles](#)).

No COMS on the Modbus TCP/IP side. To fix this problem, check the following:

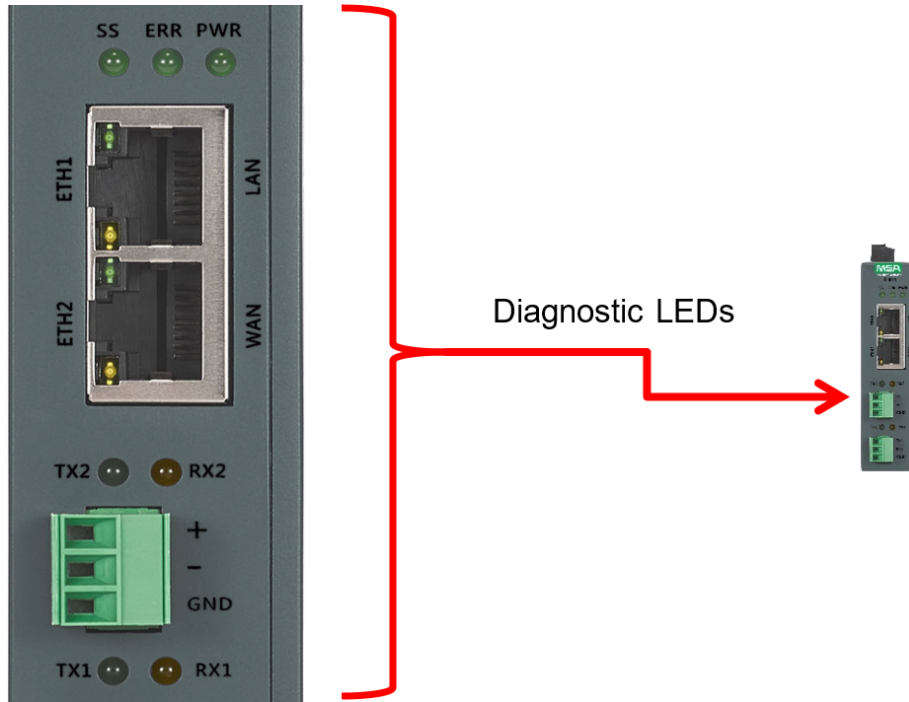
- Visual observations of LEDs on the ProtoNode. ([Section 10.4 LED Functions](#))
- Check device address.
- Verify wiring.
- Verify the device was listed in the Web Configurator ([Section 9.3 Setting Active Profiles](#)).

Field COM problems:

- Visual observations of LEDs on the ProtoNode. ([Section 10.4 LED Functions](#))
- Verify wiring.
- Verify IP Address setting.

**NOTE:** If the problem still exists, a Diagnostic Capture needs to be taken and sent to support. ([Section 10.5 Taking a FieldServer Diagnostic Capture](#))


## 10.4 LED Functions

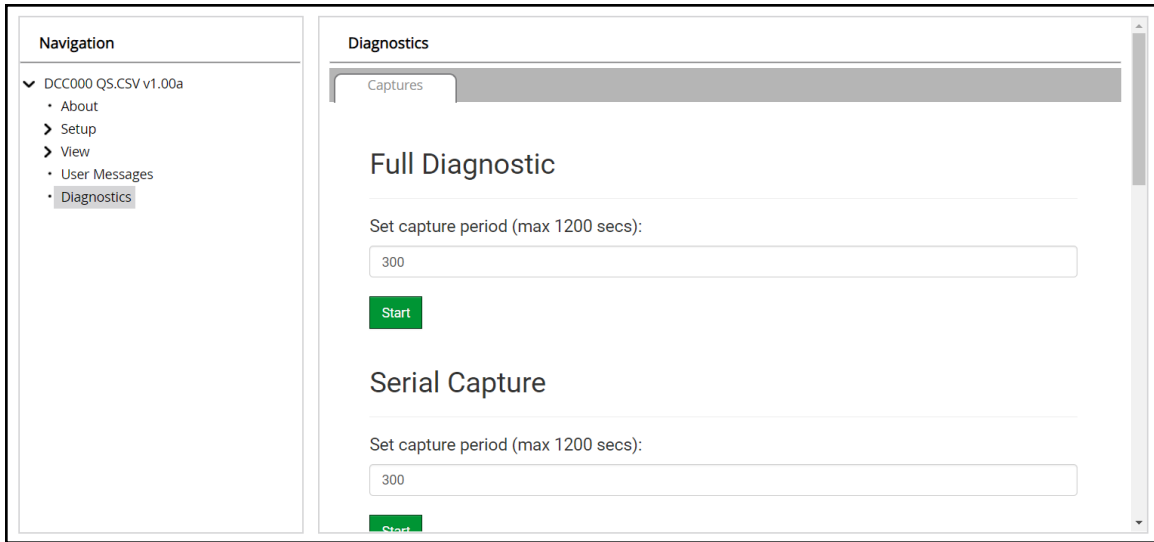


Tag	Description
<b>SS</b>	The SS LED will flash once a second to indicate that the bridge is in operation.
<b>ERR</b>	The SYS ERR LED will go on solid indicating there is a system error. If this occurs, immediately report the related “system error” shown in the error screen of the FS-GUI interface to support for evaluation.
<b>PWR</b>	This is the power light and should always be steady green when the unit is powered.
<b>RX</b>	The RX LED will flash when a message is received on the serial port on the 3-pin connector. If the serial port is not used, this LED is non-operational. RX1 applies to the R1 connection while RX2 applies to the R2 connection.
<b>TX</b>	The TX LED will flash when a message is sent on the serial port on the 3-pin connector. If the serial port is not used, this LED is non-operational. TX1 applies to the R1 connection while TX2 applies to the R2 connection.

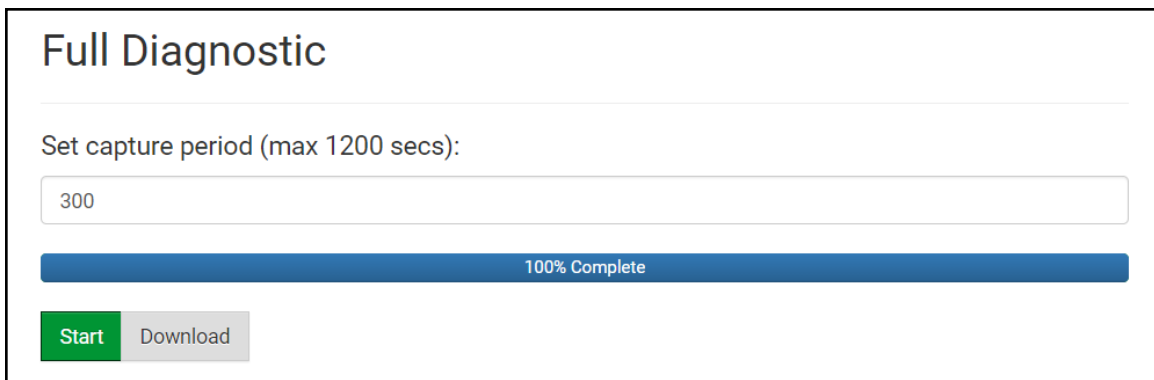
## 10.5 Taking a FieldServer Diagnostic Capture

When there is a problem on-site that cannot easily be resolved, perform a Diagnostic Capture before contacting support. Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

- Access the FieldServer Diagnostics page via one of the following methods:
  - Open the FieldServer FS-GUI page and click on Diagnostics in the Navigation panel
  - Open the FieldServer Toolbox software and click the diagnose icon  of the desired device



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



- Click Download for the capture to be downloaded to the local PC.
- Email the diagnostic zip file to technical support ([smc-support.emea@msasafety.com](mailto:smc-support.emea@msasafety.com)).

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



## 10.6 Factory Reset Instructions

For instructions on how to reset a FieldServer back to its factory released state, see [ENOTE FieldServer Next Gen Recovery](#).

## 10.7 Internet Browser Software Support

The following web browsers are supported:

- Chrome Rev. 57 and higher
- Firefox Rev. 35 and higher
- Microsoft Edge Rev. 41 and higher
- Safari Rev. 3 and higher

**NOTE:** Internet Explorer is no longer supported as recommended by Microsoft.

**NOTE:** Computer and network firewalls must be opened for Port 80 to allow FieldServer GUI to function.

## 11 Additional Information

### 11.1 Update Firmware

To load a new version of the firmware, follow these instructions:

1. Extract and save the new file onto the local PC.
2. Open a web browser and type the IP Address of the FieldServer in the address bar.
  - Default IP Address is 192.168.1.24
  - Use the FS Toolbox utility if the IP Address is unknown ([Section 10.1 Lost or Incorrect IP Address](#))
3. Click on the “Diagnostics & Debugging” button.
4. In the Navigation Tree on the left hand side, do the following:
  - a. Click on “Setup”
  - b. Click on “File Transfer”
  - c. Click on the “General” tab
5. In the General tab, click on “Choose Files” and select the web.img file extracted in step 1.
6. Click on the orange “Submit” button.
7. When the download is complete, click on the “System Restart” button.

**NOTE: Contact Huntner Fans to receive any firmware updates.**

### 11.2 BACnet: Setting Network\_Number for More Than One ProtoNode on the Subnet

For both BACnet MS/TP and BACnet/IP, if more than one ProtoNode is connected to the same subnet, they must be assigned unique Network\_Number values.

On the main Web Configuration screen, update the BACnet Network Number field and click submit. The default value is 50.

network_nr	<b>BACnet Network Number</b> This sets the BACnet network number of the Gateway. (1 - 65535)	<input type="text" value="50"/>	<input type="button" value="Submit"/>
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### 11.3 Mounting

The gateway can be mounted using the DIN rail mounting bracket on the back of the unit.



### 11.4 Certification

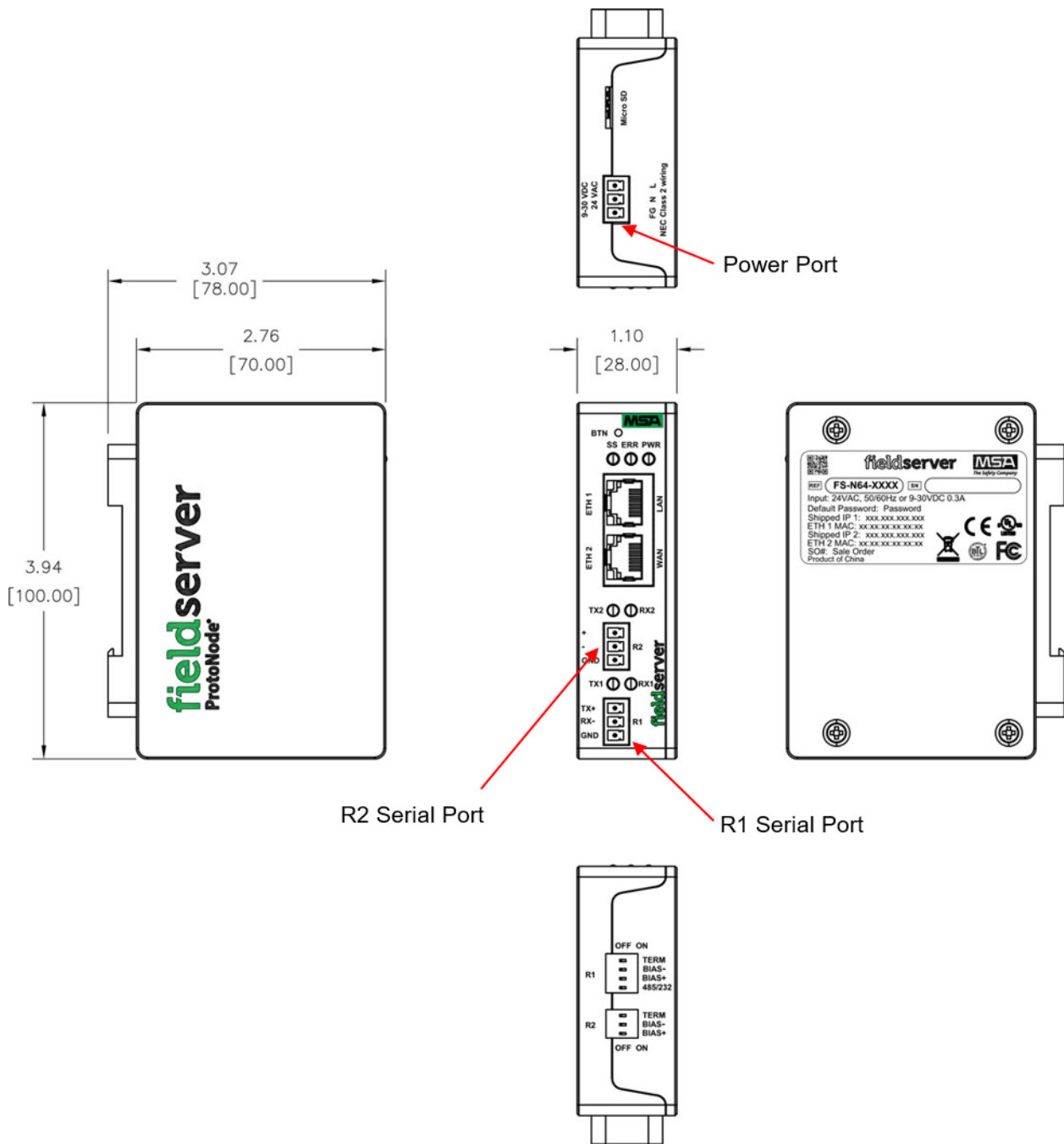
#### BTL Mark – BACnet Testing Laboratory



The BTL Mark on the FieldServer 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](http://www.BACnetInternational.net) for more information about the BACnet Testing Laboratory. Click [here](#) for the BACnet PIC Statement. *BACnet is a registered trademark of ASHRAE.*

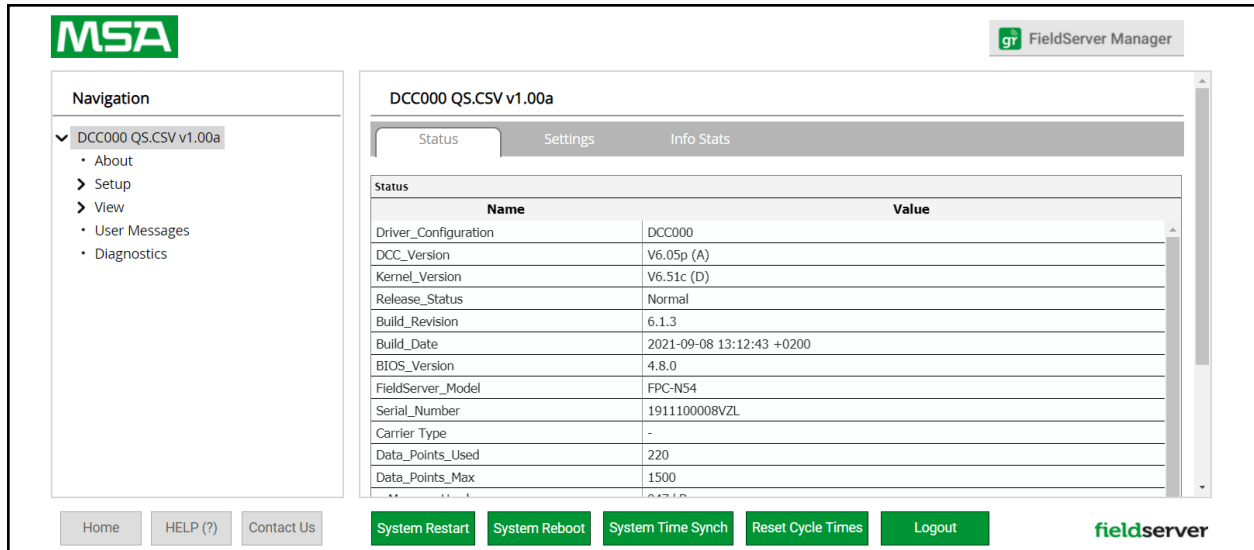
## 11.5 Physical Dimensions



## 11.6 Change Web Server Security Settings After Initial Setup

**NOTE:** Any changes will require a FieldServer reboot to take effect.

- Navigate to the FS-GUI page.
- Click Setup in the Navigation panel.



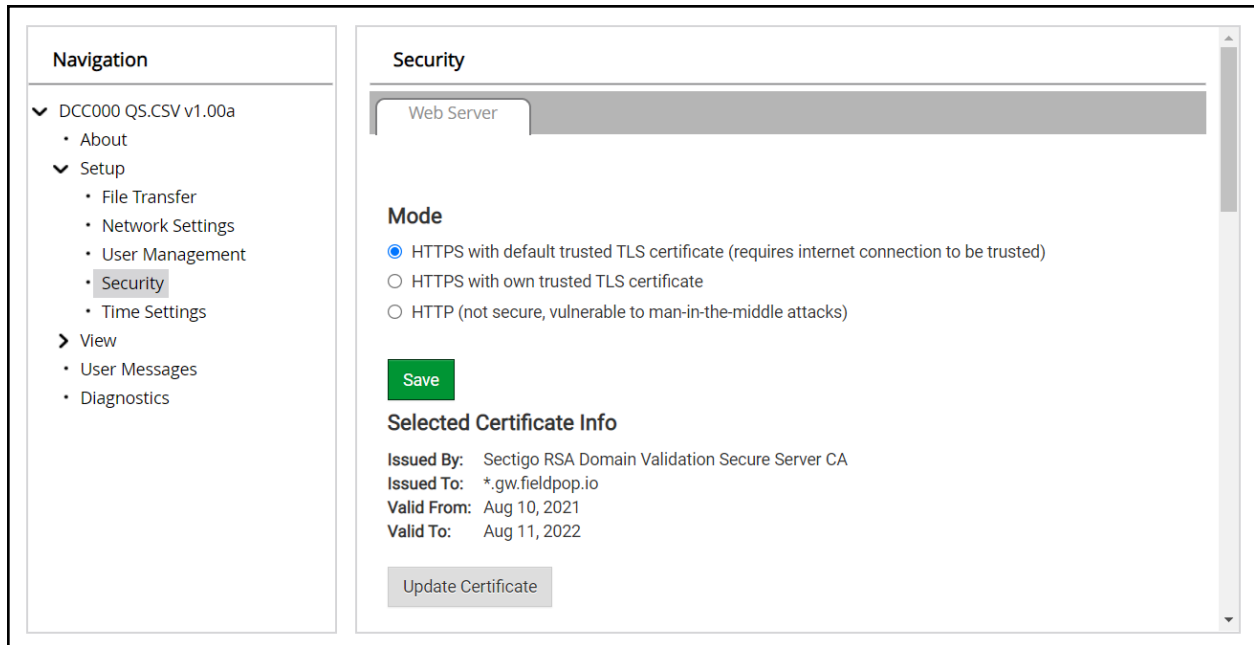
The screenshot displays the MSA FieldServer Manager interface. On the left is a navigation menu with options: About, Setup, View, User Messages, and Diagnostics. The main content area shows the 'Status' page for 'DCC000 QS.CSV v1.00a'. Below the page title are tabs for 'Status', 'Settings', and 'Info Stats'. A table lists system parameters and their values:

Name	Value
Driver_Configuration	DCC000
DCC_Version	V6.05p (A)
Kernel_Version	V6.51c (D)
Release_Status	Normal
Build_Revision	6.1.3
Build_Date	2021-09-08 13:12:43 +0200
BIOS_Version	4.8.0
FieldServer_Model	FPC-N54
Serial_Number	1911100008VZL
Carrier_Type	-
Data_Points_Used	220
Data_Points_Max	1500

At the bottom of the interface, there are several action buttons: Home, HELP (?), Contact Us, System Restart, System Reboot, System Time Synch, Reset Cycle Times, and Logout. The 'fieldserver' logo is visible in the bottom right corner.

## 11.6.1 Change Security Mode

- Click Security in the Navigation panel.

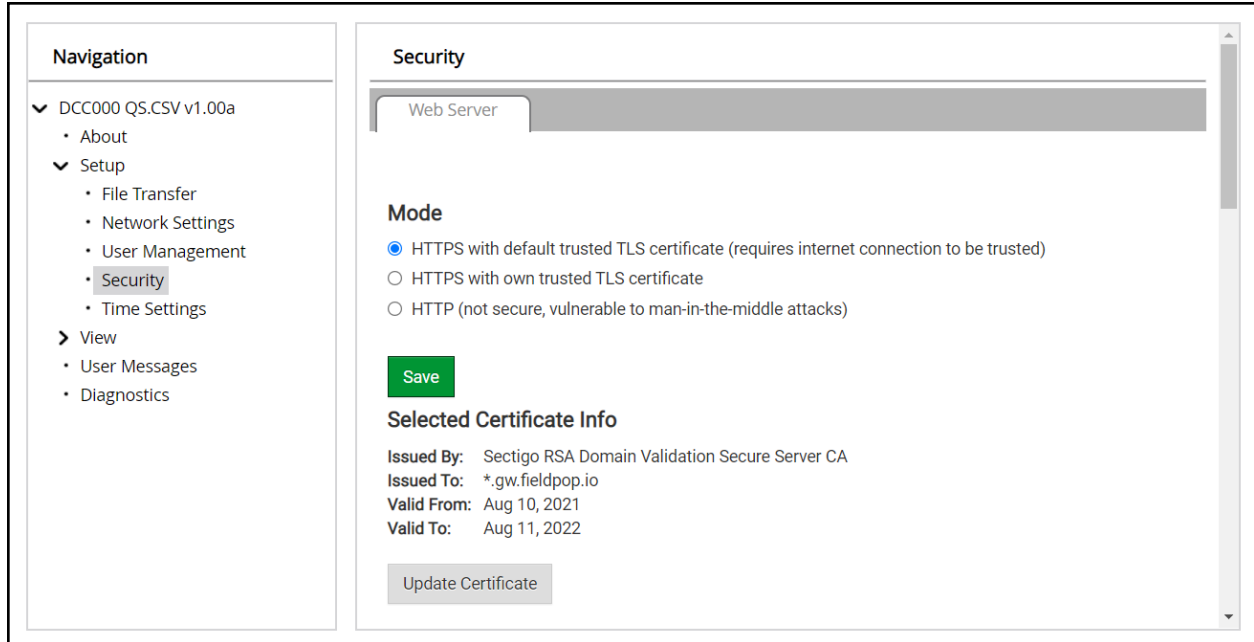


- Click the Mode desired.
  - If HTTPS with own trusted TLS certificate is selected, follow instructions in [Section 6.3.1 HTTPS with Own Trusted TLS Certificate](#)
- Click the Save button.

## 11.6.2 Edit the Certificate Loaded onto the FieldServer

**NOTE:** A loaded certificate will only be available if the security mode was previously setup as HTTPS with own trusted TLS certificate.

- Click Security in the Navigation panel.



- Click the Edit Certificate button to open the certificate and key fields.
- Edit the loaded certificate or key text as needed.
- Click Save.

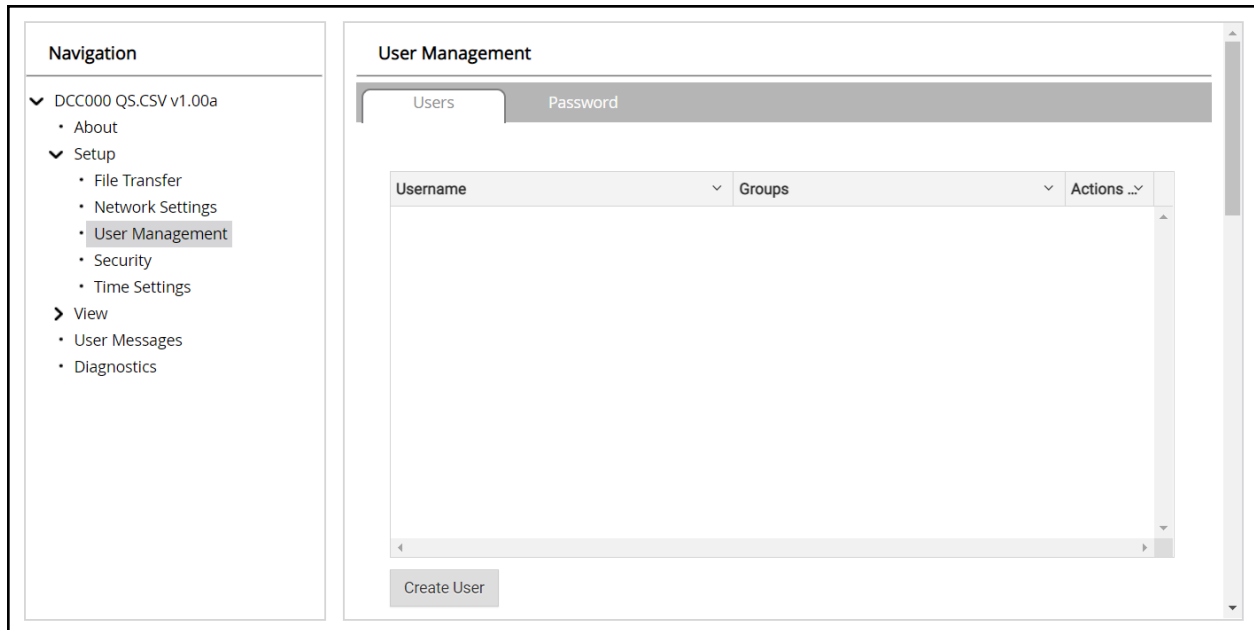
## 11.7 Change User Management Settings

- From the FS-GUI page, click Setup in the Navigation panel.
- Click User Management in the navigation panel.

**NOTE:** If the passwords are lost, the unit can be reset to factory settings to reinstate the default unique password on the label. For recovery instructions, see the [FieldServer Next Gen Recovery document](#). If the default unique password is lost, then the unit must be mailed back to the factory.

**NOTE:** Any changes will require a FieldServer reboot to take effect.

- Check that the Users tab is selected.



User Types:

**Admin** – Can modify and view any settings on the FieldServer.

**Operator** – Can modify and view any data in the FieldServer array(s).

**Viewer** – Can only view settings/readings on the FieldServer.



### 11.7.1 Create Users

- Click the Create User button.

**Create User**

**Username:**  
Enter a unique username

**Security Groups:**

- Admin
- Operator
- Viewer

**Password:** Weak  
Enter password

Show Passwords

**Confirm Password:**  
Confirm password

Generate Password

Create Cancel

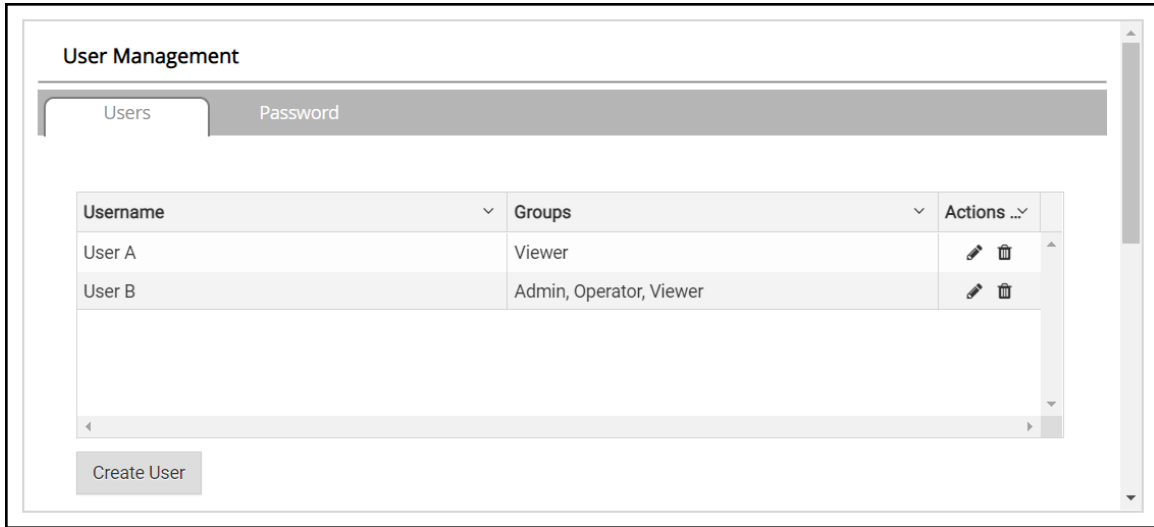
- Enter the new User fields: Name, Security Group and Password.
  - **User details are hashed and salted**

**NOTE:** The password must meet the minimum complexity requirements. An algorithm automatically checks the password entered and notes the level of strength on the top right of the Password text field.

- Click the Create button.
- Once the Success message appears, click OK.

## 11.7.2 Edit Users

- Click the pencil icon next to the desired user to open the User Edit window.



- Once the User Edit window opens, change the User Security Group and Password as needed.

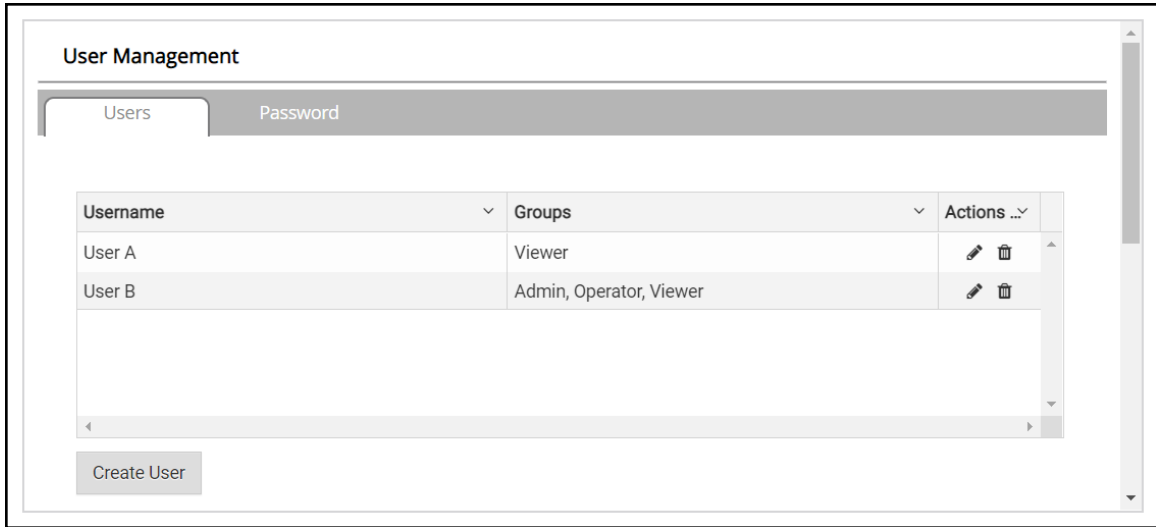
The 'Edit User' dialog box shows the following fields and options:

- Username:** Text input field containing 'User A'.
- Security Groups:** Three checkboxes: 'Admin' (unchecked), 'Operator' (unchecked), and 'Viewer' (checked).
- Password:** Text input field containing 'Optional'.
- Show passwords
- Confirm Password:** Text input field containing 'Optional'.
- 
- (green)
- 

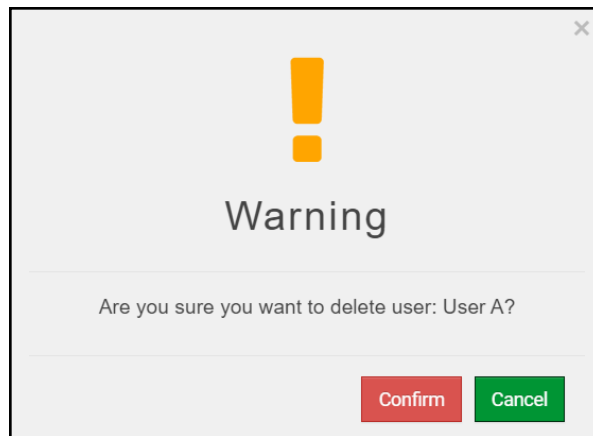
- Click Confirm.
- Once the Success message appears, click OK.

### 11.7.3 Delete Users

- Click the trash can icon next to the desired user to delete the entry.

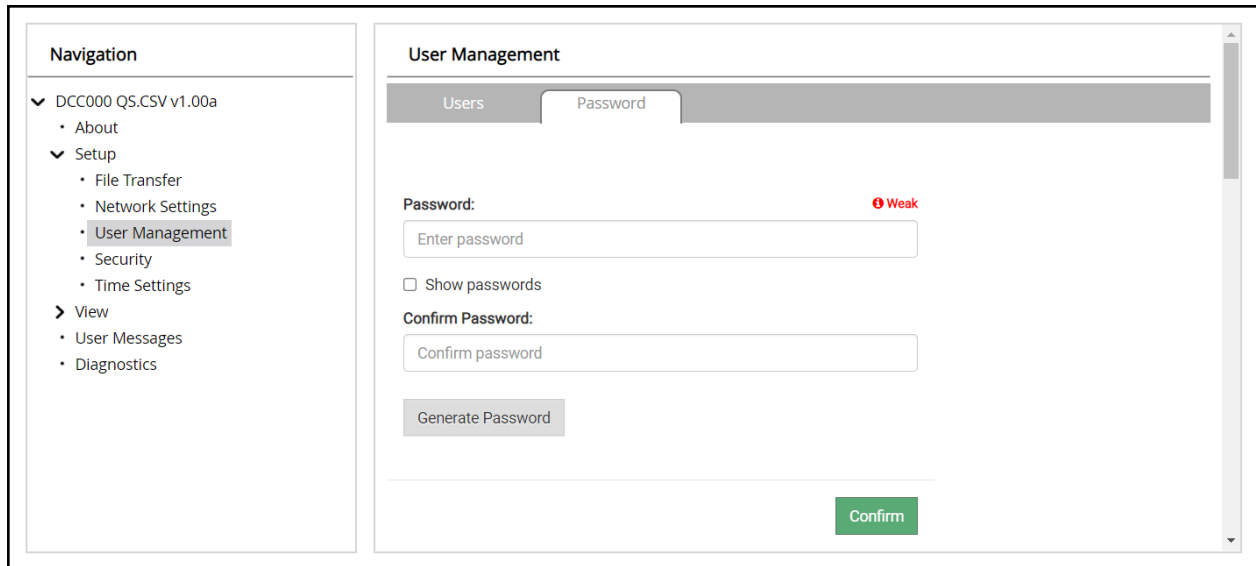


- When the warning message appears, click Confirm.



## 11.7.4 Change FieldServer Password

- Click the Password tab.



The screenshot shows a web interface for 'User Management' with two tabs: 'Users' and 'Password'. The 'Password' tab is active. On the left is a 'Navigation' sidebar with a tree structure: 'DCC000 QS.CSV v1.00a' (expanded) containing 'About', 'Setup' (expanded) containing 'File Transfer', 'Network Settings', 'User Management' (highlighted), 'Security', and 'Time Settings', and 'View' containing 'User Messages' and 'Diagnostics'. The main content area has a 'Password:' label with a red 'Weak' indicator and a text input field containing 'Enter password'. Below it is a 'Show passwords' checkbox. A 'Confirm Password:' label is followed by a text input field containing 'Confirm password'. A 'Generate Password' button is located below the confirm field. At the bottom right of the main area is a green 'Confirm' button.

- Change the general login password for the FieldServer as needed.

**NOTE:** The password must meet the minimum complexity requirements. An algorithm automatically checks the password entered and notes the level of strength on the top right of the Password text field.

## 11.8 FieldServer Manager Connection Warning Message

- If a warning message appears instead of the page as shown below, follow the suggestion that appears on screen.
  - If the FieldServer cannot reach the server, the following message will appear

### Grid FieldServer Manager Registration

**Grid FieldServer Manager™ Server Unreachable**

The device is unable to connect to the Grid FieldServer Manager server.

The following network issues have been detected. Correcting them might resolve connectivity to the server:

- Could not ping Gateway [ 192.168.2.1 ]
- Could not ping Domain Name Server 1 [ 8.8.8.8 ]
- Could not ping Domain Name Server 2 [ 8.8.4.4 ]

Ensure your network firewall is configured to allow this device to access the Grid FieldServer Manager server:

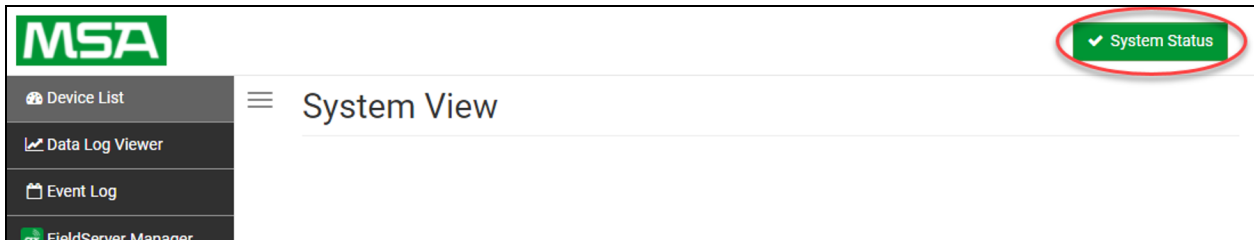
- Error Code: **EALAGAIN**
- FieldServer MAC address: **00:50:4E:60:6C:E8**
- Allow HTTPS communications to the following domains on **port 443**:
  - **www.fieldpop.io**
  - **ts.fieldpop.io**

- Follow the directions presented in the warning message.
  - Go to the network settings by clicking the Settings tab and then click the Network tab
  - Check with the site's IT support that the DNS settings are setup correctly
  - Ensure that the FieldServer is properly connected to the Internet

**NOTE:** If changes to the network settings are done, remember to click the Save button. Then power cycle the FieldServer by clicking on the Confirm button in the window and click on the bolded "Restart" text in the yellow pop-up box that appears in the upper right corner of the screen.

## 11.9 System Status Button

The System Status Button can be found on any page of the web apps. This shows the level of alert/functionality for the customer device. This is an aggregate of the Web App page's resource usage upon the local PC or mobile device, connectivity and device alert level.



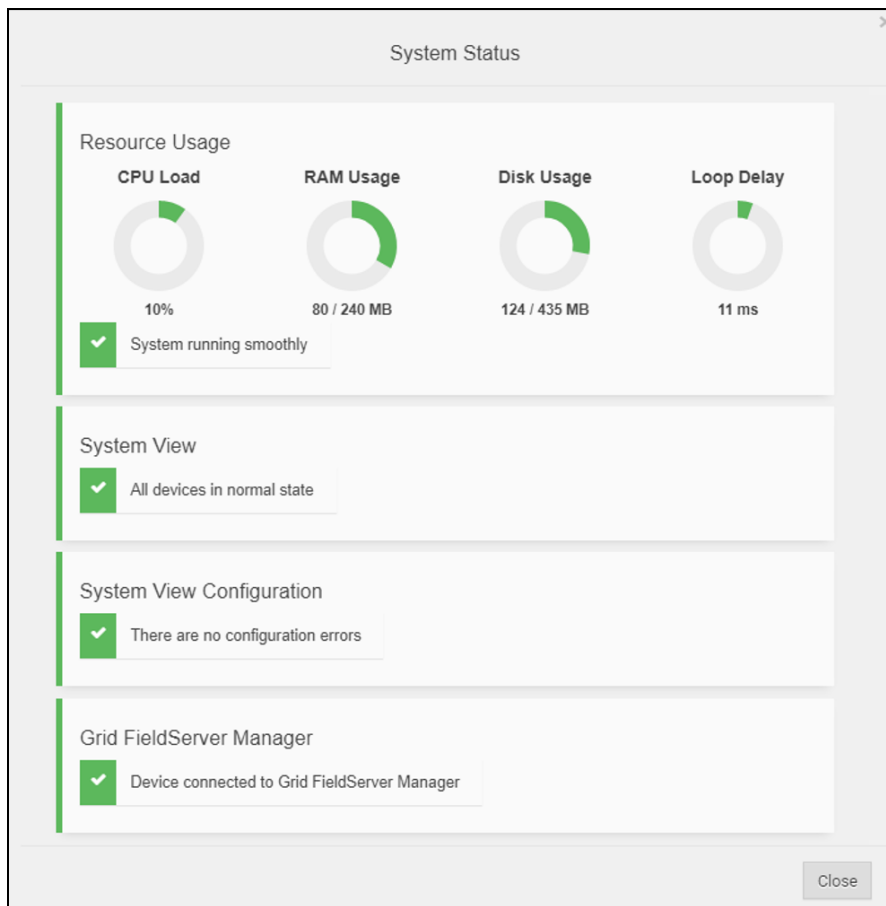
The color of the button represents the status of one to all three systems:

Green – Normal status

Yellow – Warning status

Red – Alarm status

Click on the System Status Button to open the System Status window, showing more details on the status of each system.



**NOTE:** If it was selected to opt out of the FieldServer Manager, the Grid FieldServer Manager status will not appear in the System Status window. This means the status will show as green even if the gateway is not connected to the FieldServer Manager.

## 12 Vendor Information – Huntner Fans

### 12.1 Yaskawa Modbus RTU or Modbus TCP/IP Mappings to BACnet, Metasys N2 and Modbus RTU

Point Name	BACnet Object Type	BACnet Object ID	N2 Data Type	N2 Address	Modbus Register
Com Status	BI	0	DI	1	1
CommandXXX	AV	1	AO	1	1
SpeedCmdXXX	AV	2	AO	2	2
SpeedMonXXX	AI	3	AI	3	65
FaultMonXXX	AI	4	AI	4	128
FanXXX/CommLossTimeout	AV	5	AO	5	1012
FanXXX/Current	AI	6	AI	6	8199
FanXXX/FireRelay	BI	7	DI	7	43.2
FanXXX/FireRelayFunction	AV	8	AO	8	1024
FanXXX/FreqRefSel	AV	9	AO	9	384
FanXXX/ip1	AV	10	AO	10	997
FanXXX/ip2	AV	11	AO	11	998
FanXXX/ip3	AV	12	AO	12	999
FanXXX/ip4	AV	13	AO	13	1000
FanXXX/RunCmdSel	AV	14	AO	14	385
FanXXX/sn1	AV	15	AO	15	1001
FanXXX/sn2	AV	16	AO	16	1002
FanXXX/sn3	AV	17	AO	17	1003
FanXXX/sn4	AV	18	AO	18	1004
FanXXX/Write	AV	19	AO	19	2304

### 12.2 Mitsubishi Modbus RTU or Modbus TCP/IP Mappings to BACnet, Metasys N2 and Modbus RTU

Point Name	BACnet Object Type	BACnet Object ID	N2 Data Type	N2 Address	Modbus Register
Com Status	BI	0	DI	1	10001
InvXXX Inverter Reset	AV	1	AO	1	40002
InvXXX Parameter Clear	AV	2	AO	2	40003
InvXXX All Parameter Clear	AV	3	AO	3	40004
InvXXX Parameter Clear	AV	4	AO	4	40006
InvXXX All Parameter Clear	AV	5	AO	5	40007
InvXXX Inverter Status Run/Stop	BV	6	DO	6	40009.0
InvXXX Inverter Status Forward Rot	BV	7	DO	7	40009.1
InvXXX Inverter Status Reverse Rot	BV	8	DO	8	40009.2
InvXXX Inverter Status SL/RH	BV	9	DO	9	40009.3
InvXXX Inverter Status OL/RM	BV	10	DO	10	40009.4
InvXXX Inverter Status IPF/RL	BV	11	DO	11	40009.5
InvXXX Inverter Status FU/JOG	BV	12	DO	12	40009.6
InvXXX Inverter Status ABC1/RT	BV	13	DO	13	40009.7
InvXXX Inverter Status ABC2/AU	BV	14	DO	14	40009.8
InvXXX Inverter Status CS	BV	15	DO	15	40009.9
InvXXX Inverter Status MRS	BV	16	DO	16	40009.10
InvXXX Inverter Status STOP	BV	17	DO	17	40009.11

Point Name	BACnet Object Type	BACnet Object ID	N2 Data Type	N2 Address	Modbus Register
InvXXX Inverter Status RES	BV	18	DO	18	40009.12
InvXXX Op Mode/Inverter Set	AV	19	AO	19	40010
InvXXX Running Freq (RAM Value)	AV	20	AO	20	40014
InvXXX Running Freq (EEPROM Value)	AV	21	AO	21	40015
InvXXX Output Frequency/Speed	AI	22	AI	22	40201
InvXXX Output Current	AI	23	AI	23	40202
InvXXX Output Voltage	AI	24	AI	24	40203
InvXXX Freq Setting Value/Spd Set	AI	25	AI	25	40205
InvXXX Running Speed	AI	26	AI	26	40206
InvXXX Converter Output Voltage	AI	27	AI	27	40208
InvXXX Regenerative Brake Duty	AI	28	AI	28	40209
InvXXX Elec Thrm Rel Func Load Fac	AI	29	AI	29	40210
InvXXX Output Current Peak Value	AI	30	AI	30	40211
InvXXX Conv Output Volt Peak Value	AI	31	AI	31	40212
InvXXX Input Power	AI	32	AI	32	40213
InvXXX Output Power	AI	33	AI	33	40214
InvXXX Input Terminal Status	AI	34	AI	34	40215
InvXXX Output Terminal Status	AI	35	AI	35	40216
InvXXX Load Meter	AI	36	AI	36	40217
InvXXX Cum energization Time	AI	37	AI	37	40220
InvXXX Actual Operation Time	AI	38	AI	38	40223
InvXXX Motor Load Factor	AI	39	AI	39	40224
InvXXX Cumulative Power	AI	40	AI	40	40225
InvXXX Power Saving Effect	AI	41	AI	41	40250
InvXXX Cumulative Saving Power	AI	42	AI	42	40251
InvXXX PID Setpoint	AI	43	AI	43	40252
InvXXX PID Measured Value	AI	44	AI	44	40253
InvXXX PID Deviation	AI	45	AI	45	40254
InvXXX PTC Thermistor Resistance	AI	46	AI	46	40264
InvXXX Cumulative Power U32	AI	47	AI	47	40277/40278
InvXXX Cumulative Power Flt	AI	48	AI	48	40279/40280
InvXXX Fault History 1	AI	49	AI	49	40501
InvXXX Fault History 2	AI	50	AI	50	40502
InvXXX Fault History 3	AI	51	AI	51	40503
InvXXX Fault History 4	AI	52	AI	52	40504
InvXXX Fault History 5	AI	53	AI	53	40505
InvXXX Fault History 6	AI	54	AI	54	40506
InvXXX Fault History 7	AI	55	AI	55	40507
InvXXX Fault History 8	AI	56	AI	56	40508
InvXXX Inverter Status Fault Occur	BI	57	DI	57	40009.15
InvXXX Inverter Status FWD CMD	BV	58	DO	58	40009.1
InvXXX Inverter Status REV CMD	BV	59	DO	59	40009.2



### 12.3 TRAK Modbus RTU or Modbus TCP/IP Mappings to BACnet, Metasys N2 and Modbus RTU

Point Name	BACnet Object Type	BACnet Object ID	N2 Data Type	N2 Address	Modbus Register
InvXXX Com Status Ok	BI	0	DI	1	10001
InvXXX Fan Controller Reset	BV	1	DO	1	40002.0
InvXXX Stop/Run Status	BI	2	DI	2	40009.0
InvXXX Fan Downdraft Direction Status	BI	3	DI	3	40009.1
InvXXX Fan Updraft Direction Status	BI	4	DI	4	40009.2
InvXXX Fan Fault Status	BI	5	DI	5	40009.15
InvXXX Fan Speed Command	AV	6	AO	6	40014
InvXXX Fan Output Speed Monitor	AI	7	AI	7	40201
InvXXX LED Off	BI	8	DI	8	40309.0
InvXXX LED On	BI	9	DI	9	40309.1
InvXXX LED Brightness Command	AV	10	AO	10	40314
InvXXX Fault History 1	AI	11	AI	11	40501
InvXXX Fault History 2	AI	12	AI	12	40502
InvXXX Fault History 3	AI	13	AI	13	40503
InvXXX Fault History 4	AI	14	AI	14	40504
InvXXX Fault History 5	AI	15	AI	15	40505
InvXXX Fault History 6	AI	16	AI	16	40506
InvXXX Fault History 7	AI	17	AI	17	40507
InvXXX Fault History 8	AI	18	AI	18	40508
InvXXX Stop Fan CMD	BV	19	DO	19	40009.0
InvXXX Fan Updraft Dir CMD	BV	20	DO	20	40009.1
InvXXX Fan Downdraft Dir CMD	BV	21	DO	21	40009.2
InvXXX LED Off CMD	BV	22	DO	22	40309.0
InvXXX LED On CMD	BV	23	DO	23	40309.1

## 12.4 Specifications



<b>Electrical Connections</b>	One 3-pin Phoenix connector with: RS-485/RS-232 (Tx+ / Rx- / gnd) One 3-pin Phoenix connector with: RS-485 (+ / - / gnd) One 3-pin Phoenix connector with: Power port (+ / - / Frame-gnd) Two Ethernet 10/100 BaseT port
<b>Power Requirements</b>	<i>Input Voltage:</i> 9-30VDC or 24VAC <i>Max Power:</i> 3 Watts <i>Current draw:</i> 24VAC 0.125A 9-30VDC 0.25A @12VDC
<b>Approvals</b>	FCC Part 15 C, UL 62368-1, CAN/CSA C22.2 No. 62368-1, EN IEC 62368-1, DNP 3.0 and Modbus conformance tested, BTL Marked, WEEE compliant, RoHS compliant, REACH compliant, UKCA and CE compliant, ODVA conformant, CAN ICES-003(B) / NMB-003(B)
<b>Physical Dimensions</b>	4 x 1.1 x 2.7 in (10.16 x 2.8 x 6.8 cm)
<b>Weight</b>	0.4 lbs (0.2 Kg)
<b>Operating Temperature</b>	-20°C to 70°C (-4°F to 158°F)
<b>Humidity</b>	10-95% RH non-condensing

**NOTE:** Specifications subject to change without notice.

## 12.5 Warnings

### FCC Class B

**NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## 12.6 Compliance with EN IEC 62368-1

For EN IEC compliance, the following instructions must be met when operating the 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 the FieldServer
- 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.

### **13 Limited 2 Year Warranty**

MSA Safety warrants its products to be free from defects in workmanship or material under normal use and service for two years after date of shipment. MSA Safety 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 MSA Safety 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 MSA Safety'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 MSA Safety'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, MSA Safety 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 MSA Safety for damages including, but not limited to, consequential damages arising out of/or in connection with the use or performance of the product.