



## Operating Manual

# ProtoAir FPA-W44 for Interfacing Cooper Lighting Solutions Products



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# Technical Support

Thank you for purchasing the ProtoAir for Cooper Lighting Solutions.

Please call Cooper Lighting Solutions for technical support of the ProtoAir product.

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

Support Contact Information:

Cooper Lighting Solutions  
1121 Highway 74 South  
Peachtree City, GA 30269

Customer Service:

Phone: (770) 486-4800

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

For online help go to <https://www.cooperlighting.com/global/contact-us>.

# Quick Start Guide

1. Record the information about the unit. ([Section 2.1 Record Identification Data](#))
2. Check that the ProtoAir and customer device COM settings match. ([Section 2.3 Configuring Device Communications](#))
3. **If using a serial field protocol:**  
Connect the ProtoAir 3 pin RS-485 R2 port to the field protocol cabling ([Section 3.1 Wiring Field Port to RS-485 Serial Network](#)).
4. Connect power to ProtoAir 3 pin power port. ([Section 4 Power up the Gateway](#))
5. Connect a PC to the ProtoAir via Ethernet cable. ([Section 5 Connect the PC to the Gateway](#))
6. Setup Web Server Security and login via web browser. ([Section 6 Setup Web Server Security](#))
7. Configure the ProtoAir to connect to the local network. ([Section 7 Setup Network](#))
8. Select the System to use. ([Section 8 Select System](#))
9. Set the field protocol settings via the Web Configurator. ([Section 9.1 Select BMS Protocol and Configure Settings](#))
10. Greengate/WaveLinx: Use the Discovery function to configure the ProtoAir and to find any light panels connected to the device. ([Section 9.2 Greengate/WaveLinx: Discover and Configure Light Panels Connected to the Gateway](#))
11. Fifth Light: Review System Status and potential errors. ([Section 9.3 Fifth Light: System Status](#))

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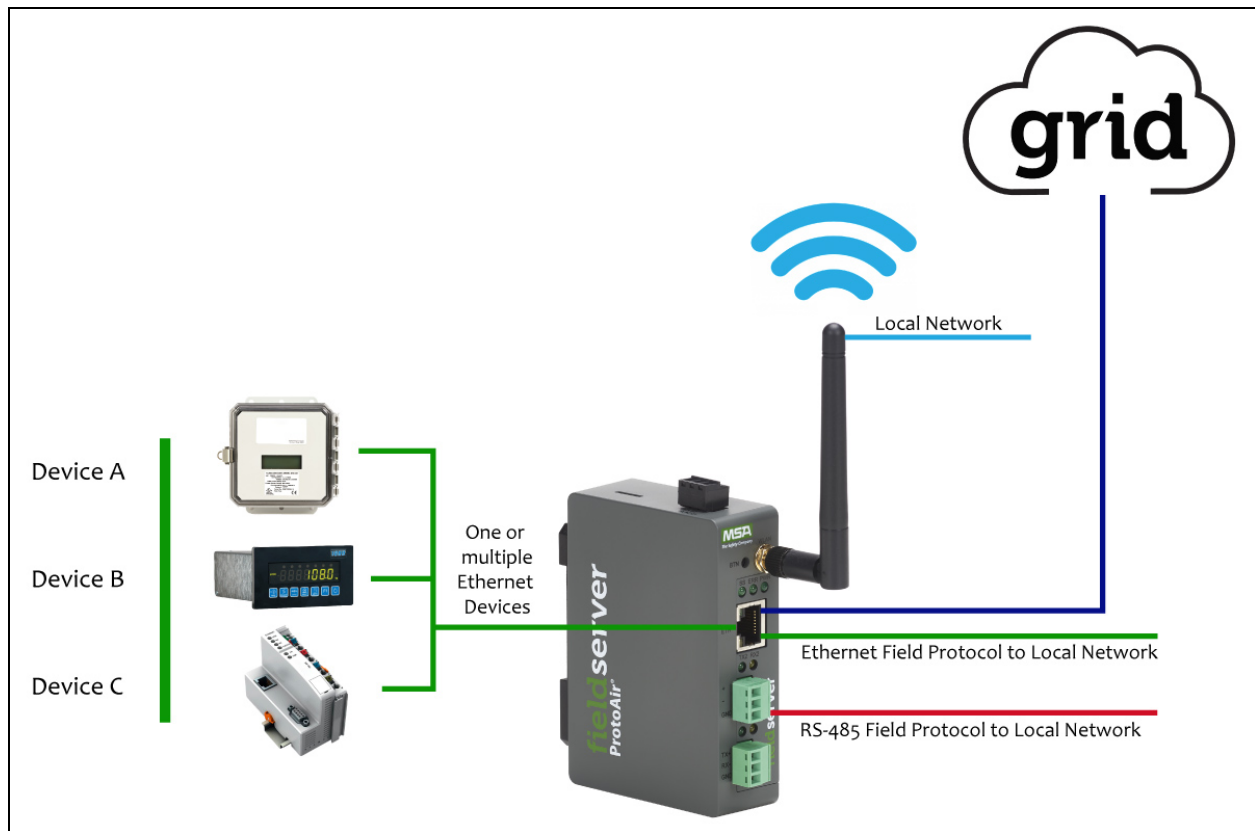
# 1 Introduction

## 1.1 ProtoAir Gateway

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

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

### FPA-W44 Connectivity Diagram:



The ProtoAir 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 ProtoAir. 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 ProtoAir

### 2.1 Record Identification Data

Each ProtoAir 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
ProtoAir	FPA-W44-1757

- FPA-W44 units have the following 3 ports: 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 ProtoAir cannot exceed:

Part number	Total Registers
FPA-W44-1757	10,000

Greengate Devices	Point Count Per Device
ControlKeeper 2 & 4	161
ControlKeeper T	213
Room Controller	115
ControlKeeper 4A	181
ControlKeeper M/MB	225

WaveLinx Wired Functionality	Point Count
Scene	2
Channel	2

**NOTE: Fifth light points determined by functionality selections (i.e. unit level, workpoint, workpoint power consumption, occupancy sensors and daylight sensors).**

## 2.3 Configuring Device Communications

- The device needs to be on the same IP subnet as the ProtoAir and the configuration PC.
- Record the following device information for Greengate and WaveLinx Wired setup:
  - IP Address
  - IP port
  - Panel Address (Greengate only)
  - Number of Panels (Greengate only)

**NOTE:** This information is required for [Section 9 Configure the ProtoAir](#).

**NOTE:** The WaveLinx Wired application requires a Virtual Item file to load device details.

**NOTE:** These parameters are not required for Fifth Light application.

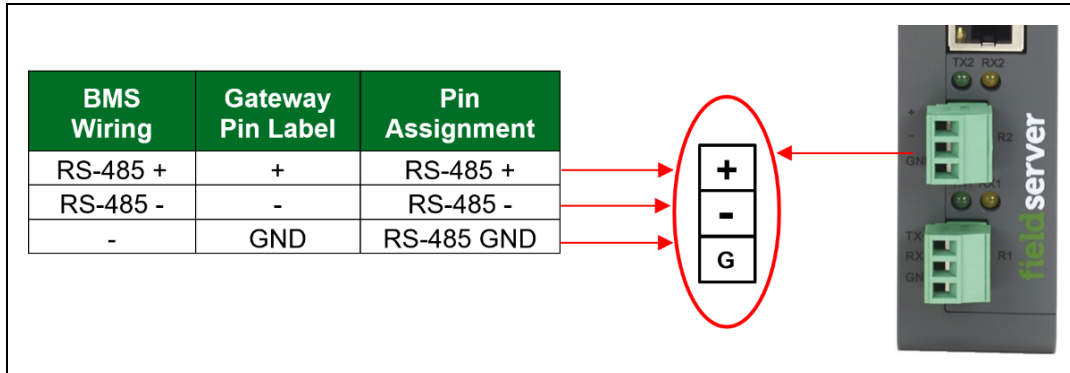
**NOTE:** Cooper Lighting Solutions does not support the use of Wi-Fi on this device.



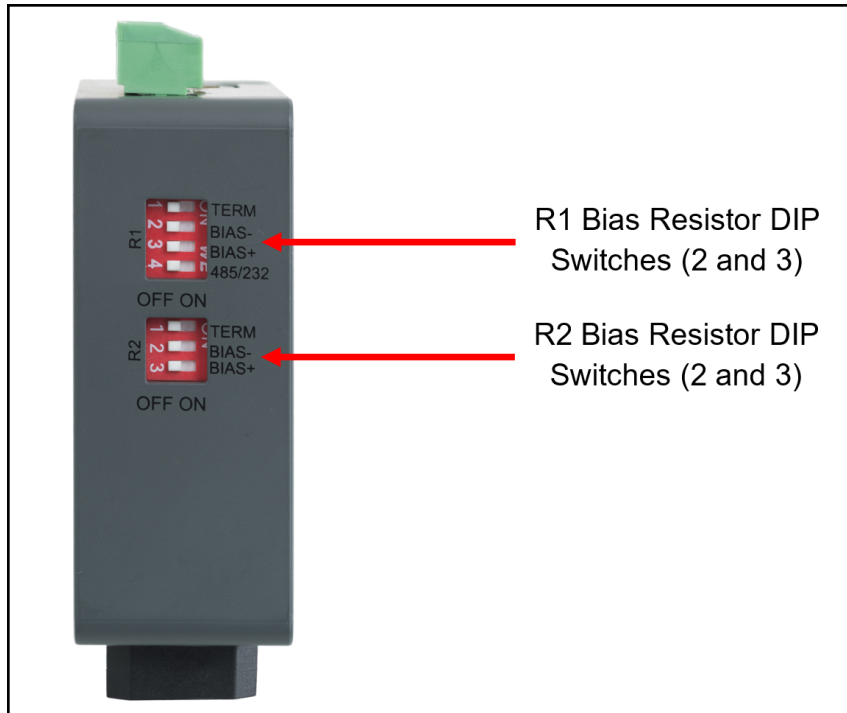
### 3 Interfacing ProtoAir to Devices

#### 3.1 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.



### 3.2 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.

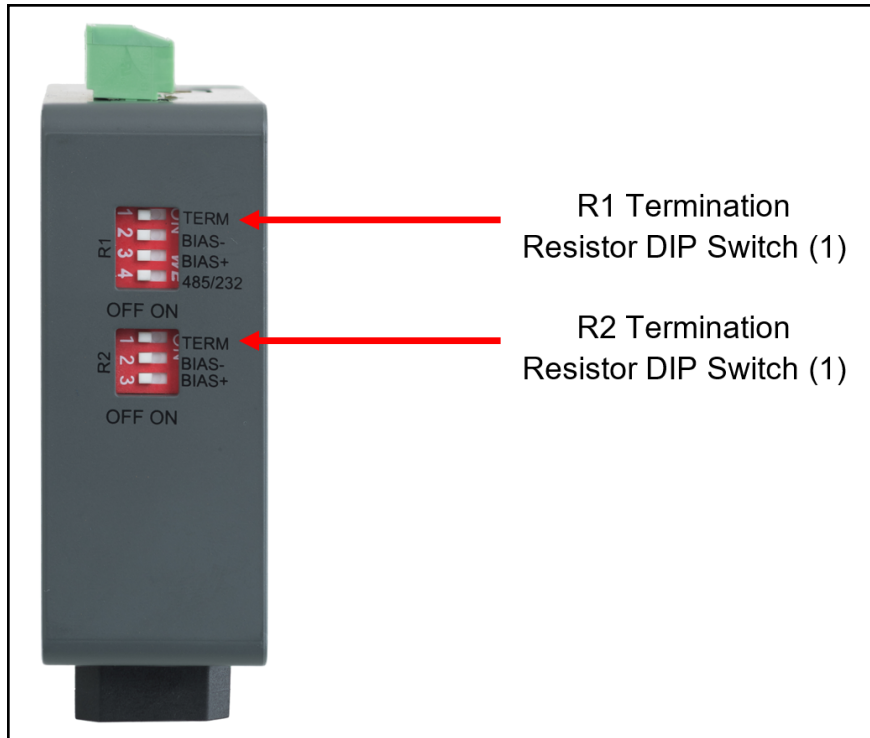
The bias resistor is 510 ohms which is in line with the BACnet spec. It should only be enabled at one point on the bus (for example, on the field port were there are very weak bias resistors of 100k). Since there are no jumpers, many ProtoAirs can be put on the network without running into the bias resistor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

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

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

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

### 3.3 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.**

The 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. The R1 termination resistor is 120 Ohms.

**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:

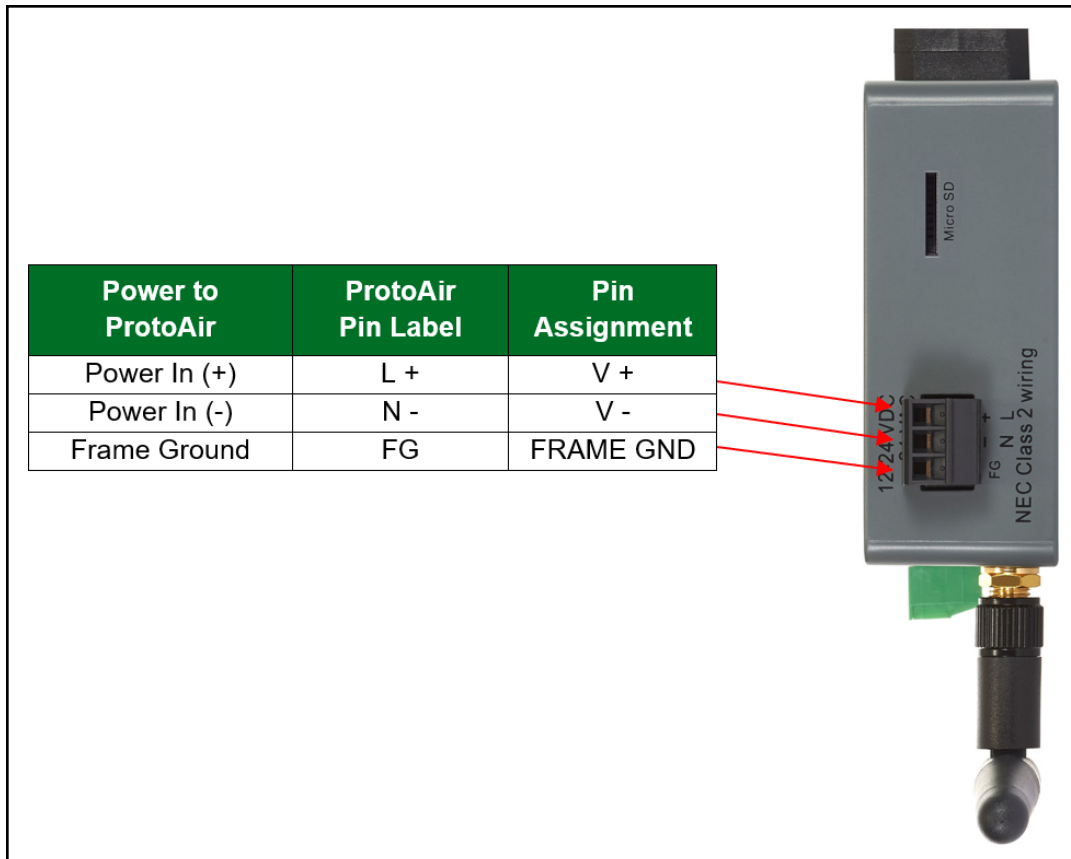
Power Requirement for ProtoAir External Gateway		
	Current Draw Type	
ProtoAir Family	12VDC	24VDC/AC
FPA -W44 (Typical)	250mA	125mA

**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.**

Apply power to the ProtoAir as shown below. Ensure that the power supply used complies with the specifications provided in [Section 15 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.

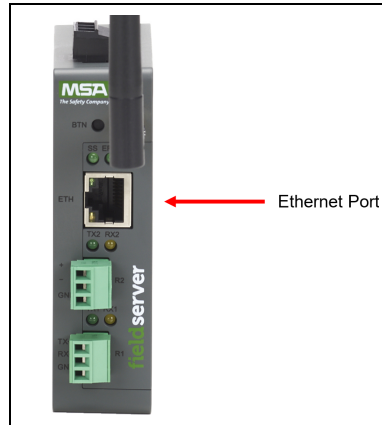
**NOTE: Floating AC Power Supplies are supported.**



## 5 Connect the PC to the Gateway

### 5.1 Connecting to the Gateway via Ethernet


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



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

The default IP Address for the ProtoAir is **192.168.1.24**, Subnet Mask is **255.255.255.0**. If the PC and ProtoAir 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:

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.

### 5.2 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**.

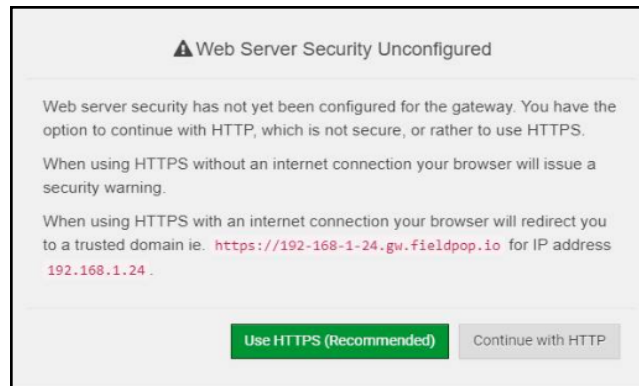
**NOTE:** If the IP Address of the ProtoAir has been changed, the IP Address can be discovered using the FS Toolbox utility. See Section [12.1 Lost or Incorrect IP Address](#) for instructions.

## 6 Setup Web Server Security

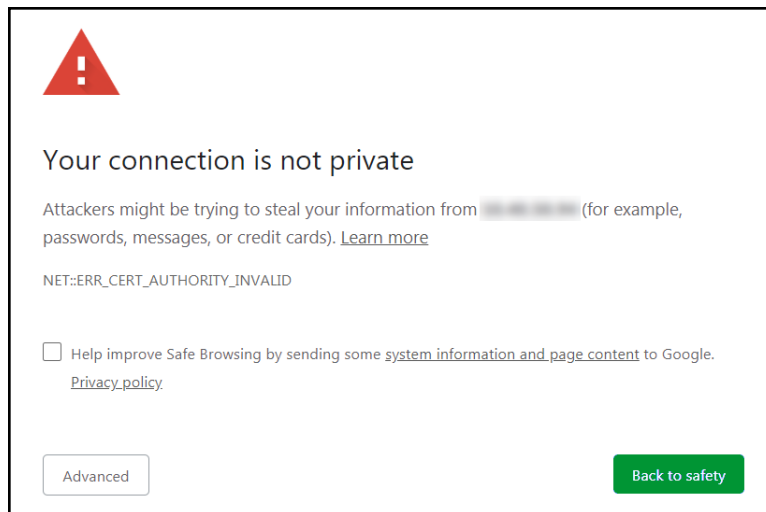
### 6.1 Login to the FieldServer

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.

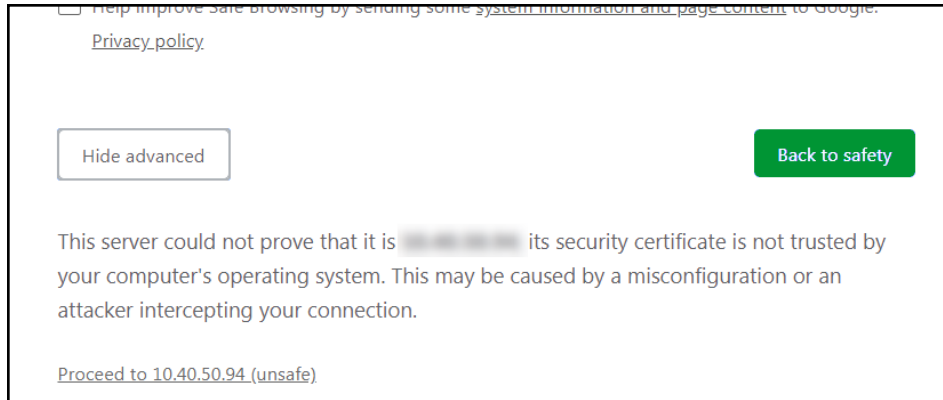
- When the Web Server Security Unconfigured window appears, read the text and choose whether to move forward with HTTPS or HTTP.



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

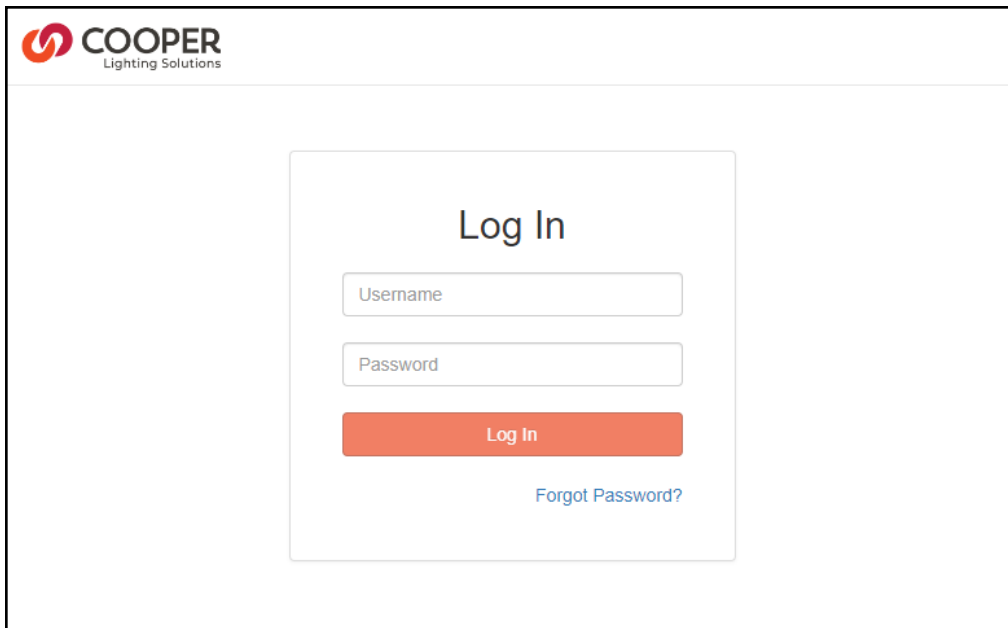


- Additional text will expand below the warning, click the underlined text to go to the IP Address. In the example below this text is “[Proceed to <FieldServer IP> \(unsafe\)](#)”.



- 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 [13.7 Change User Management Settings](#).

## 6.2 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 13.6 Change Web Server Security Settings After Initial Setup](#).

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



## 6.2.1 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+gEr0IQo2wvmhyc7L22UXse1NoOfUJ2Zq0Eu1Vvtu
JRryaMWIRFEWuuzMGZtKFWWC+8q2JQsVcqiRWM7naoblEhOCMH+sKHJMCxDoXGt
vtZjpZUoAL51YXxWSVcyZdGiAP5e
-----END CERTIFICATE-----
```

### Private Key

```
sHB0zZoHr4YQSDk2BbYVzZbI0LDuKtc8+JiO3ooGjoTuHnqkeAj/fKfbTAsKeAzw
gKQe+H5UQNk0bdvZfOJrm6daDK2vDmR5k+juUUhEj5N49uplroB97MQgYotzqfT+
THlbpq5t1SIK617k04ObKmHF5l8fck+ru545sVmpeezh0m5j5SURYAZMvbq5daCu
J4l5NlIhbEvxRF4UK41ZDMCvujopCkBUWrb1a/3XXnDnM2K9xyz2wze998D6Wk46
+7aOFY9F+7j5lJmnkoS3GYtwCyH5jP+mPP1K6RnuiD019wwwGPb4dtN/RTnfd0eF
GYeVskl9fxxkxDOFtdWRZbM/rPin4tmO1Xf8HqONVN1x/iaMynOXG4cukoI4+VO
u0rZaUESll2zNkfrn7fAASm5NBWg202Cy9IAYnuujs3aALl5uGBEEK62oTMxlzx
-----END RSA PRIVATE KEY-----
```

### Private Key Passphrase

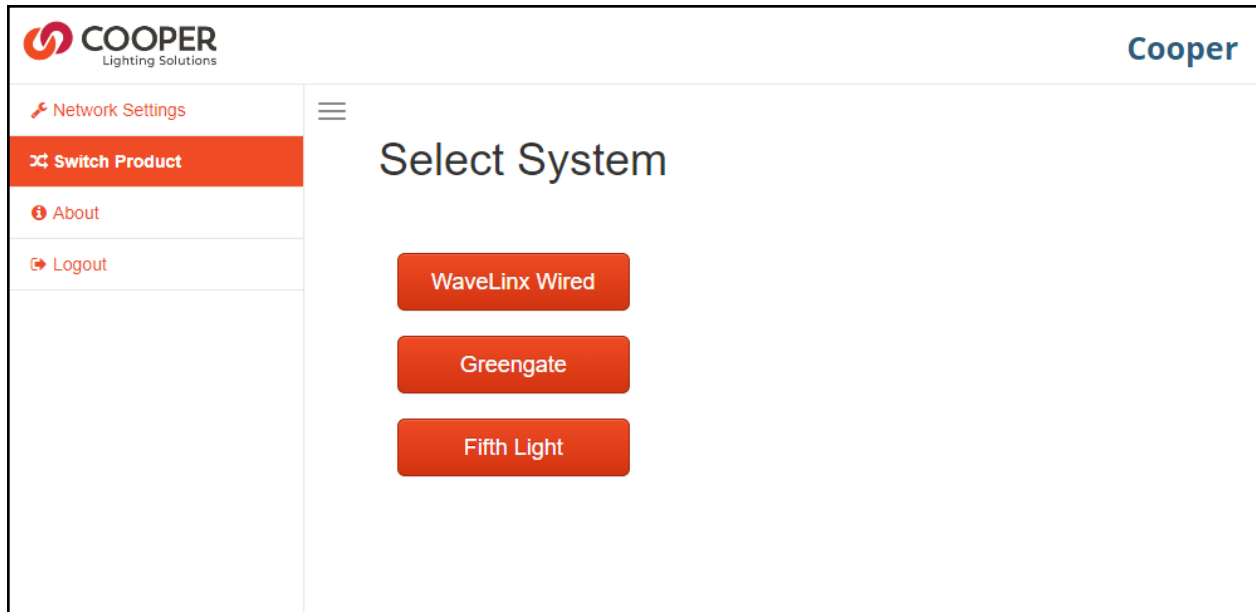
- Copy and paste the Certificate and Private Key text into their respective fields. If the Private Key is encrypted type in the associated Passphrase.
- Click Save.
- A “Redirecting” message will appear. After a short time, the FieldServer GUI will open.

## 6.2.2 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

From the Web Configurator landing page, click the Network Settings tab to open the Network Settings page for the ProtoAir.



## 7.1 Routing Settings

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

- 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.

## 7.2 Ethernet 1 Network Settings

The ETH 1 section contains the wired network settings. To change the FieldServer IP Settings, follow these instructions:

- Enable DHCP to automatically assign IP Settings or modify the IP Settings manually as needed, via these fields: IP Address, Netmask, Default Gateway, and Domain Name Server1/2.

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

**NOTE: The browser needs to be updated to the new IP Address of the FieldServer before the settings will be accessible again.**

ETH 1   WiFi Client   WiFi Access Point   Routing

Enable DHCP

IP Address  
10.40.50.92

Netmask  
255.255.255.0

Gateway  
10.40.50.1

Domain Name Server 1 (Optional)  
10.40.2.24

Domain Name Server 2 (Optional)  
10.15.130.15

Cancel   Save

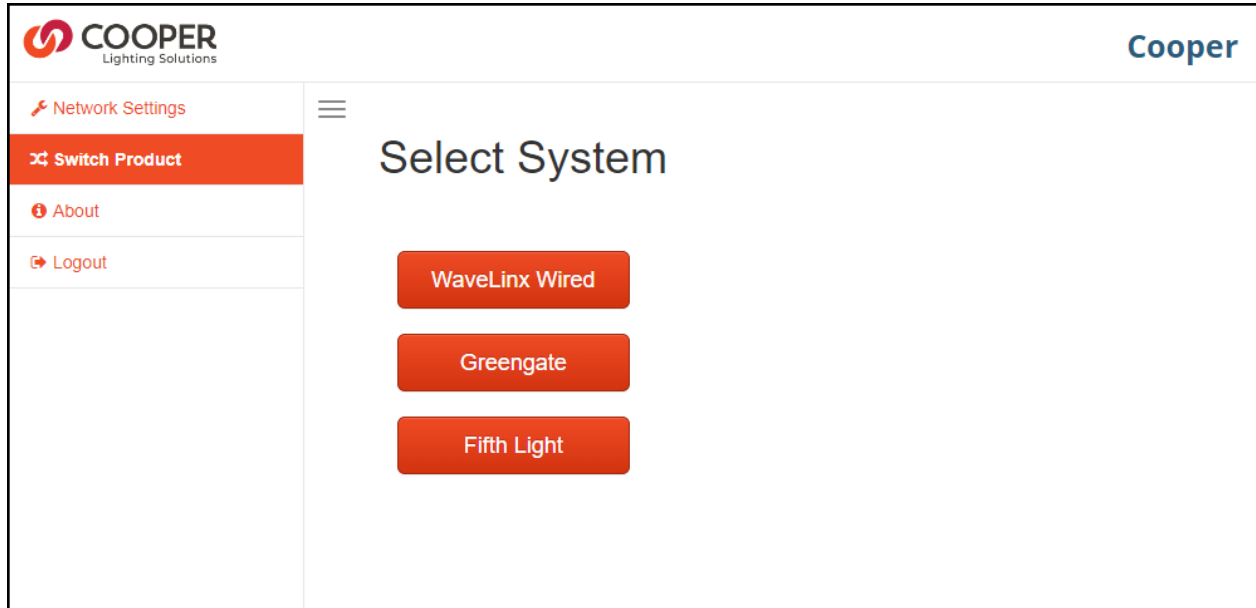
**Network Status**

Connection Status	✔ Connected
MAC Address	00:50:4e:60:01:fd
Ethernet Tx Msgs	498,827
Ethernet Rx Msgs	1,384,116
Ethernet Tx Msgs Dropped	0
Ethernet Rx Msgs Dropped	0

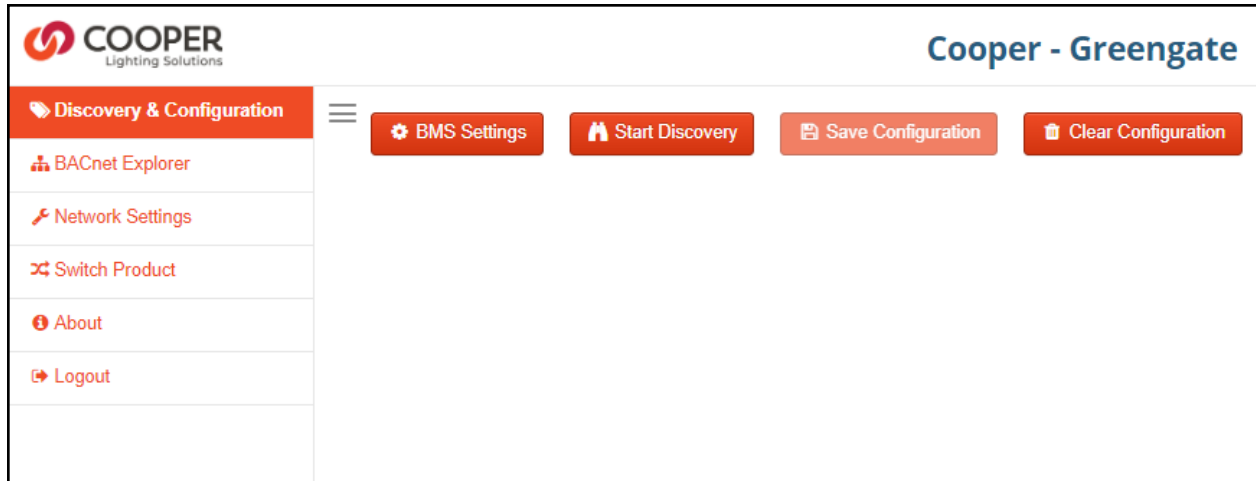
## 8 Select System

The Select System Page will appear the first time the FieldServer is accessed.

- Select the desired protocol.



- The Web Configurator landing page will now appear.



**NOTE:** If the wrong protocol was selected, click the Switch Product tab to reset the GUI and go back to the Select System Page.

## 9 Configure the ProtoAir

### 9.1 Select BMS Protocol and Configure Settings

- Click back to the Discovery & Configuration tab, and click the BMS Settings button to view or edit the Building Management System (BMS) Settings.
- Select the appropriate protocol and edit the settings as needed.
- Once completed, click Save.
- Click Yes and then Restart to save and restart the ProtoAir.

### BMS Protocol Settings

Select the BMS Protocol

BACnet IP

BACnet IP  
BACnet MS/TP  
Modbus TCP  
Modbus RTU

Connection	ETHER
------------	-------

Device Instance	80000
Name	Cooper Gateway
Location	-
Device Instance Offset	80001

Network Number	50010
IP Port	47808

Enable BBMD [Edit Broadcast Distribution Table](#)

Public IP Address	-
Public IP Port	
BBMD Connection IP Port	47809
BBMD Network Number	50011

External Network Number	50012
Internal Network Number	50013

Save Cancel

### 9.1.1 Set Device Instance for Any Lighting Panel Attached to the Device

The Device Instance can be set independently of the site administrator. As an example:

- A Device Instance is a BACnet Node-ID which is obtained by the network administrator.
- Each lighting panel connected to the Device will have its own BACnet Device Instance.
- The values allowed for a BACnet Device Instance can range from 1 to 4,194,303.
- With the default BACnet Device Instance value of 50,000 the Device Instances values generated will be within the range of 50,000 plus the incremental number of lighting panels that are connected to the ProtoAir. The first lighting panel will therefore be 50,000.
- To assign a specific Device Instance (or range); change the Device instance value to assigned value of the first lighting panel.
- The Web Configurator will be displayed as the landing page.

**BMS Protocol Settings**

Select the BMS Protocol

BACnet IP

**BACnet IP Settings**

Connection	ETH1
Device Instance	80000
Name	Cooper Gateway
Location	-
Device Instance Offset	80001
Network Number	50010
IP Port	47808

Enable BBMD

[Edit Broadcast Distribution Table](#)

### 9.1.2 BACnet MS/TP: Setting the MAC Address BACnet Network

- Only 1 MAC address is set for ProtoAir regardless of how many light panels are connected to ProtoAir.
- Set the BACnet MS/TP MAC address of the ProtoAir to a value between 1 to 127 (MAC Master Addresses); this is so that the BMS Front End can find the ProtoAir via BACnet discovery.

**NOTE: Never set a BACnet MS/TP MAC Address from 128 to 255. Addresses from 128 to 255 are Slave Addresses and cannot be discovered by BMS Front Ends that support auto discovery of BACnet MS/TP devices.**

Enter the following details into the web configuration as per Figure 26 below:

- Device Instance – Enter a range between 1 and 4,194,303 for the ProtoAir.
- Name – Enter a name for the ProtoAir.
- Location – Enter the location of the lighting panel.
- Device Instance Offset – Default of 50000 so that Device Instance begins at 50001.
- Network Number – Leave as default unless instructed by BMS integrator.
- Baud Rate – Select a value of 9600, 19200, 38400, or 76800.

#### BMS Protocol Settings

Select the BMS Protocol

BACnet MS/TP ▼

#### BACnet MS/TP Settings

Device Instance	80000
Name	Cooper Gateway
Location	-
Device Instance Offset	80001
Network Number	50014
Max Masters	127
Max Info Frames	1
MAC address	1
Connection	R1 <span style="float: right;">▼</span>
Baud Rate	9600 <span style="float: right;">▼</span>
Parity	None <span style="float: right;">▼</span>
Data Bits	8 <span style="float: right;">▼</span>
Stop Bits	1 <span style="float: right;">▼</span>

SaveCancel

## 9.2 Greengate/WaveLinx: Discover and Configure Light Panels Connected to the Gateway

- For Greengate, click on the “Start Discovery” button to enter the port, network address, panel address and number of panels for the device.

The screenshot shows a dialog box titled "Start Greengate Discovery". At the top, there is a radio button labeled "Discover new gateway" which is selected. Below this, there is a table with four columns: "IP Address", "IP Port", "Panel Address", and "Number of Panels". The values entered in the rows are "192.168.1.251", "10001", "1", and "2" respectively. At the bottom right of the dialog, there are two buttons: "Start Discovery" and "Cancel".

IP Address	IP Port	Panel Address	Number of Panels
192.168.1.251	10001	1	2

- For WaveLinx Wired, click on the “Start Discovery” button to enter the port, network address and Virtual Item file to load for the device.

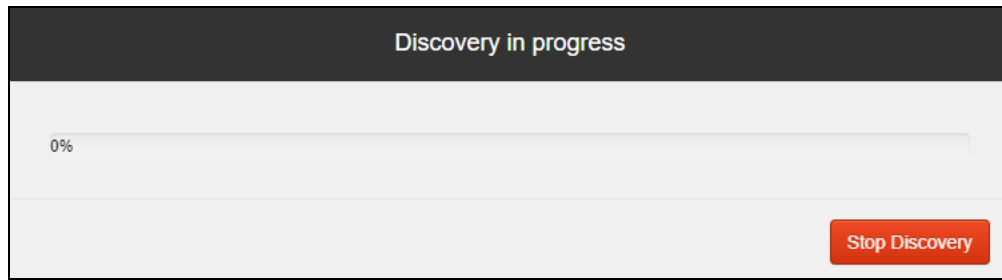
The screenshot shows a dialog box titled "Start WaveLinx Wired Discovery". At the top, there is a radio button labeled "Discover new gateway" which is selected. Below this, there is a table with three columns: "IP Address", "IP Port", and "WaveLinx Wired Config File". The values entered in the rows are "192.168.0.100", "30087", and "Choose File" (with "No file chosen" displayed next to it). At the bottom right of the dialog, there are two buttons: "Start Discovery" and "Cancel".

IP Address	IP Port	WaveLinx Wired Config File
192.168.0.100	30087	Choose File No file chosen

**NOTE:** To generate a Virtual Item file, consult the WaveLinx Wired manual.



- After entering the device details, click on the “Start Discovery” button and the discovery progress bar will display
- Discovering a device may take a few minutes depending on the number of items it contains



- After the discovery process is complete, the device tree will appear.
- The items marked in color indicate that they have not been configured for protocol conversion.



- When clicking on gateways or gateways containing light panels a checkbox will check or uncheck items for protocol conversion
- By clicking on a gateway, the parameters will be shown and can be edited

- By clicking on a light panel, parameters for that panel will be shown

The screenshot shows a configuration interface. On the left, a tree view displays a hierarchy: 192.168.9.54 (expanded), CKT\_CVT (expanded), CK4A (expanded), and 2 (selected). On the right, a table lists parameters for the selected panel:

Relays	48
Switches	64
Remotes	64
Analog States	32
Analog Values	4

- Clicking on a light displays and allows editing of the preconfigured BACnet parameters

The screenshot shows the configuration interface with the tree view on the left. The 'BACnet Device Parameters' dialog box is open on the right, showing the following fields:

BACnet Device Parameters	
BACnet Device Instance	-
Name	
Description	
Location	
IO Scan Interval	10

- Once the items for configuration are chosen, click on the “Save Configuration” button. The save configuration progress bar will appear. This process may take several minutes.

The screenshot shows a dialog box titled "Saving Configuration". It features a progress bar at the top that is filled to 100%. Below the progress bar, the text reads: "A restart is required for the configuration to take effect" and "Restart now?". At the bottom right, there are two buttons: "Restart" and "Cancel".

- When this process is complete, the items on the tree will change to black to show that they have been configured.

BACnet Device Instance	-
Name	
Description	
Location	
IO Scan Interval	10

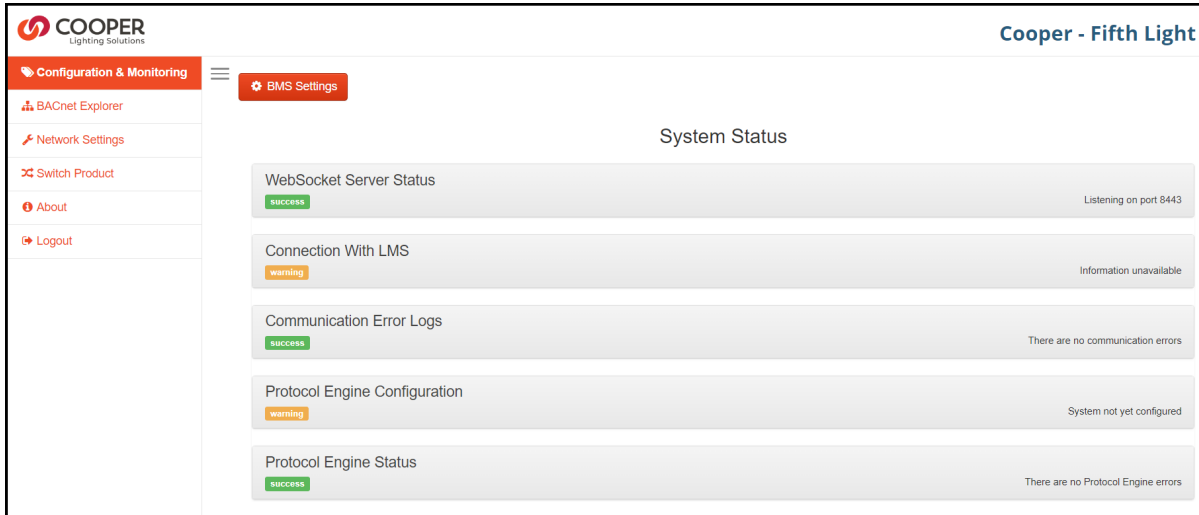
- In order to clear a configuration, click on the “Clear Configuration” button. An additional option to clear all other device configurations will appear.

- After clicking on the Clear & Restart button the window will state “Configuration cleared. Restarting...”.
- After this process is complete, the ProtoAir will automatically restart.

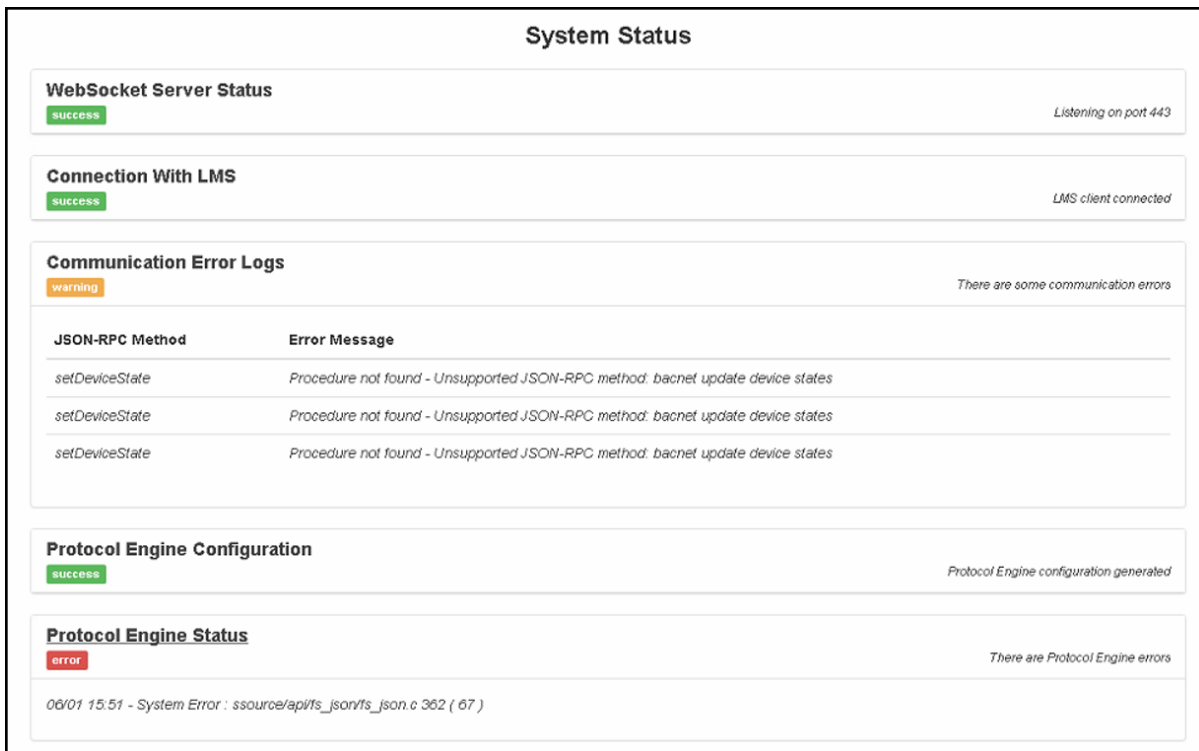
### 9.3 Fifth Light: System Status

**NOTE: Fifth Light configuration must be done on the Fifth Light panel. For Instructions, refer to the Cooper Lighting Solutions Fifth Light Panel manual.**

The ProtoAir allows BMS settings to be changed (BBMD settings, Public IP Address, Public IP Port, Router Network Number, Network Number and IP Port) and Fifth Light Panel system information to be reviewed.



Error messages can be viewed by clicking the heading above a warning or error.



To clear configuration, go to the Switch Product tab and then select the Clear Current Selection button.

## 10 BACnet: Setting Device Instance Offset to Assign Specific Device Instances

- Follow the steps outlined in **Section 6 Setup Web Server Security** to access the ProtoAir Web Configurator.
- The Device Instance Offset field shows the current value (default = 80,001).
  - 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 Device Instance Offset value as needed using the calculation below:

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

**NOTE: Node\_ID is gathered from the Cooper Lighting Solutions device.**

For example, if the desired Device Instance for the device 1 is 80,002 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 Offset:

$$80,002 = \text{Offset} + 1$$

$$\mathbf{80,001 = \text{Offset}}$$

Once the Offset value is input, it will be applied as shown below:

- Device 1 Instance =  $80,001 + \text{Node\_ID} = 80,001 + 1 = 80,002$
- Device 2 Instance =  $80,001 + \text{Node\_ID} = 80,001 + 22 = 80,023$
- Device 3 Instance =  $80,001 + \text{Node\_ID} = 80,001 + 33 = 80,034$

Click "Submit" once the desired value is entered.

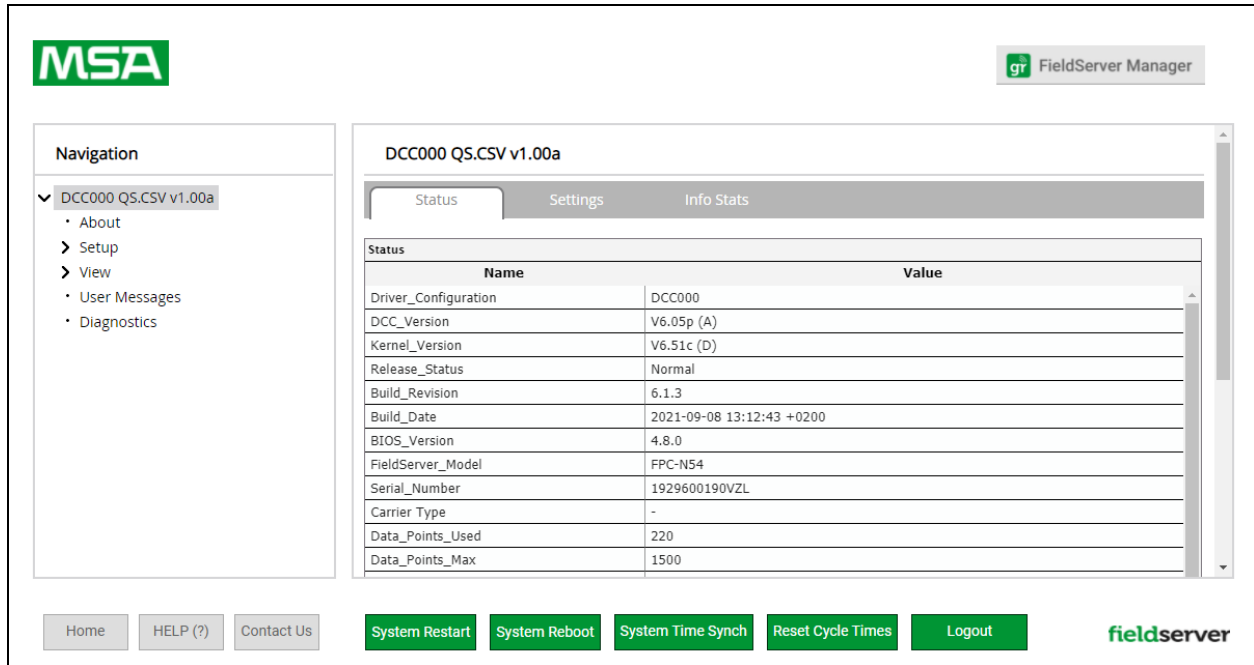
Device Instance	80000
Name	Cooper Gateway
Location	-
Device Instance Offset	80001

**NOTE: For Fifth Light, the Device Instance is set on the Fifth Light panel.**

## 11 Using the Embedded BACnet Explorer

The embedded BACnet Explorer allows installers to validate that their equipment is working on BACnet without having to ask the BMS integrator to test the unit.

- To access the embedded BACnet Explorer, go to the FS-GUI page and click the Explorer button.



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 area shows the configuration for 'DCC000 QS.CSV v1.00a' with tabs for Status, Settings, and Info Stats. The Status tab is active, showing a table of system parameters.

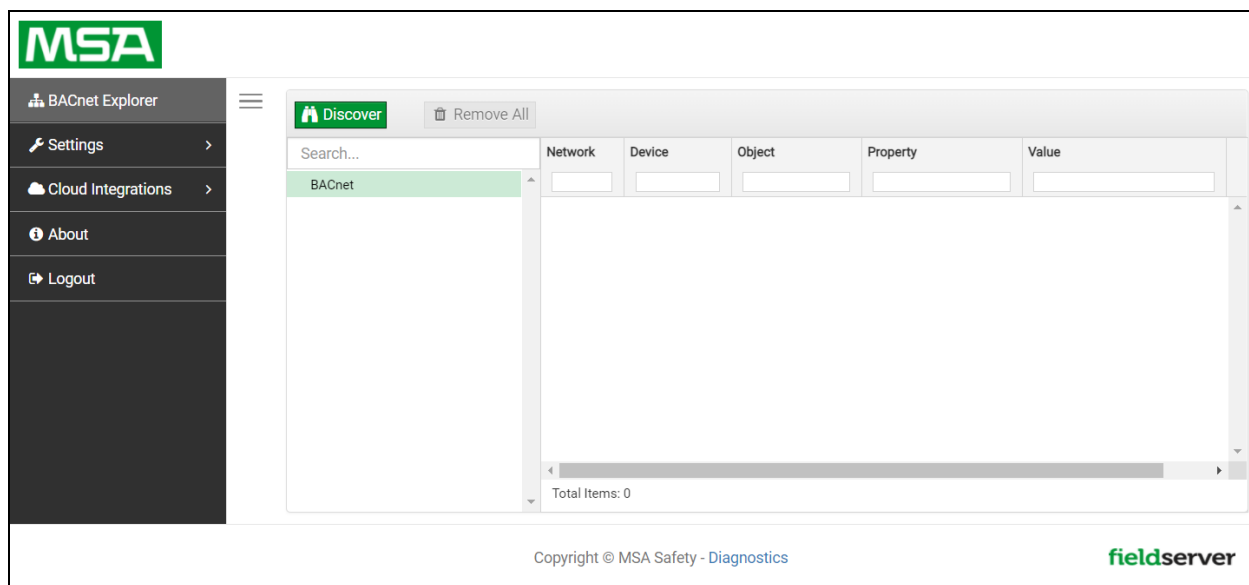
Name	Value
Driver_Configuration	DCC000
DCC_Version	V6.05p (A)
Kernel_Version	V6.51c (D)
Release_Status	Normal
Build_Revision	6.1.3
Build_Date	2021-09-08 13:12:43 +0200
BIOS_Version	4.8.0
FieldServer_Model	FPC-N54
Serial_Number	1929600190VZL
Carrier_Type	-
Data_Points_Used	220
Data_Points_Max	1500


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

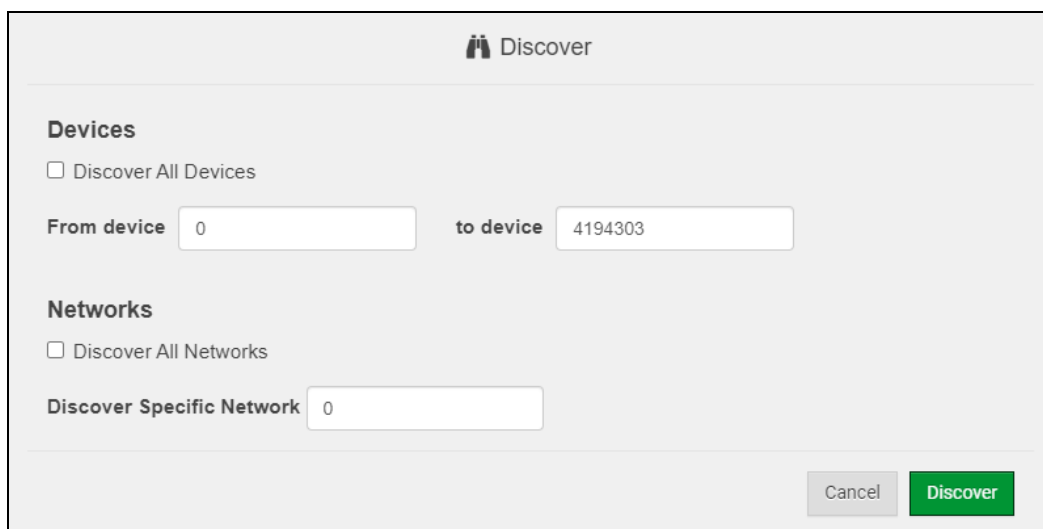
**NOTE:** For BACnet/IP, click on the Settings button on the left side of the landing page to ensure the ProtoAir is on the BACnet/IP network subnet to configure BBMD.

## 11.1 Discover the Device List

- From the BACnet Explorer landing page, click on the BACnet Explorer tab on the left side of the screen to go to the BACnet Explorer page.



- Find devices connected to the same subnet as the gateway by clicking the Discover button  (binocular icon).
- This opens the Discover window, click the checkboxes next to the desired settings and click Discover to start the search.



**NOTE:** The “Discover All Devices” or “Discover All Networks” checkboxes must be unchecked to search for a specific device range or network.

Allow the devices to populate before interacting with the device list for optimal performance. Any discovery or explore process will cause a green message to appear in the upper right corner of the browser to confirm that the action is complete.

The screenshot shows the 'Discover' interface with a search bar and a list of devices. The table below represents the data shown in the interface.

Device	Object	Property	Value	Monitor
1 (FAP_1)	device:1 (FAP_1)	max-apdu-length-accepted	1458	Off
1 (FAP_1)	device:1 (FAP_1)	object-name	FAP_1	Off
1 (FAP_1)	device:1 (FAP_1)	vendor-identifier	37	Off
18100 (BASRTLX-B-01C6AF)	device:18100 (BASRTLX-B-01C...	max-apdu-length-accepted	1476	Off
18100 (BASRTLX-B-01C6AF)	device:18100 (BASRTLX-B-01C...	object-name	BASRTLX-B-01C6AF	Off
18100 (BASRTLX-B-01C6AF)	device:18100 (BASRTLX-B-01C...	vendor-identifier	245	Off
50001	device:50001	max-apdu-length-accepted	1458	Off
50001	device:50001	vendor-identifier	37	Off
54321 (SENTRY_BAC_11)	device:54321 (SENTRY_BAC_11)	max-apdu-length-accepted	1458	Off
54321 (SENTRY_BAC_11)	device:54321 (SENTRY_BAC_11)	object-name	SENTRY_BAC_11	Off
54321 (SENTRY_BAC_11)	device:54321 (SENTRY_BAC_11)	vendor-identifier	37	Off
259645 (WeatherLink_1)	device:259645 (WeatherLink_1)	max-apdu-length-accepted	1458	Off
259645 (WeatherLink_1)	device:259645 (WeatherLink_1)	object-name	WeatherLink_1	Off
259645 (WeatherLink_1)	device:259645 (WeatherLink_1)	vendor-identifier	37	Off

Total Items: 42 (Showing Items: 14)

## 11.2 View Device Details and Explore Points/Parameters


- To view the device details, click the blue plus sign (+) next to the desired device in the list.
  - This will show only some of the device properties for the selected aspect of a device

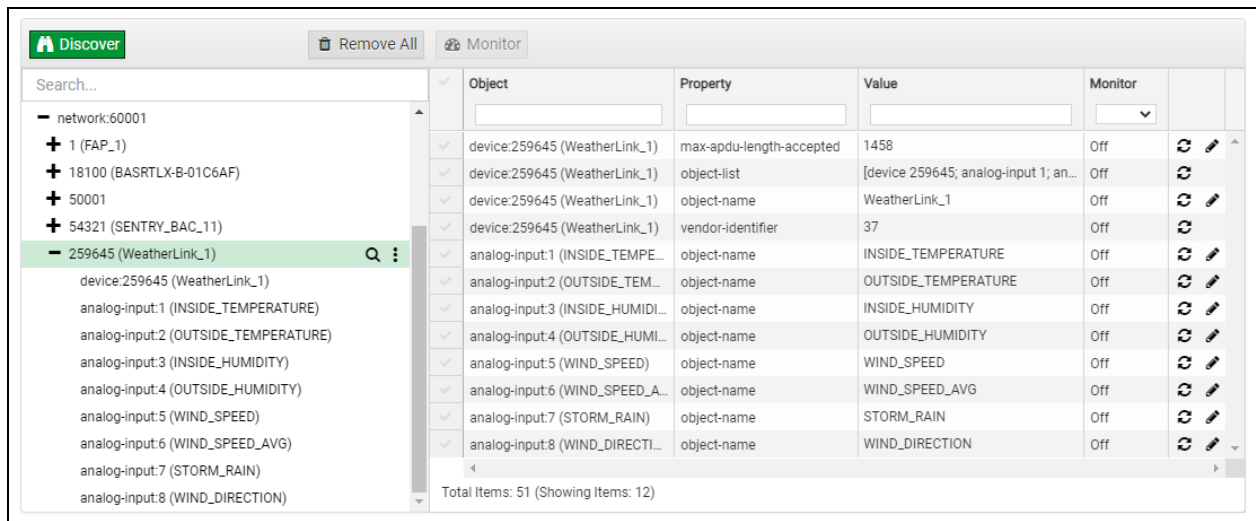
The screenshot shows the 'Discover' interface with the '259645 (WeatherLink\_1)' device selected. The table below represents the data shown in the interface.

Object	Property	Value	Monitor
device:259645 (WeatherLink_1)	max-apdu-length-accepted	1458	Off
device:259645 (WeatherLink_1)	object-name	WeatherLink_1	Off
device:259645 (WeatherLink_1)	vendor-identifier	37	Off

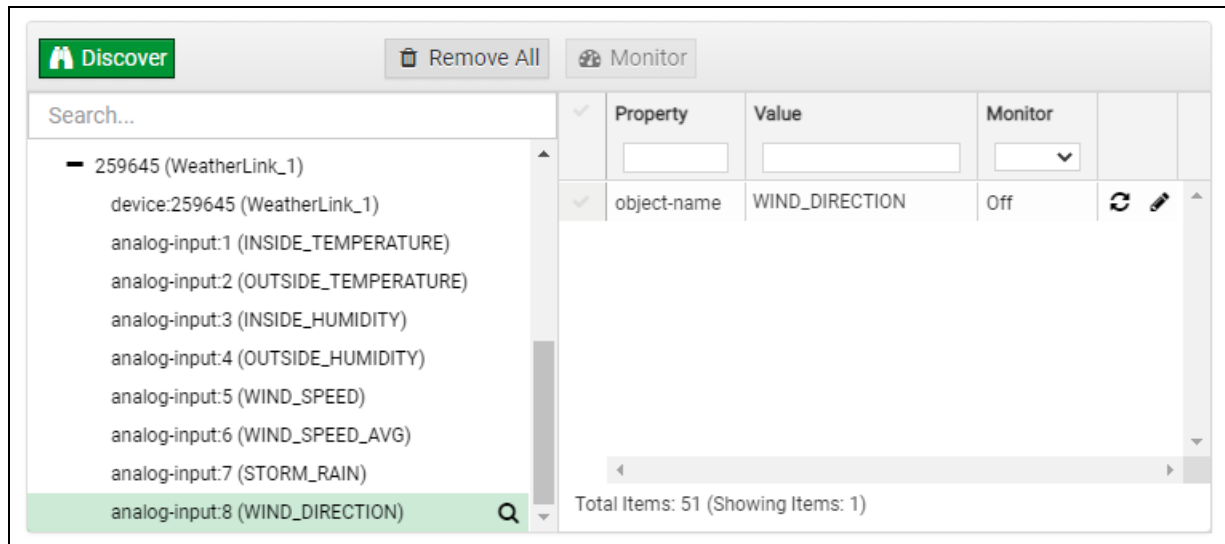
Total Items: 42 (Showing Items: 3)



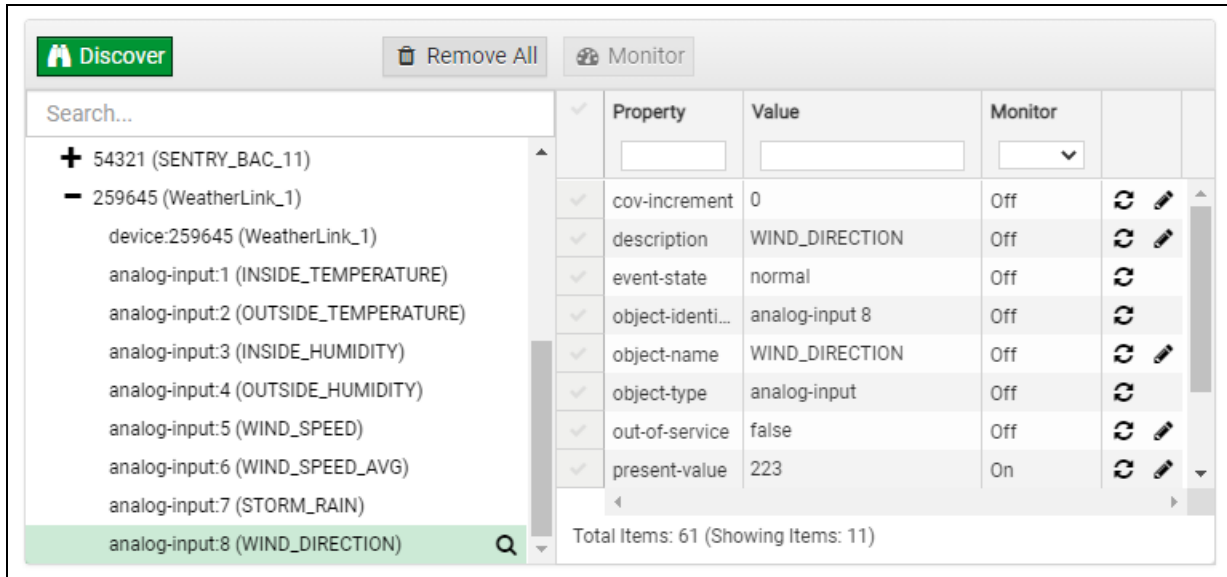
- To view the full details of a device, highlight the device directly (in the image below – “1991 WeatherLink\_1”) and click the Explore button (  ) that appears to the right of the highlighted device as a magnifying glass icon or double-click the highlighted device.



- Now additional device details are viewable; however, the device can be explored even further
- Click on one of the device details.



- Then click on the Explore button that appears or double-click the device object.



A full list of the device details will appear on the right side window. If changes are expected since the last explore, simply press the Refresh button (🔄) that appears to right of individual properties to refresh.

**NOTE: The Gateway Search Bar will find devices based on their Device ID.**

**NOTE: The Gateway Discovery Tree has 3 levels that correspond to the following.**

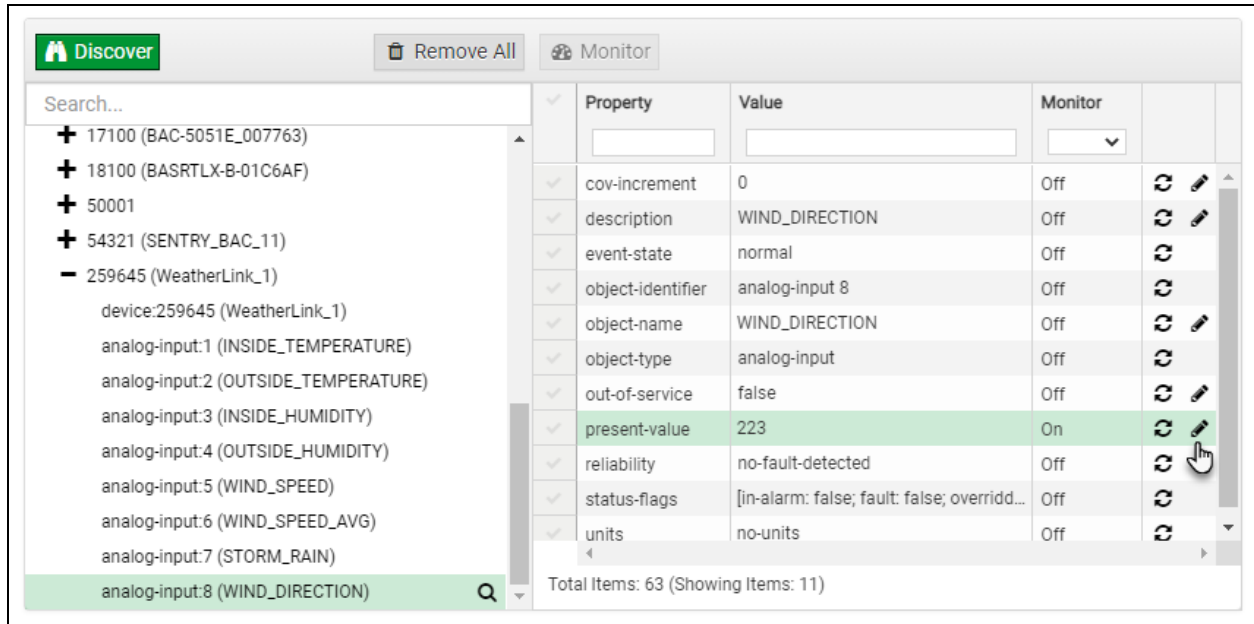
- Network number
  - Device
    - Device object

### 11.2.1 Edit the Present Value Field

The only recommended field to edit is the device's present value field.

**NOTE:** Other BACnet properties are editable (such as object name, object description, etc.); however, this is not recommended because the gateway is not a Building Management System (BMS).

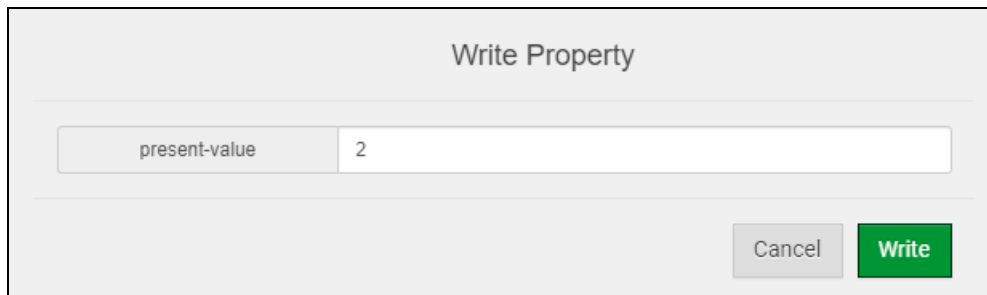
- To edit the present value, select it in the property listings.



The screenshot shows a software interface with a search bar and a list of properties. The 'present-value' property is highlighted in green. The 'Monitor' column for this property is set to 'On'. A hand cursor is pointing at the edit icon for the 'present-value' property.

Property	Value	Monitor	
cov-increment	0	Off	🔄 ✎
description	WIND_DIRECTION	Off	🔄 ✎
event-state	normal	Off	🔄 ✎
object-identifier	analog-input 8	Off	🔄 ✎
object-name	WIND_DIRECTION	Off	🔄 ✎
object-type	analog-input	Off	🔄 ✎
out-of-service	false	Off	🔄 ✎
present-value	223	On	🔄 ✎
reliability	no-fault-detected	Off	🔄 ✎
status-flags	[in-alarm: false; fault: false; overrid...	Off	🔄 ✎
units	no-units	Off	🔄 ✎

- Then click the Write button ( ✎ ) on the right of the property to bring up the Write Property window.



The 'Write Property' dialog box shows the 'present-value' property selected. The value '2' is entered in the input field. The 'Write' button is highlighted in green.

- Enter the appropriate change and click the Write button.

The window will close. When the BACnet Explorer page appears, the present value will be changed as specified.

The screenshot shows the BACnet Explorer interface. On the left, a tree view lists devices under the 'Discover' tab. The selected device is 'analog-input:8 (WIND\_DIRECTION)'. The main pane displays a table of properties for this device.

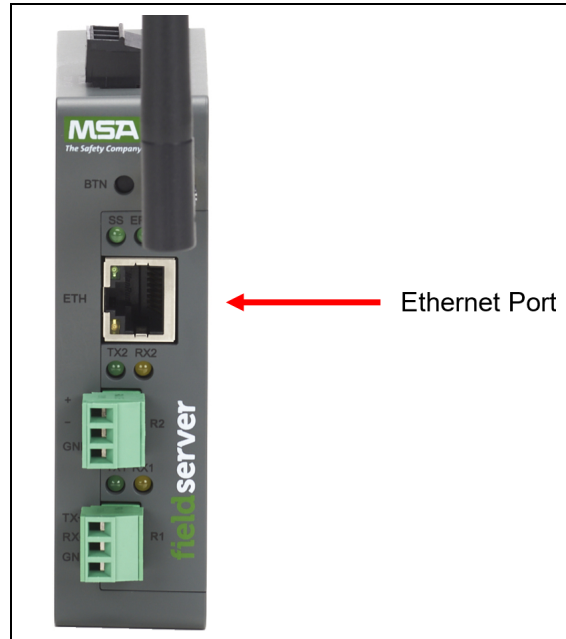
Property	Value	Monitor		
cov-increment	0	Off	↻	✎
description	WIND_DIRECTION	Off	↻	✎
event-state	normal	Off	↻	
object-identifier	analog-input 8	Off	↻	
object-name	WIND_DIRECTION	Off	↻	✎
object-type	analog-input	Off	↻	
out-of-service	false	Off	↻	✎
present-value	2	On	↻	✎
reliability	no-fault-detected	Off	↻	
status-flags	[in-alarm: false; fault: false; overridd...	Off	↻	
units	no-units	Off	↻	

Total Items: 63 (Showing Items: 11)

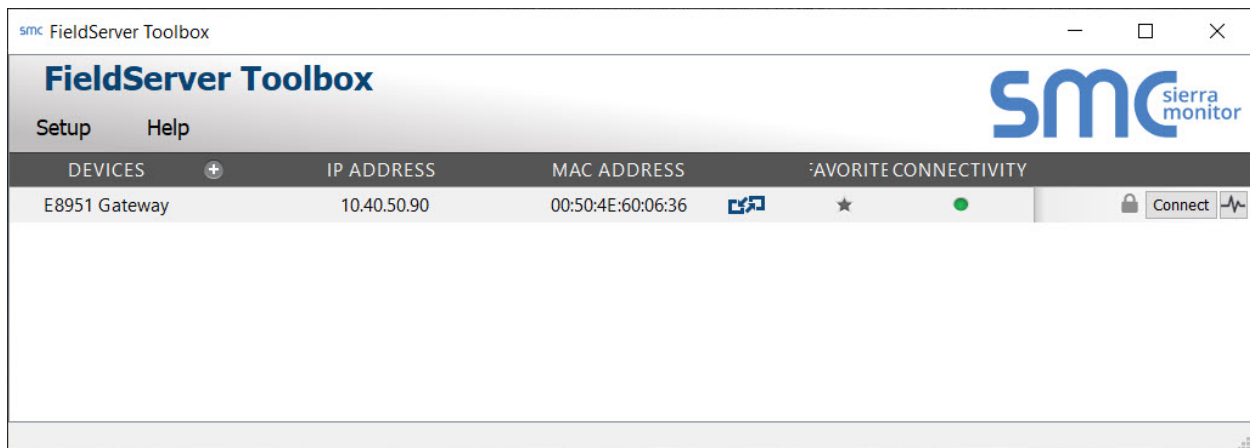
## 12 Troubleshooting

### 12.1 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.

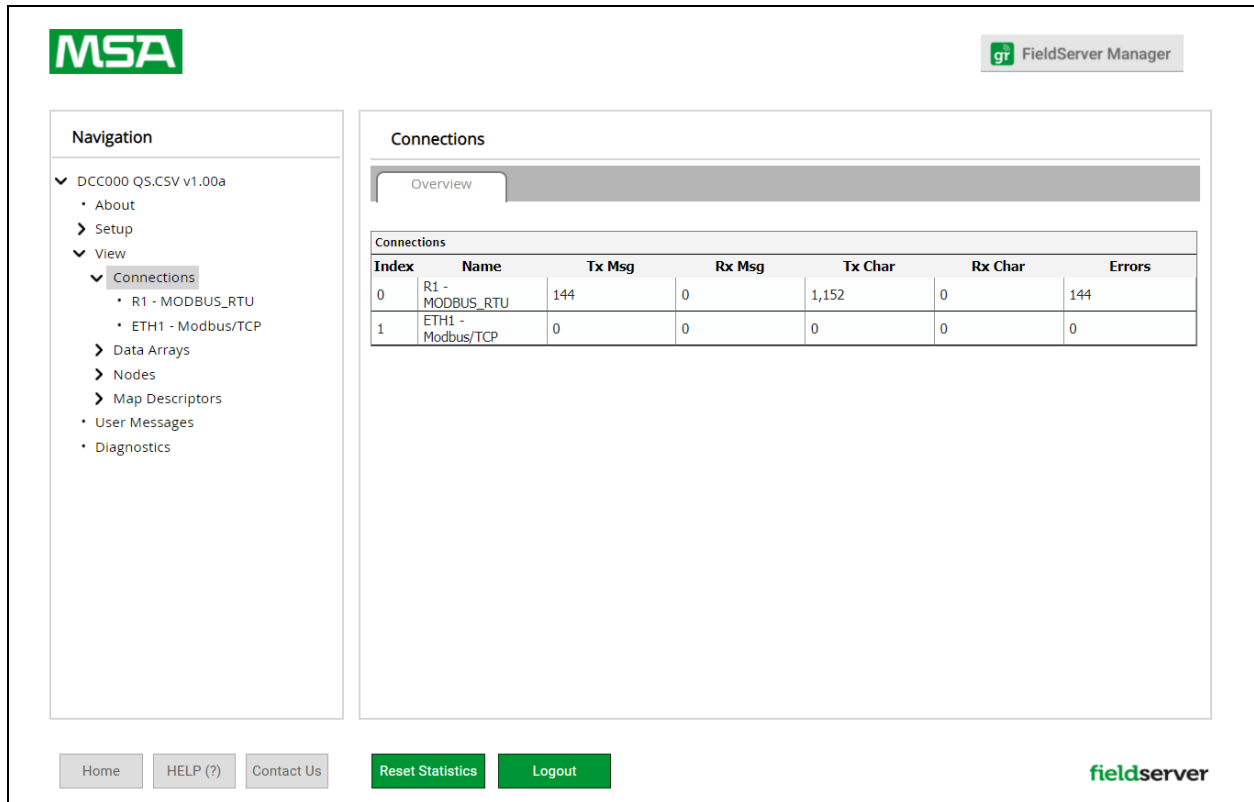


- Connect a standard Cat-5 Ethernet cable between the user's PC and ProtoAir.
- Double click on the FS Toolbox Utility and click Discover Now on the splash page.
- Check for the IP Address of the desired gateway.



## 12.2 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 12.3 Checking Wiring and Settings** for the relevant wiring and settings.



The screenshot shows the MSA FieldServer Manager interface. The top left features the MSA logo, and the top right shows the 'gr FieldServer Manager' header. A navigation sidebar on the left lists various system components, with 'Connections' selected. The main content area, titled 'Connections', includes an 'Overview' tab and a table of connection statistics.

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

### 12.3 Checking Wiring and Settings

No COMS on the Ethernet side. To fix this problem, check the following:

- Visual observations of LEDs on the ProtoAir. ([Section 12.6 LED Functions](#))
- Check device address.
- Verify wiring.
- Verify the device was discovered ([Section 9 Configure the ProtoAir](#)).

Field COM problems:

- Visual observations of LEDs on the ProtoAir. ([Section 12.6 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 12.7 Taking a FieldServer Diagnostic Capture](#))

### 12.4 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

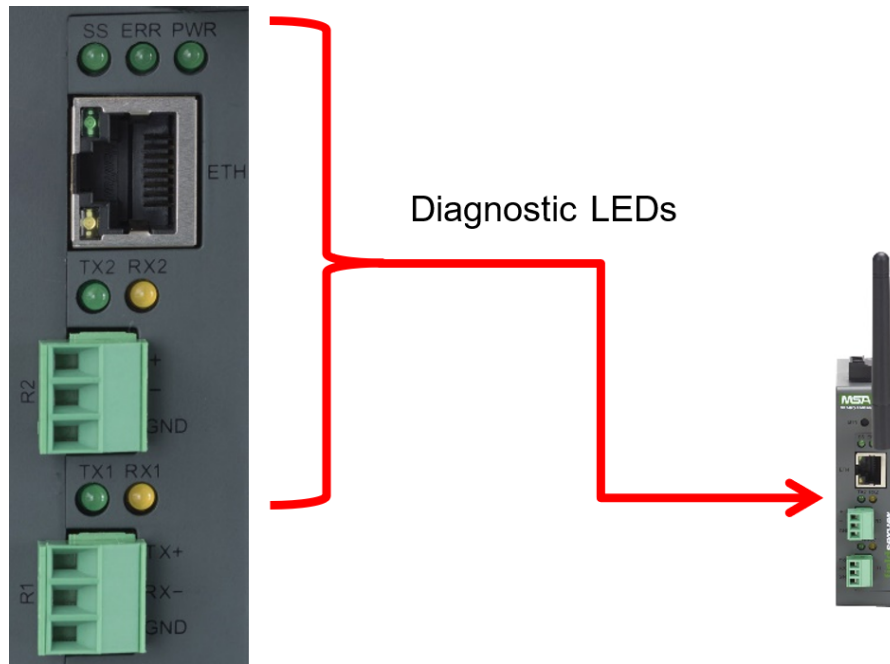
**NOTE:** Internet Explorer is no longer supported as recommended by Microsoft.

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

### 12.5 Factory Reset Instructions

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

## 12.6 LED Functions




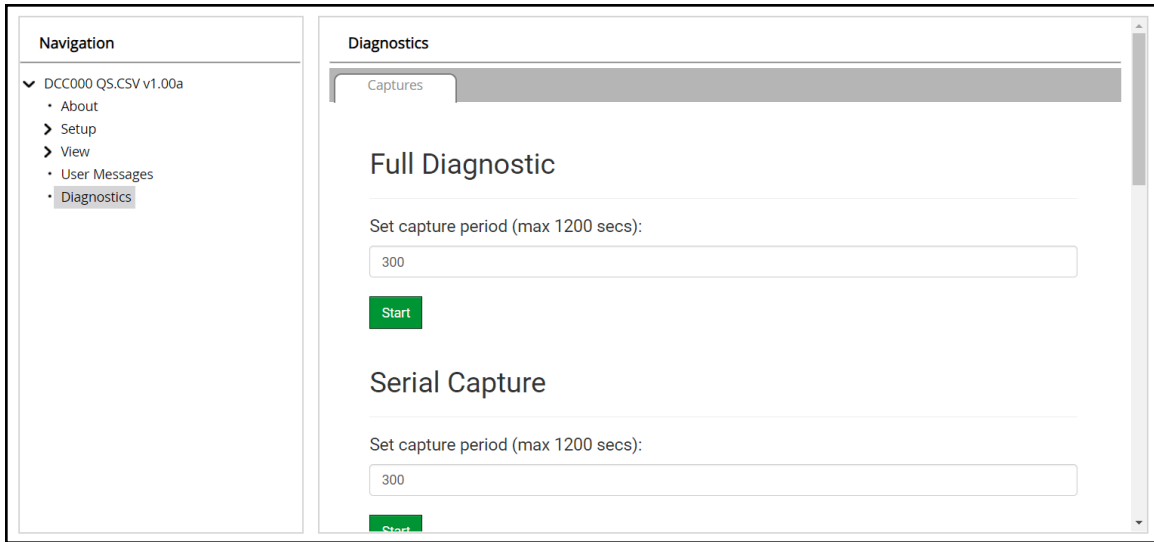
Tag	Description
<b>SS</b>	The SS LED will flash once a second to indicate that the bridge is in operation.
<b>ERR</b>	The SYS ERR LED will go on solid indicating there is a system error. If this occurs, immediately report the related “system error” shown in the error screen of the FS-GUI interface to 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.



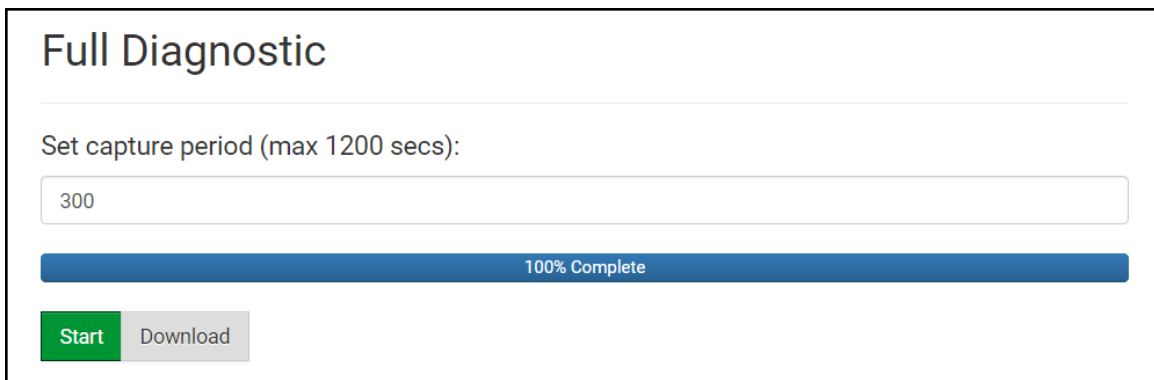
## 12.7 Taking a FieldServer Diagnostic Capture

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)).

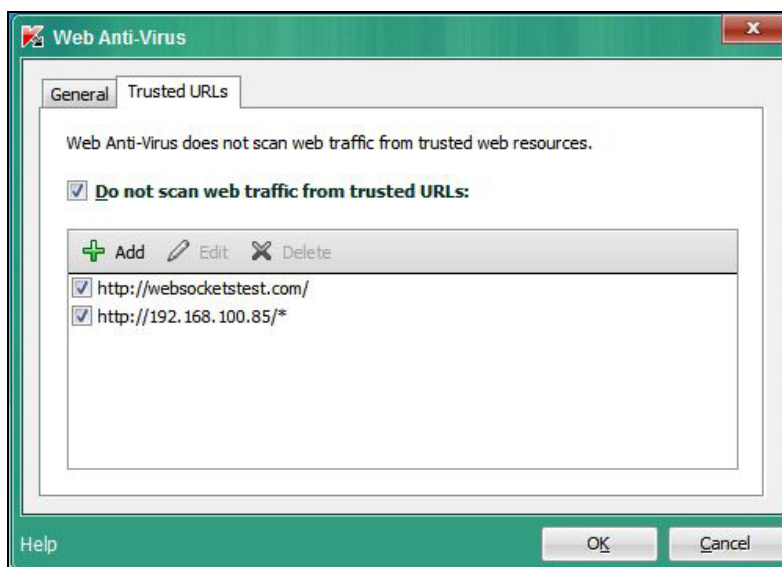
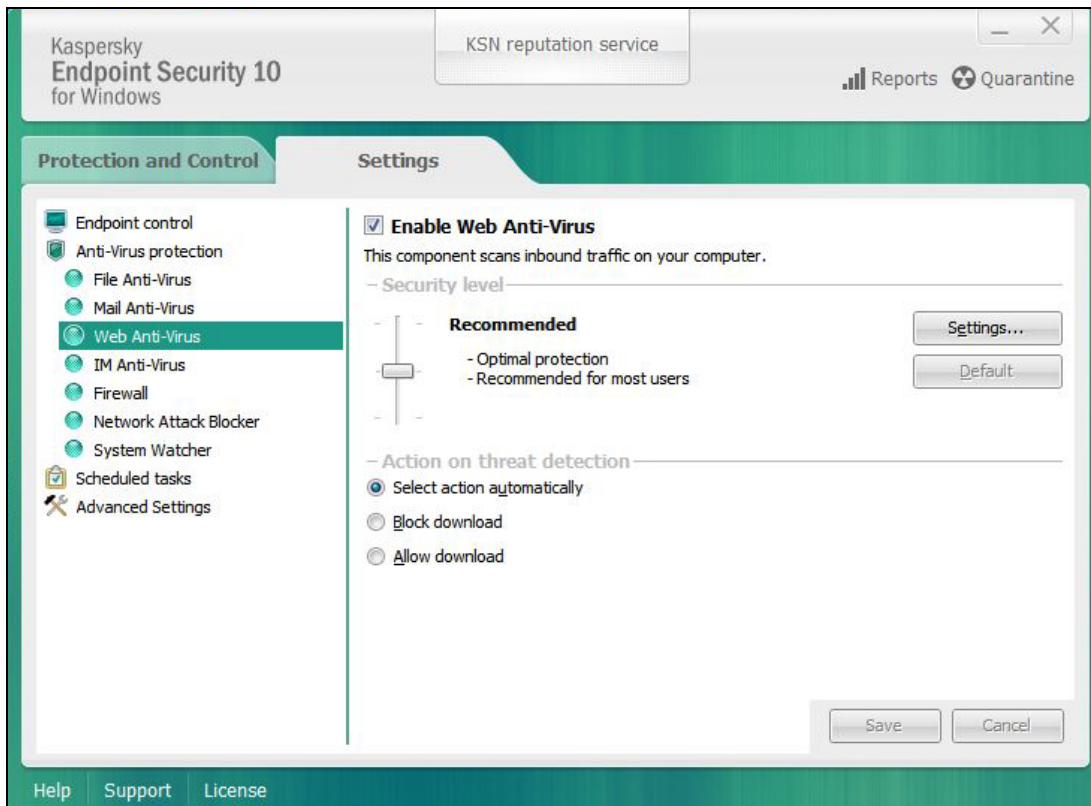
**NOTE:** Diagnostic captures of BACnet MS/TP communication are output in a “.PCAP” file extension which is compatible with Wireshark.

## 12.8 Kaspersky Endpoint Security 10

If Kaspersky Endpoint Security 10 is installed on the user's PC, the software needs to be modified to allow the PC to register bridges on the FieldServer Manager.

**NOTE:** This problem is specific to KES10, Kaspersky 2017 does not have this problem.

To fix the problem, the ProtoAir (see [http://192.168.100.85/\\*](http://192.168.100.85/*) in the 2<sup>nd</sup> image below) must be set as a trusted URL to the "Web Anti-Virus"->"Settings" as shown below.



## 13 Additional Information

### 13.1 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 12.1 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 Cooper Lighting Solutions to receive any firmware updates.**

### 13.2 BACnet: Setting Network\_Number for More Than One ProtoAir on the Subnet

For both BACnet MS/TP and BACnet/IP, if more than one ProtoAir 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 50001.

network_nr	<b>BACnet Network Number</b> This sets the BACnet network number of the Gateway. (1 - 65535)	<input type="text" value="50001"/>	<input type="button" value="Submit"/>
------------	--	------------------------------------	---------------------------------------

### 13.3 Mounting

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



### 13.4 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.

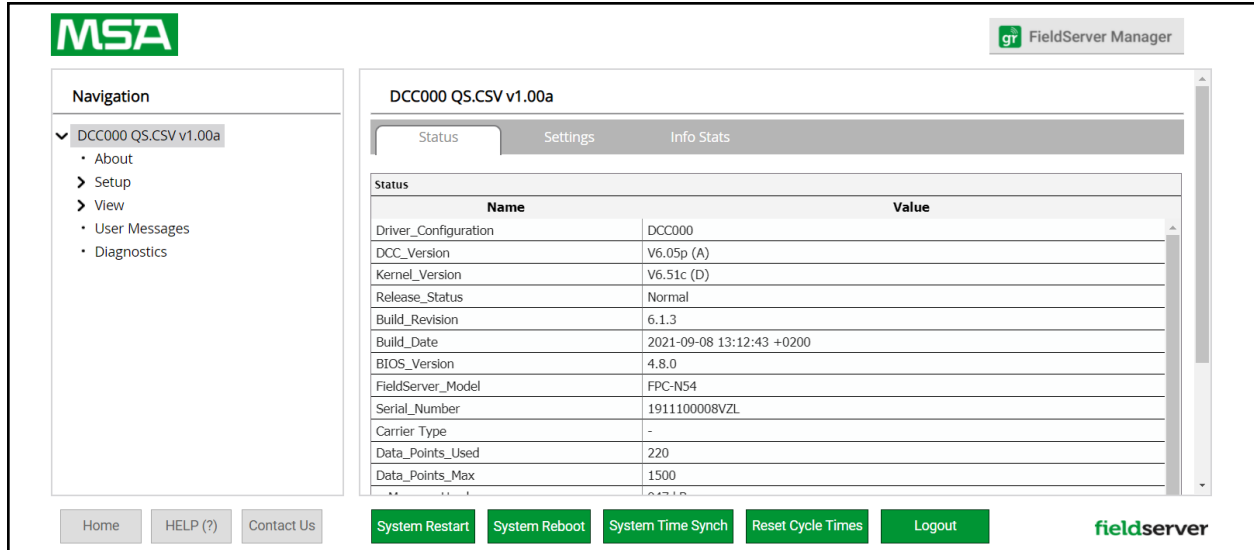
Go to [www.BACnetInternational.net](http://www.BACnetInternational.net) for more information about the BACnet Testing Laboratory. Click [here](#) for the BACnet PIC Statement. *BACnet is a registered trademark of ASHRAE.*



## 13.6 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.

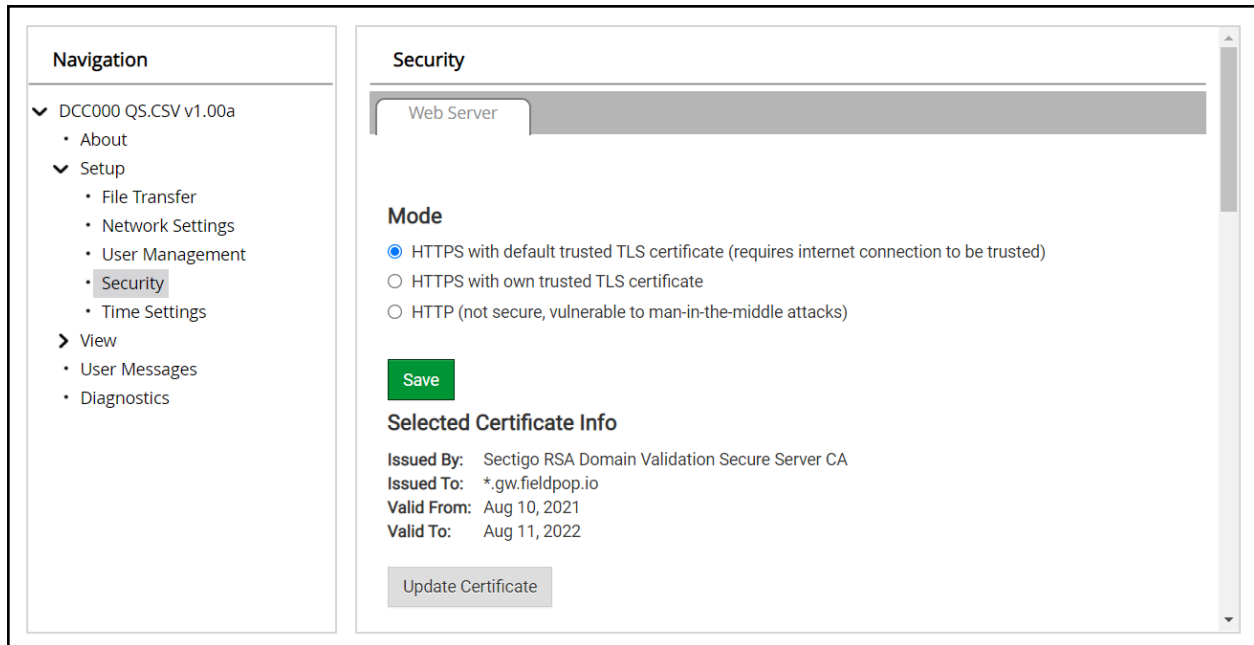


The screenshot displays the MSA FieldServer Manager interface. On the left is a navigation menu with options: About, Setup, View, User Messages, and Diagnostics. The main content area shows the 'Status' page for 'DCC000 QS.CSV v1.00a'. A table lists system parameters and their values. At the bottom, there are buttons for 'System Restart', 'System Reboot', 'System Time Synch', 'Reset Cycle Times', and 'Logout'. The 'fieldserver' logo is in the bottom right corner.

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

### 13.6.1 Change Security Mode

- Click Security in the Navigation panel.

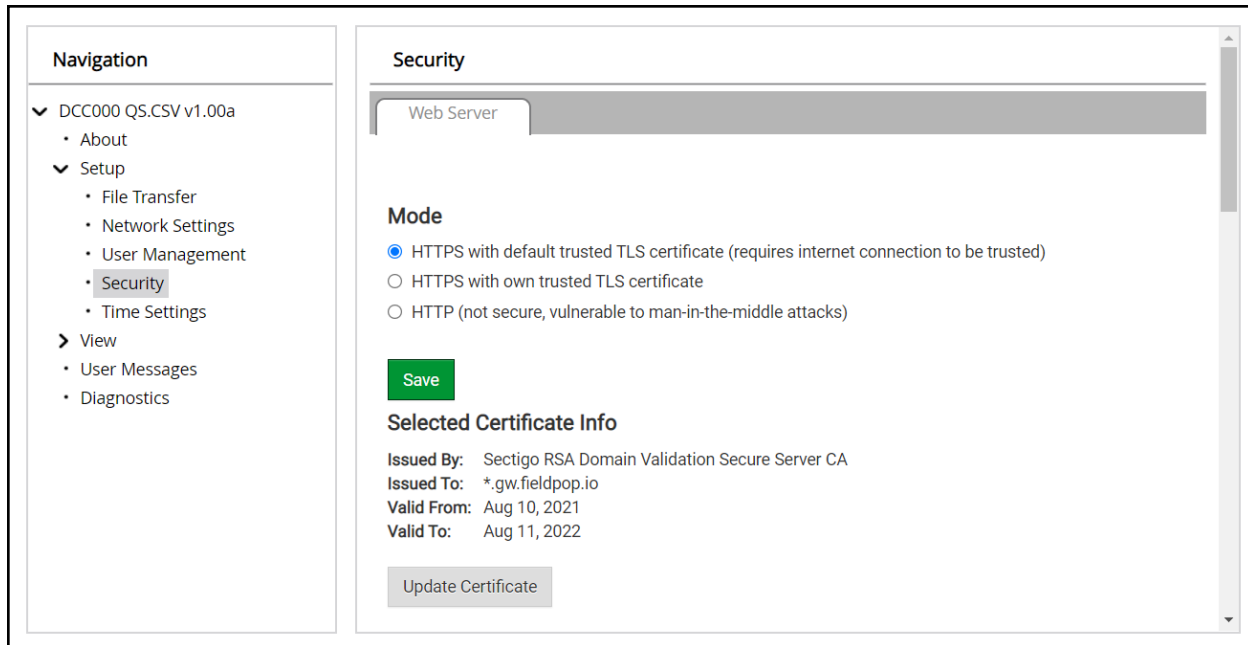


- Click the Mode desired.
  - If HTTPS with own trusted TLS certificate is selected, follow instructions in [Section 6.2.1 HTTPS with Own Trusted TLS Certificate](#)
- Click the Save button.

### 13.6.2 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.



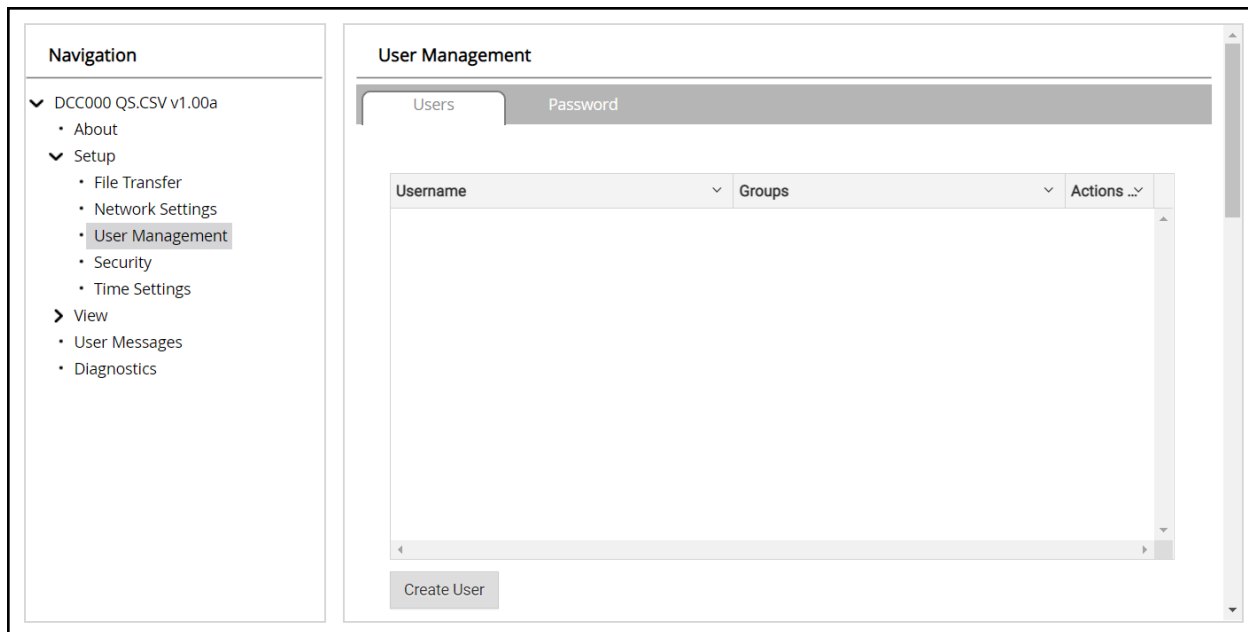
## 13.7 Change User Management Settings

- 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.

### 13.7.1 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

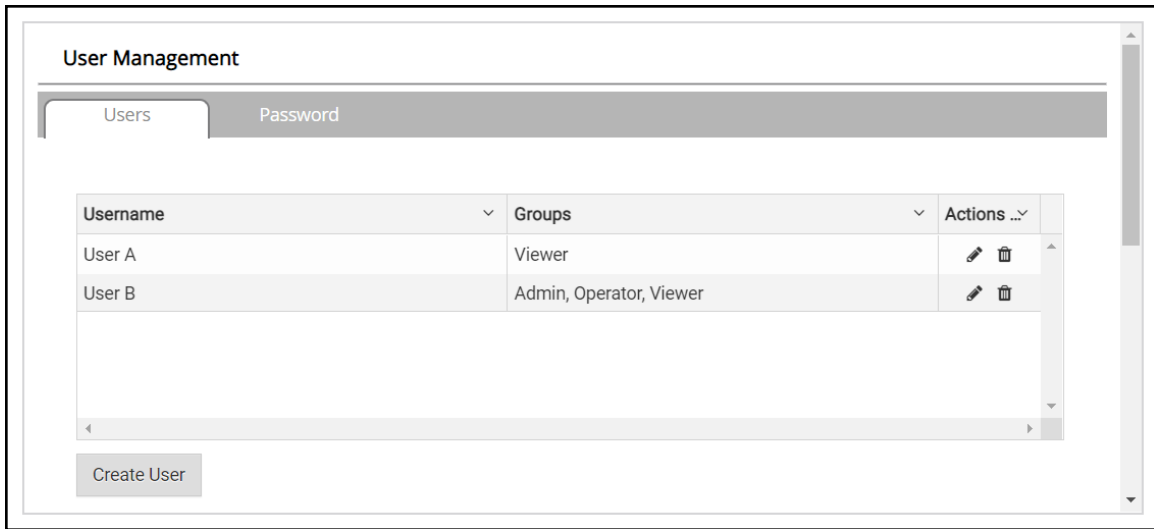
- Enter the new User fields: Name, Security Group and Password.
  - **User details are hashed and salted**

**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.

### 13.7.2 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.

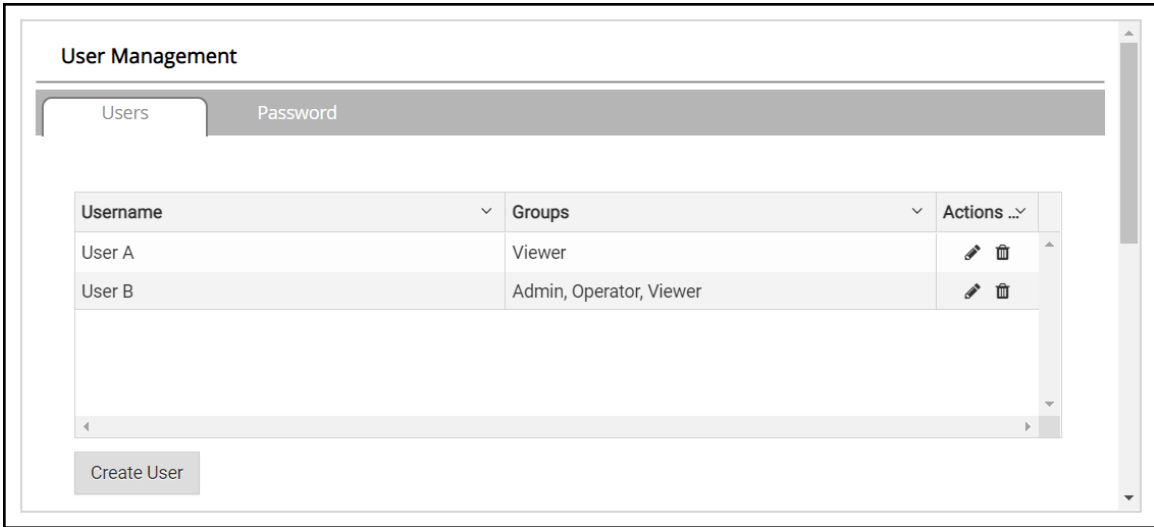
The 'Edit User' dialog box contains the following fields and options:

- 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)
- 

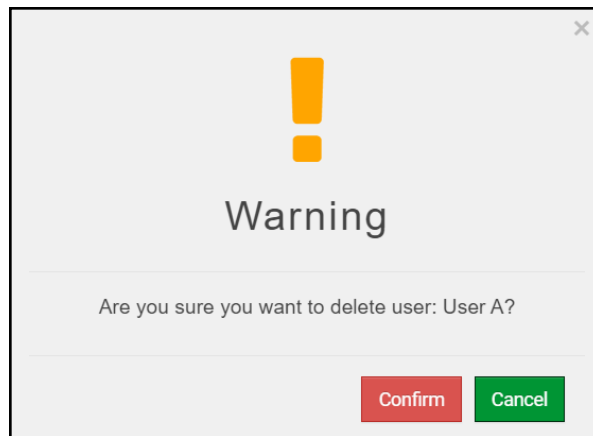
- Click Confirm.
- Once the Success message appears, click OK.

### 13.7.3 Delete Users

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

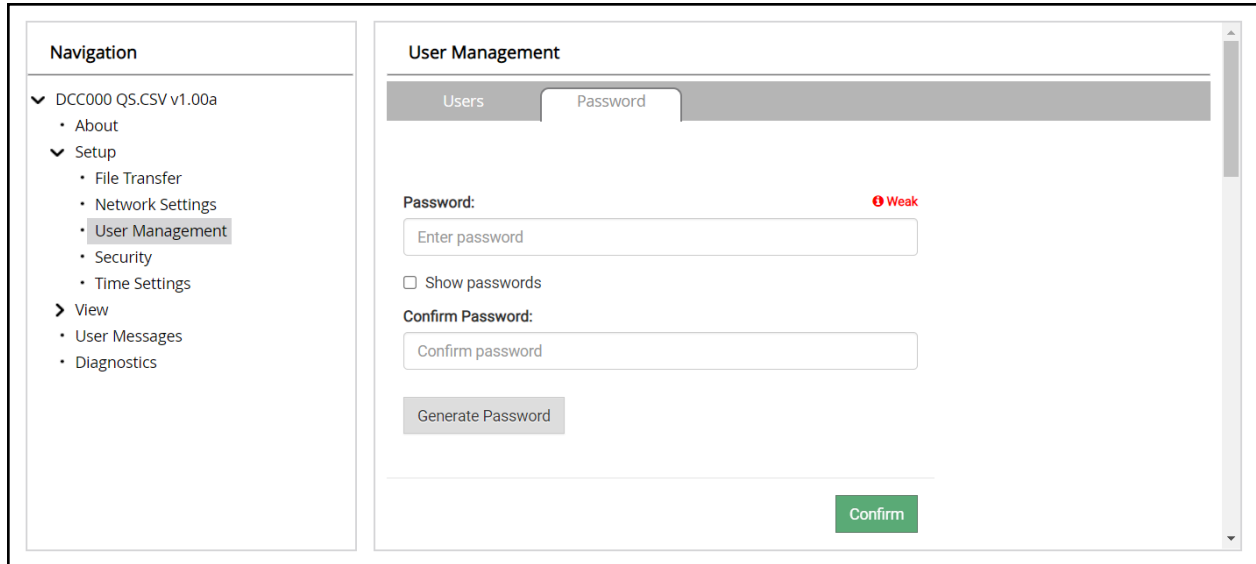


- When the warning message appears, click Confirm.



### 13.7.4 Change FieldServer Password

- Click the Password tab.



The screenshot shows a web interface with a navigation menu on the left and a main content area on the right. The navigation menu includes 'DCC000 QS.CSV v1.00a', 'About', 'Setup' (with sub-items: File Transfer, Network Settings, User Management, Security, Time Settings), 'View' (with sub-items: User Messages, Diagnostics), and 'User Management' is highlighted. The main content area is titled 'User Management' and has two tabs: 'Users' and 'Password'. The 'Password' tab is active. It contains a 'Password:' label with a red 'Weak' indicator, a text input field with the placeholder 'Enter password', a 'Show passwords' checkbox, a 'Confirm Password:' label, a text input field with the placeholder 'Confirm password', a 'Generate Password' button, and a 'Confirm' button at the bottom right.

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

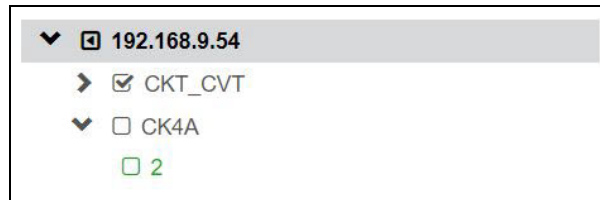
**NOTE:** The password must meet the minimum complexity requirements. An algorithm automatically checks the password entered and notes the level of strength on the top right of the Password text field.

### 13.8 Structure of the Device Tree

The device tree is in the following structure:

- Device IP Address
  - Devices connected
    - Data points

For example:



## 14 Vendor Information – Cooper Lighting Solutions

Check the specific gateway start-up guide for the supported protocols for the gateway in use.

**NOTE: Cooper Lighting Solutions Fifth Light points determined by panel configuration.**

### 14.1 ControlKeeper 2 & 4 (GreenGate) Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Reset	BV	1001	201
Relay01	BV	1	1
Relay02	BV	2	2
Relay03	BV	3	3
Relay04	BV	4	4
Relay05	BV	5	5
Relay06	BV	6	6
Relay07	BV	7	7
Relay08	BV	8	8
Relay09	BV	9	9
Relay010	BV	10	10
Relay011	BV	11	11
Relay012	BV	12	12
Relay013	BV	13	13
Relay014	BV	14	14
Relay015	BV	15	15
Relay016	BV	16	16
Relay017	BV	17	17
Relay018	BV	18	18
Relay019	BV	19	19
Relay020	BV	20	20
Relay021	BV	21	21
Relay022	BV	22	22
Relay023	BV	23	23
Relay024	BV	24	24
Relay025	BV	25	25
Relay026	BV	26	26
Relay027	BV	27	27
Relay028	BV	28	28
Relay029	BV	29	29
Relay030	BV	30	30
Relay031	BV	31	31
Relay032	BV	32	32
Remote01	BV	101	101
Remote02	BV	102	102
Remote03	BV	103	103
Remote04	BV	104	104
Remote05	BV	105	105
Remote06	BV	106	106

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote07	BV	107	107
Remote08	BV	108	108
Remote09	BV	109	109
Remote010	BV	110	110
Remote011	BV	111	111
Remote012	BV	112	112
Remote013	BV	113	113
Remote014	BV	114	114
Remote015	BV	115	115
Remote016	BV	116	116
Remote017	BV	117	117
Remote018	BV	118	118
Remote019	BV	119	119
Remote020	BV	120	120
Remote021	BV	121	121
Remote022	BV	122	122
Remote023	BV	123	123
Remote024	BV	124	124
Remote025	BV	125	125
Remote026	BV	126	126
Remote027	BV	127	127
Remote028	BV	128	128
Remote029	BV	129	129
Remote030	BV	130	130
Remote031	BV	131	131
Remote032	BV	132	132
Remote033	BV	133	133
Remote034	BV	134	134
Remote035	BV	135	135
Remote036	BV	136	136
Remote037	BV	137	137
Remote038	BV	138	138
Remote039	BV	139	139
Remote040	BV	140	140
Remote041	BV	141	141
Remote042	BV	142	142
Remote043	BV	143	143
Remote044	BV	144	144
Remote045	BV	145	145
Remote046	BV	146	146
Remote047	BV	147	147
Remote048	BV	148	148
Remote049	BV	149	149
Remote050	BV	150	150
Remote051	BV	151	151
Remote052	BV	152	152
Remote053	BV	153	153
Remote054	BV	154	154



Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote055	BV	155	155
Remote056	BV	156	156
Remote057	BV	157	157
Remote058	BV	158	158
Remote059	BV	159	159
Remote060	BV	160	160
Remote061	BV	161	161
Remote062	BV	162	162
Remote063	BV	163	163
Remote064	BV	164	164
Switch01	BI	1	10001
Switch02	BI	2	10002
Switch03	BI	3	10003
Switch04	BI	4	10004
Switch05	BI	5	10005
Switch06	BI	6	10006
Switch07	BI	7	10007
Switch08	BI	8	10008
Switch09	BI	9	10009
Switch010	BI	10	10010
Switch011	BI	11	10011
Switch012	BI	12	10012
Switch013	BI	13	10013
Switch014	BI	14	10014
Switch015	BI	15	10015
Switch016	BI	16	10016
Switch017	BI	17	10017
Switch018	BI	18	10018
Switch019	BI	19	10019
Switch020	BI	20	10020
Switch021	BI	21	10021
Switch022	BI	22	10022
Switch023	BI	23	10023
Switch024	BI	24	10024
Switch025	BI	25	10025
Switch026	BI	26	10026
Switch027	BI	27	10027
Switch028	BI	28	10028
Switch029	BI	29	10029
Switch030	BI	30	10030
Switch031	BI	31	10031
Switch032	BI	32	10032
Switch033	BI	33	10033
Switch034	BI	34	10034
Switch035	BI	35	10035
Switch036	BI	36	10036
Switch037	BI	37	10037

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Switch038	BI	38	10038
Switch039	BI	39	10039
Switch040	BI	40	10040
Switch041	BI	41	10041
Switch042	BI	42	10042
Switch043	BI	43	10043
Switch044	BI	44	10044
Switch045	BI	45	10045
Switch046	BI	46	10046
Switch047	BI	47	10047
Switch048	BI	48	10048
Switch049	BI	49	10049
Switch050	BI	50	10050
Switch051	BI	51	10051
Switch052	BI	52	10052
Switch053	BI	53	10053
Switch054	BI	54	10054
Switch055	BI	55	10055
Switch056	BI	56	10056
Switch057	BI	57	10057
Switch058	BI	58	10058
Switch059	BI	59	10059
Switch060	BI	60	10060
Switch061	BI	61	10061
Switch062	BI	62	10062
Switch063	BI	63	10063
Switch064	BI	64	10064

## 14.2 ControlKeeper T (GreenGate) Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Reset	BV	1001	201
Relay01	BV	1	1
Relay02	BV	2	2
Relay03	BV	3	3
Relay04	BV	4	4
Relay05	BV	5	5
Relay06	BV	6	6
Relay07	BV	7	7
Relay08	BV	8	8
Relay09	BV	9	9
Relay010	BV	10	10
Relay011	BV	11	11
Relay012	BV	12	12
Relay013	BV	13	13
Relay014	BV	14	14
Relay015	BV	15	15
Relay016	BV	16	16

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Relay017	BV	17	17
Relay018	BV	18	18
Relay019	BV	19	19
Relay020	BV	20	20
Relay021	BV	21	21
Relay022	BV	22	22
Relay023	BV	23	23
Relay024	BV	24	24
Relay025	BV	25	25
Relay026	BV	26	26
Relay027	BV	27	27
Relay028	BV	28	28
Relay029	BV	29	29
Relay030	BV	30	30
Relay031	BV	31	31
Relay032	BV	32	32
Relay033	BV	33	33
Relay034	BV	34	34
Relay035	BV	35	35
Relay036	BV	36	36
Relay037	BV	37	37
Relay038	BV	38	38
Relay039	BV	39	39
Relay040	BV	40	40
Relay041	BV	41	41
Relay042	BV	42	42
Relay043	BV	43	43
Relay044	BV	44	44
Relay045	BV	45	45
Relay046	BV	46	46
Relay047	BV	47	47
Relay048	BV	48	48
Remote01	BV	101	101
Remote02	BV	102	102
Remote03	BV	103	103
Remote04	BV	104	104
Remote05	BV	105	105
Remote06	BV	106	106
Remote07	BV	107	107
Remote08	BV	108	108
Remote09	BV	109	109
Remote010	BV	110	110
Remote011	BV	111	111
Remote012	BV	112	112
Remote013	BV	113	113
Remote014	BV	114	114
Remote015	BV	115	115

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote016	BV	116	116
Remote017	BV	117	117
Remote018	BV	118	118
Remote019	BV	119	119
Remote020	BV	120	120
Remote021	BV	121	121
Remote022	BV	122	122
Remote023	BV	123	123
Remote024	BV	124	124
Remote025	BV	125	125
Remote026	BV	126	126
Remote027	BV	127	127
Remote028	BV	128	128
Remote029	BV	129	129
Remote030	BV	130	130
Remote031	BV	131	131
Remote032	BV	132	132
Remote033	BV	133	133
Remote034	BV	134	134
Remote035	BV	135	135
Remote036	BV	136	136
Remote037	BV	137	137
Remote038	BV	138	138
Remote039	BV	139	139
Remote040	BV	140	140
Remote041	BV	141	141
Remote042	BV	142	142
Remote043	BV	143	143
Remote044	BV	144	144
Remote045	BV	145	145
Remote046	BV	146	146
Remote047	BV	147	147
Remote048	BV	148	148
Remote049	BV	149	149
Remote050	BV	150	150
Remote051	BV	151	151
Remote052	BV	152	152
Remote053	BV	153	153
Remote054	BV	154	154
Remote055	BV	155	155
Remote056	BV	156	156
Remote057	BV	157	157
Remote058	BV	158	158
Remote059	BV	159	159
Remote060	BV	160	160
Remote061	BV	161	161
Remote062	BV	162	162
Remote063	BV	163	163

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote064	BV	164	164
Switch01	BI	1	10001
Switch02	BI	2	10002
Switch03	BI	3	10003
Switch04	BI	4	10004
Switch05	BI	5	10005
Switch06	BI	6	10006
Switch07	BI	7	10007
Switch08	BI	8	10008
Switch09	BI	9	10009
Switch010	BI	10	10010
Switch011	BI	11	10011
Switch012	BI	12	10012
Switch013	BI	13	10013
Switch014	BI	14	10014
Switch015	BI	15	10015
Switch016	BI	16	10016
Switch017	BI	17	10017
Switch018	BI	18	10018
Switch019	BI	19	10019
Switch020	BI	20	10020
Switch021	BI	21	10021
Switch022	BI	22	10022
Switch023	BI	23	10023
Switch024	BI	24	10024
Switch025	BI	25	10025
Switch026	BI	26	10026
Switch027	BI	27	10027
Switch028	BI	28	10028
Switch029	BI	29	10029
Switch030	BI	30	10030
Switch031	BI	31	10031
Switch032	BI	32	10032
Switch033	BI	33	10033
Switch034	BI	34	10034
Switch035	BI	35	10035
Switch036	BI	36	10036
Switch037	BI	37	10037
Switch038	BI	38	10038
Switch039	BI	39	10039
Switch040	BI	40	10040
Switch041	BI	41	10041
Switch042	BI	42	10042
Switch043	BI	43	10043
Switch044	BI	44	10044
Switch045	BI	45	10045
Switch046	BI	46	10046

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Switch047	BI	47	10047
Switch048	BI	48	10048
Switch049	BI	49	10049
Switch050	BI	50	10050
Switch051	BI	51	10051
Switch052	BI	52	10052
Switch053	BI	53	10053
Switch054	BI	54	10054
Switch055	BI	55	10055
Switch056	BI	56	10056
Switch057	BI	57	10057
Switch058	BI	58	10058
Switch059	BI	59	10059
Switch060	BI	60	10060
Switch061	BI	61	10061
Switch062	BI	62	10062
Switch063	BI	63	10063
Switch064	BI	64	10064
AI_State01	BI	101	10101
AI_State02	BI	102	10102
AI_State03	BI	103	10103
AI_State04	BI	104	10104
AI_State05	BI	105	10105
AI_State06	BI	106	10106
AI_State07	BI	107	10107
AI_State08	BI	108	10108
AI_State09	BI	109	10109
AI_State010	BI	110	10110
AI_State011	BI	111	10111
AI_State012	BI	112	10112
AI_State013	BI	113	10113
AI_State014	BI	114	10114
AI_State015	BI	115	10115
AI_State016	BI	116	10116
AI_State017	BI	117	10117
AI_State018	BI	118	10118
AI_State019	BI	119	10119
AI_State020	BI	120	10120
AI_State021	BI	121	10121
AI_State022	BI	122	10122
AI_State023	BI	123	10123
AI_State024	BI	124	10124
AI_State025	BI	125	10125
AI_State026	BI	126	10126
AI_State027	BI	127	10127
AI_State028	BI	128	10128
AI_State029	BI	129	10129

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
AI_State030	BI	130	10130
AI_State031	BI	131	10131
AI_State032	BI	132	10132
AI01	AI	1	30001
AI02	AI	2	30002
AI03	AI	3	30003
AI04	AI	4	30004

### 14.3 Room Controller (GreenGate) Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Reset	BV	1001	201
Relay01	BV	1	1
Relay02	BV	2	2
Relay03	BV	3	3
Remote01	BV	101	101
Remote02	BV	102	102
Remote03	BV	103	103
Remote04	BV	104	104
Remote05	BV	105	105
Remote06	BV	106	106
Remote07	BV	107	107
Remote08	BV	108	108
Remote09	BV	109	109
Remote010	BV	110	110
Remote011	BV	111	111
Remote012	BV	112	112
Remote013	BV	113	113
Remote014	BV	114	114
Remote015	BV	115	115
Remote016	BV	116	116
Remote017	BV	117	117
Remote018	BV	118	118
Remote019	BV	119	119
Remote020	BV	120	120
Remote021	BV	121	121
Remote022	BV	122	122
Remote023	BV	123	123
Remote024	BV	124	124
Remote025	BV	125	125
Remote026	BV	126	126
Remote027	BV	127	127
Remote028	BV	128	128
Remote029	BV	129	129
Remote030	BV	130	130
Remote031	BV	131	131

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote032	BV	132	132
Remote033	BV	133	133
Remote034	BV	134	134
Remote035	BV	135	135
Remote036	BV	136	136
Remote037	BV	137	137
Remote038	BV	138	138
Remote039	BV	139	139
Remote040	BV	140	140
Remote041	BV	141	141
Remote042	BV	142	142
Remote043	BV	143	143
Remote044	BV	144	144
Remote045	BV	145	145
Remote046	BV	146	146
Remote047	BV	147	147
Remote048	BV	148	148
Remote049	BV	149	149
Remote050	BV	150	150
Remote051	BV	151	151
Remote052	BV	152	152
Remote053	BV	153	153
Remote054	BV	154	154
Remote055	BV	155	155
Remote056	BV	156	156
Remote057	BV	157	157
Remote058	BV	158	158
Remote059	BV	159	159
Remote060	BV	160	160
Remote061	BV	161	161
Remote062	BV	162	162
Remote063	BV	163	163
Remote064	BV	164	164
Switch01	BI	1	10001
Switch02	BI	2	10002
Switch03	BI	3	10003
Switch04	BI	4	10004
Switch05	BI	5	10005
Switch06	BI	6	10006
Switch07	BI	7	10007
Switch08	BI	8	10008
Switch09	BI	9	10009
Switch010	BI	10	10010
Switch011	BI	11	10011
Switch012	BI	12	10012
Switch013	BI	13	10013
Switch014	BI	14	10014



Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Switch015	BI	15	10015
Switch016	BI	16	10016
Switch017	BI	17	10017
Switch018	BI	18	10018
Switch019	BI	19	10019
Switch020	BI	20	10020
Switch021	BI	21	10021
Switch022	BI	22	10022
Switch023	BI	23	10023
Switch024	BI	24	10024
Switch025	BI	25	10025
Switch026	BI	26	10026
Switch027	BI	27	10027
Switch028	BI	28	10028
Switch029	BI	29	10029
Switch030	BI	30	10030
Switch031	BI	31	10031
Switch032	BI	32	10032
Switch033	BI	33	10033
Switch034	BI	34	10034
Switch035	BI	35	10035
Switch036	BI	36	10036
Switch037	BI	37	10037
Switch038	BI	38	10038
Switch039	BI	39	10039
Switch040	BI	40	10040
Switch041	BI	41	10041
Switch042	BI	42	10042
Switch043	BI	43	10043
Switch044	BI	44	10044
AI01	AI	1	30001
AI02	AI	2	30002
AI03	AI	3	30003

#### 14.4 ControlKeeper 4A (GreenGate) Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Reset	BV	1001	201
Relay01	BV	1	1
Relay02	BV	2	2
Relay03	BV	3	3
Relay04	BV	4	4
Relay05	BV	5	5
Relay06	BV	6	6
Relay07	BV	7	7
Relay08	BV	8	8
Relay09	BV	9	9

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Relay010	BV	10	10
Relay011	BV	11	11
Relay012	BV	12	12
Relay013	BV	13	13
Relay014	BV	14	14
Relay015	BV	15	15
Relay016	BV	16	16
Remote01	BV	101	101
Remote02	BV	102	102
Remote03	BV	103	103
Remote04	BV	104	104
Remote05	BV	105	105
Remote06	BV	106	106
Remote07	BV	107	107
Remote08	BV	108	108
Remote09	BV	109	109
Remote010	BV	110	110
Remote011	BV	111	111
Remote012	BV	112	112
Remote013	BV	113	113
Remote014	BV	114	114
Remote015	BV	115	115
Remote016	BV	116	116
Remote017	BV	117	117
Remote018	BV	118	118
Remote019	BV	119	119
Remote020	BV	120	120
Remote021	BV	121	121
Remote022	BV	122	122
Remote023	BV	123	123
Remote024	BV	124	124
Remote025	BV	125	125
Remote026	BV	126	126
Remote027	BV	127	127
Remote028	BV	128	128
Remote029	BV	129	129
Remote030	BV	130	130
Remote031	BV	131	131
Remote032	BV	132	132
Remote033	BV	133	133
Remote034	BV	134	134
Remote035	BV	135	135
Remote036	BV	136	136
Remote037	BV	137	137
Remote038	BV	138	138
Remote039	BV	139	139
Remote040	BV	140	140

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote041	BV	141	141
Remote042	BV	142	142
Remote043	BV	143	143
Remote044	BV	144	144
Remote045	BV	145	145
Remote046	BV	146	146
Remote047	BV	147	147
Remote048	BV	148	148
Remote049	BV	149	149
Remote050	BV	150	150
Remote051	BV	151	151
Remote052	BV	152	152
Remote053	BV	153	153
Remote054	BV	154	154
Remote055	BV	155	155
Remote056	BV	156	156
Remote057	BV	157	157
Remote058	BV	158	158
Remote059	BV	159	159
Remote060	BV	160	160
Remote061	BV	161	161
Remote062	BV	162	162
Remote063	BV	163	163
Remote064	BV	164	164
Switch01	BI	1	10001
Switch02	BI	2	10002
Switch03	BI	3	10003
Switch04	BI	4	10004
Switch05	BI	5	10005
Switch06	BI	6	10006
Switch07	BI	7	10007
Switch08	BI	8	10008
Switch09	BI	9	10009
Switch010	BI	10	10010
Switch011	BI	11	10011
Switch012	BI	12	10012
Switch013	BI	13	10013
Switch014	BI	14	10014
Switch015	BI	15	10015
Switch016	BI	16	10016
Switch017	BI	17	10017
Switch018	BI	18	10018
Switch019	BI	19	10019
Switch020	BI	20	10020
Switch021	BI	21	10021
Switch022	BI	22	10022
Switch023	BI	23	10023

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Switch024	BI	24	10024
Switch025	BI	25	10025
Switch026	BI	26	10026
Switch027	BI	27	10027
Switch028	BI	28	10028
Switch029	BI	29	10029
Switch030	BI	30	10030
Switch031	BI	31	10031
Switch032	BI	32	10032
Switch033	BI	33	10033
Switch034	BI	34	10034
Switch035	BI	35	10035
Switch036	BI	36	10036
Switch037	BI	37	10037
Switch038	BI	38	10038
Switch039	BI	39	10039
Switch040	BI	40	10040
Switch041	BI	41	10041
Switch042	BI	42	10042
Switch043	BI	43	10043
Switch044	BI	44	10044
Switch045	BI	45	10045
Switch046	BI	46	10046
Switch047	BI	47	10047
Switch048	BI	48	10048
Switch049	BI	49	10049
Switch050	BI	50	10050
Switch051	BI	51	10051
Switch052	BI	52	10052
Switch053	BI	53	10053
Switch054	BI	54	10054
Switch055	BI	55	10055
Switch056	BI	56	10056
Switch057	BI	57	10057
Switch058	BI	58	10058
Switch059	BI	59	10059
Switch060	BI	60	10060
Switch061	BI	61	10061
Switch062	BI	62	10062
Switch063	BI	63	10063
Switch064	BI	64	10064
AI_State01	BI	101	10101
AI_State02	BI	102	10102
AI_State03	BI	103	10103
AI_State04	BI	104	10104
AI_State05	BI	105	10105
AI_State06	BI	106	10106

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
AI_State07	BI	107	10107
AI_State08	BI	108	10108
AI_State09	BI	109	10109
AI_State010	BI	110	10110
AI_State011	BI	111	10111
AI_State012	BI	112	10112
AI_State013	BI	113	10113
AI_State014	BI	114	10114
AI_State015	BI	115	10115
AI_State016	BI	116	10116
AI_State017	BI	117	10117
AI_State018	BI	118	10118
AI_State019	BI	119	10119
AI_State020	BI	120	10120
AI_State021	BI	121	10121
AI_State022	BI	122	10122
AI_State023	BI	123	10123
AI_State024	BI	124	10124
AI_State025	BI	125	10125
AI_State026	BI	126	10126
AI_State027	BI	127	10127
AI_State028	BI	128	10128
AI_State029	BI	129	10129
AI_State030	BI	130	10130
AI_State031	BI	131	10131
AI_State032	BI	132	10132
AI01	AI	1	30001
AI02	AI	2	30002
AI03	AI	3	30003
AI04	AI	4	30004

#### 14.5 ControlKeeper M/MB (GreenGate) Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Reset	BV	1001	201
Relay01	BV	1	1
Relay02	BV	2	2
Relay03	BV	3	3
Relay04	BV	4	4
Relay05	BV	5	5
Relay06	BV	6	6
Relay07	BV	7	7
Relay08	BV	8	8
Relay09	BV	9	9
Relay010	BV	10	10
Relay011	BV	11	11
Relay012	BV	12	12

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Relay013	BV	13	13
Relay014	BV	14	14
Relay015	BV	15	15
Relay016	BV	16	16
Relay017	BV	17	17
Relay018	BV	18	18
Relay019	BV	19	19
Relay020	BV	20	20
Relay021	BV	21	21
Relay022	BV	22	22
Relay023	BV	23	23
Relay024	BV	24	24
Relay025	BV	25	25
Relay026	BV	26	26
Relay027	BV	27	27
Relay028	BV	28	28
Relay029	BV	29	29
Relay030	BV	30	30
Relay031	BV	31	31
Relay032	BV	32	32
Relay033	BV	33	33
Relay034	BV	34	34
Relay035	BV	35	35
Relay036	BV	36	36
Relay037	BV	37	37
Relay038	BV	38	38
Relay039	BV	39	39
Relay040	BV	40	40
Relay041	BV	41	41
Relay042	BV	42	42
Relay043	BV	43	43
Relay044	BV	44	44
Relay045	BV	45	45
Relay046	BV	46	46
Relay047	BV	47	47
Relay048	BV	48	48
Relay049	BV	49	49
Relay050	BV	50	50
Relay051	BV	51	51
Relay052	BV	52	52
Relay053	BV	53	53
Relay054	BV	54	54
Relay055	BV	55	55
Relay056	BV	56	56
Relay057	BV	57	57
Relay058	BV	58	58
Relay059	BV	59	59
Relay060	BV	60	60

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Relay061	BV	61	61
Relay062	BV	62	62
Relay063	BV	63	63
Relay064	BV	64	64
Remote01	BV	101	101
Remote02	BV	102	102
Remote03	BV	103	103
Remote04	BV	104	104
Remote05	BV	105	105
Remote06	BV	106	106
Remote07	BV	107	107
Remote08	BV	108	108
Remote09	BV	109	109
Remote010	BV	110	110
Remote011	BV	111	111
Remote012	BV	112	112
Remote013	BV	113	113
Remote014	BV	114	114
Remote015	BV	115	115
Remote016	BV	116	116
Remote017	BV	117	117
Remote018	BV	118	118
Remote019	BV	119	119
Remote020	BV	120	120
Remote021	BV	121	121
Remote022	BV	122	122
Remote023	BV	123	123
Remote024	BV	124	124
Remote025	BV	125	125
Remote026	BV	126	126
Remote027	BV	127	127
Remote028	BV	128	128
Remote029	BV	129	129
Remote030	BV	130	130
Remote031	BV	131	131
Remote032	BV	132	132
Remote033	BV	133	133
Remote034	BV	134	134
Remote035	BV	135	135
Remote036	BV	136	136
Remote037	BV	137	137
Remote038	BV	138	138
Remote039	BV	139	139
Remote040	BV	140	140
Remote041	BV	141	141
Remote042	BV	142	142
Remote043	BV	143	143

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Remote044	BV	144	144
Remote045	BV	145	145
Remote046	BV	146	146
Remote047	BV	147	147
Remote048	BV	148	148
Remote049	BV	149	149
Remote050	BV	150	150
Remote051	BV	151	151
Remote052	BV	152	152
Remote053	BV	153	153
Remote054	BV	154	154
Remote055	BV	155	155
Remote056	BV	156	156
Remote057	BV	157	157
Remote058	BV	158	158
Remote059	BV	159	159
Remote060	BV	160	160
Remote061	BV	161	161
Remote062	BV	162	162
Remote063	BV	163	163
Remote064	BV	164	164
Switch01	BI	1	10001
Switch02	BI	2	10002
Switch03	BI	3	10003
Switch04	BI	4	10004
Switch05	BI	5	10005
Switch06	BI	6	10006
Switch07	BI	7	10007
Switch08	BI	8	10008
Switch09	BI	9	10009
Switch010	BI	10	10010
Switch011	BI	11	10011
Switch012	BI	12	10012
Switch013	BI	13	10013
Switch014	BI	14	10014
Switch015	BI	15	10015
Switch016	BI	16	10016
Switch017	BI	17	10017
Switch018	BI	18	10018
Switch019	BI	19	10019
Switch020	BI	20	10020
Switch021	BI	21	10021
Switch022	BI	22	10022
Switch023	BI	23	10023
Switch024	BI	24	10024
Switch025	BI	25	10025
Switch026	BI	26	10026



Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
Switch027	BI	27	10027
Switch028	BI	28	10028
Switch029	BI	29	10029
Switch030	BI	30	10030
Switch031	BI	31	10031
Switch032	BI	32	10032
Switch033	BI	33	10033
Switch034	BI	34	10034
Switch035	BI	35	10035
Switch036	BI	36	10036
Switch037	BI	37	10037
Switch038	BI	38	10038
Switch039	BI	39	10039
Switch040	BI	40	10040
Switch041	BI	41	10041
Switch042	BI	42	10042
Switch043	BI	43	10043
Switch044	BI	44	10044
Switch045	BI	45	10045
Switch046	BI	46	10046
Switch047	BI	47	10047
Switch048	BI	48	10048
Switch049	BI	49	10049
Switch050	BI	50	10050
Switch051	BI	51	10051
Switch052	BI	52	10052
Switch053	BI	53	10053
Switch054	BI	54	10054
Switch055	BI	55	10055
Switch056	BI	56	10056
Switch057	BI	57	10057
Switch058	BI	58	10058
Switch059	BI	59	10059
Switch060	BI	60	10060
Switch061	BI	61	10061
Switch062	BI	62	10062
Switch063	BI	63	10063
Switch064	BI	64	10064
AI_State01	BI	101	10101
AI_State02	BI	102	10102
AI_State03	BI	103	10103
AI_State04	BI	104	10104
AI_State05	BI	105	10105
AI_State06	BI	106	10106
AI_State07	BI	107	10107
AI_State08	BI	108	10108
AI_State09	BI	109	10109

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
AI_State010	BI	110	10110
AI_State011	BI	111	10111
AI_State012	BI	112	10112
AI_State013	BI	113	10113
AI_State014	BI	114	10114
AI_State015	BI	115	10115
AI_State016	BI	116	10116
AI_State017	BI	117	10117
AI_State018	BI	118	10118
AI_State019	BI	119	10119
AI_State020	BI	120	10120
AI_State021	BI	121	10121
AI_State022	BI	122	10122
AI_State023	BI	123	10123
AI_State024	BI	124	10124
AI_State025	BI	125	10125
AI_State026	BI	126	10126
AI_State027	BI	127	10127
AI_State028	BI	128	10128
AI_State029	BI	129	10129
AI_State030	BI	130	10130
AI_State031	BI	131	10131
AI_State032	BI	132	10132

#### 14.6 WaveLinx Wired Scene Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
scene	AO	1	40001
sceneFT	AO	2	40002

#### 14.7 WaveLinx Wired Channel Mappings to Field Protocols

Point Name	BACnet Object Type	BACnet Object ID	Modbus Register
channel	AO	1	40001
channelFT	AO	2	40002

## 15 Specifications



ProtoAir FPA-W44	
<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) One Ethernet 10/100 BaseT port
<b>Power Requirements</b>	<i>Input Voltage:</i> 12-24VDC or 24VAC <i>Current draw:</i> 24VAC 0.125A <i>Max Power:</i> 3 Watts                              12-24VDC 0.25A @12VDC
<b>Approvals</b>	FCC Part 15 C, IEC 62368-1, CAN/CSA C22.2 No. 60950-1, EN IEC 62368-1:2020+A11:2020, 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
<b>Wi-Fi 802.11 b/g/n</b>	<i>Frequency:</i> 2.4 GHz <i>Channels:</i> 1 to 11 (inclusive) <i>Antenna Type:</i> SMA <i>Encryption:</i> TKIP, WPA2 & AES

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

### 15.1 Compliance with EN IEC 62368-1

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

- 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.

## 15.2 Warnings for FCC and IC

### Waste Disposal

It is recommended to disassemble the device before abandoning it in conformity with local regulations. Please ensure that the abandoned batteries are disposed according to local regulations on waste disposal. Do not throw batteries into fire (explosive) or put in common waste canister. Products or product packages with the sign of “explosive” should not be disposed like household waste but delivered to specialized electrical & electronic waste recycling/disposal center. Proper disposal of this sort of waste helps avoiding harm and adverse effect upon surroundings and people’s health. Please contact local organizations or recycling/disposal center for more recycling/disposal methods of related products.

Comply with the following safety tips:

### Do Not use in Combustible and Explosive Environment

Keep away from combustible and explosive environment for fear of danger.

Keep away from all energized circuits.

Operators should not remove enclosure from the device. Only the group or person with factory certification is permitted to open the enclosure to adjust and replace the structure and components of the device. Do not change components unless the power cord is removed. In some cases, the device may still have residual voltage even if the power cord is removed. Therefore, it is a must to remove and fully discharge the device before contact so as to avoid injury.

### Unauthorized Changes to this Product or its Components are Prohibited

In the aim of avoiding accidents as far as possible, it is not allowed to replace the system or change components unless with permission and certification. Please contact the technical department of Vantron or local branches for help.

### Pay Attention to Caution Signs

Caution signs in this manual remind of possible danger. Please comply with relevant safety tips below each sign. Meanwhile, you should strictly conform to all safety tips for operation environment.

### Notice

Considering that reasonable efforts have been made to assure accuracy of this manual, Vantron assumes no responsibility of possible missing contents and information, errors in contents, citations, examples, and source programs.

Vantron reserves the right to make necessary changes to this manual without prior notice. No part of this manual may be reprinted or publicly released.

## FCC Warning

This device complies with FCC Rules. Operation is subject to the following conditions.

This device may not cause harmful interference.

This device must accept any interference received, including interference that may cause undesired operation.

This device complies with Part 15C of the FCC Rules

**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.

Any modification to the product is not permitted unless authorized by MSA Safety. It's not allowed to disassemble the product; it is not allowed to replace the system or change components unless with permission and certification. Please contact the FieldServer technical support department or local branches for help.

## IC Statement

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions:

- This device may not cause interference, and
- This device must accept any interference, including interference that may cause undesired operation of the device.

Warning! This class B digital apparatus complies with Canadian ICES-003.

Industry Canada ICES-003 Compliance Label:

CAN ICES-3 (B)/NMB-3(B)

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts.

L'exploitation est autorisée aux deux conditions suivantes:

- l'appareil ne doit pas produire de brouillage, et
- l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

## **RF Exposure Warning**

This equipment must be installed and operated in accordance with provide instructions and the antenna used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operation in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

For product compliance test FCC and IC, all the technical documentation is submitted by MSA Safety, who is the customer or importer of the ProtoAir.

ProtoAir radios have been approved to be used with antennas that have a maximum gain of 3 dBi. Any antennas with a gain greater than 3 dBi are strictly prohibited for use with this device.

## **Power Output**

Frequency Range Output Power:

### ***Wi-Fi***

2402.0 – 2480 MHz 0.004 W

2412.0 – 2462.0 MHz 0.0258 W

The Output Power listed is conducted. The device should be professionally installed to ensure compliance with power requirements. The antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and not be co-located with any other transmitters except in accordance with multi-transmitter product procedures. This device supports 20MHz and 40MHz bandwidth.

## **16 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.