





# Start-up Guide **ProtoAir FPA-W44 For Interfacing Chromalox Products**



fieldserver

Document Revision: 11.A Web Configurator

MSAsafety.com

## **Technical Support**

Thank you for purchasing the ProtoAir for Chromalox.

Please call Chromalox for technical support of the ProtoAir product.

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

Support Contact Information:

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Website: www.chromalox.com

## **Quick Start Guide**

- 1. Record the information about the unit. (Section 2.1)
- 2. Check that the ProtoAir and customer device COM settings match. (Section 2.3)
- If connecting to a serial device: Connect the ProtoAir 3 pin RS-485 R1 port to the RS-485 network connected to each of the devices. (Section 3.1)
- 4. If using a serial field protocol: Connect the ProtoAir 3 pin RS-485 R2 port to the field protocol cabling. (Section 3.2)
- 5. Connect power to ProtoAir 3 pin power port. (Section 3.5)
- 6. Connect a PC to the ProtoAir via Ethernet cable. (Section 4)
- 7. Setup Web Server Security and login via web browser. (Section 5)
- 8. Configure the ProtoAir to connect to the local network. (Section 6)
- 9. Integrate the ProtoAir with the Grid or opt out. (Section 7)
- 10. Use a web browser to access the ProtoAir Web Configurator page to select the profile of the device attached to the ProtoAir and enter any necessary device information. Once the device is selected, the ProtoAir automatically builds and loads the appropriate configuration. (Section 8.3)

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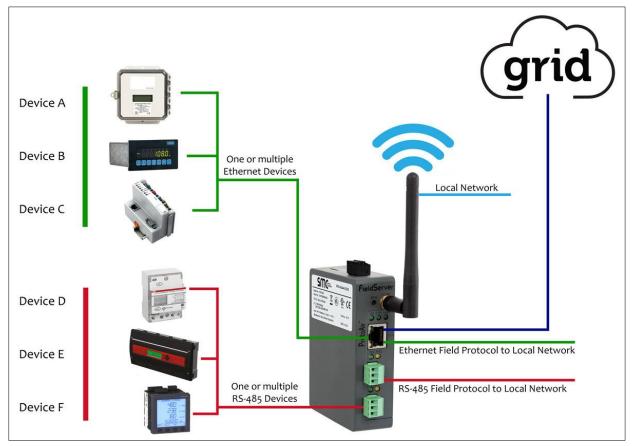
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## 1 Introduction

#### 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 Chromalox's devices (hereafter simply called "device") connected to the ProtoAir and automatically configures them for BACnet/IP, BACnet MS/TP, Modbus TCP/IP, Modbus RTU, EtherNet/IP and Metasys<sup>®1</sup> N2.

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

- Remotely monitor and control devices.
- Collect device data and view it on the Grid 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 about the Grid, refer to the MSA Grid Start-up Guide.

<sup>&</sup>lt;sup>1</sup> Metasys is a registered trademark of Johnson Controls Inc.

## 1.2 Methods of Configuration

Devices	Communication
ITC1	Modbus RTU & Modbus TCP/IP
ITC2	Modbus RTU & Modbus TCP/IP
ITLS4	Modbus RTU & Modbus TCP/IP
ITLS6	Modbus RTU & Modbus TCP/IP
ITLS_2016	Modbus RTU & Modbus TCP/IP
40 Series	Modbus RTU & Modbus TCP/IP
50 Series	Modbus RTU & Modbus TCP/IP
6060	Modbus RTU & Modbus TCP/IP
4081_4082	Modbus RTU & Modbus TCP/IP
3340	Modbus RTU & Modbus TCP/IP
3380	Modbus RTU & Modbus TCP/IP
6020	Modbus RTU & Modbus TCP/IP
1020	Modbus RTU & Modbus TCP/IP
1040	Modbus RTU & Modbus TCP/IP
WM30-WM40	Modbus RTU & Modbus TCP/IP
1030	Modbus RTU & Modbus TCP/IP
MV	EtherNet/IP
ITLS_Snow	Modbus RTU & Modbus TCP/IP
Figure 1: Method o	of Configuration per Device

## 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-W44-1853	
Figure 2: ProtoAir Part Numbers		

• FPA-W44 units have the following 4 ports: Ethernet + Wi-Fi + 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-W44-1853	5,000	
Figure 3: Supported Point Count Capacity		

Devices	Points Per Device	
ITC1	29	
ITC2	57	
ITLS4	230	
ITLS6 – ITLS72	152 – 1802	
ITLS_2016	434	
40 Series	45	
50 Series	27	
6060	103	
4081_4082	105	
3340	133	
3380	201	
6020	84	
1020	118	
1040	310	
WM30-WM40	33	
1030	118	
MV	380	
ITLS_Snow	188 – 2234	
Figure 4: Points per Device		

#### 2.3 Configuring Device Communications

- 2.3.1 Confirm the Device and ProtoAir COM Settings Match
  - Any connected serial devices MUST have the same baud rate, data bits, stop bits, and parity settings as the ProtoAir.
  - Figure 5 specifies the device serial port settings required to communicate with the ProtoAir.

Port Setting	Device	
Protocol	Modbus RTU	
Baud Rate	19200	
Parity	Even	
Data Bits	8	
Stop Bits	1	
Figure 5: COM Settings		

#### 2.3.2 Set Node-ID for Any Device Attached to the ProtoAir

- Set Node-ID for any device attached to ProtoAir. 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 8.3)
- NOTE: The Metasys N2 and Modbus TCP/IP field protocol Node-ID is automatically set to be the same value as the Node-ID of the device.

#### 2.3.3 Set IP Address for Any Ethernet Device Connected to the ProtoAir

- Ensure the device is set to Modbus TCP/IP or EtherNet/IP to communicate with the ProtoAir.
- The device needs to be on the same IP subnet as the ProtoAir and the configuration PC.
- Record the following device information to start the setup:
  - o IP Address
  - o IP port
  - TCP\_ID
- NOTE: If using EtherNet/IP only the IP Address is required. This information is required for Section 8.3.

#### 2.4 Attaching the Antenna

#### Wi-Fi Antenna:

Screw in the Wi-Fi antenna to the front of the unit as shown in Figure 52.

NOTE: Using an external antenna is also an option. An external antenna can be plugged into the SMA connector. The best antenna for the job depends on the range, topography and obstacles between the two radios.

## 3 Interfacing ProtoAir to Devices

#### 3.1 Device Connections to ProtoAir

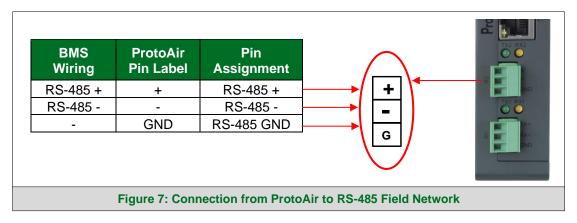
The ProtoAir has a 3-pin Phoenix connector for connecting RS-485 devices on the R1 port.

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

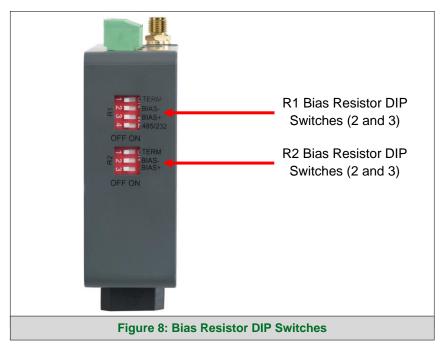
	Droto Air	Pin
Device Pins	ProtoAir Pin Label	Assignment
RS-485 +	TX +	RS-485 +
RS-485 -	RX -	RS-485 -
RS-485 GND	GND	RS-485 GND
	Figure 6: RS-4	85 Connections fr

#### 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. (Figure 7)
  - Use standard grounding principles for RS-485 GND
- See **Section 4** 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 as shown in Figure 8.

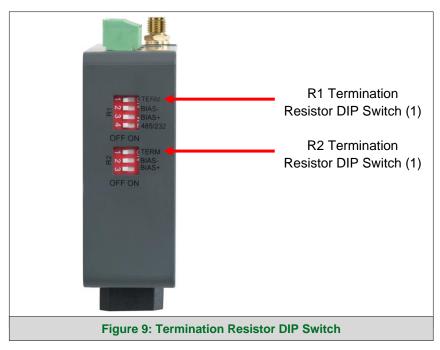
The ProtoAir bias resistors are used to keep the RS-485 bus to a known state, when there is no transmission on the line (bus is idling), to help prevent false bits of data from being detected. The bias resistors typically pull one line high and the other low - far away from the decision point of the 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 gateways can be put on the network without running into the bias resistor limit which is < 500 ohms.

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

- 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.

#### 3.4 Termination Resistor



If the ProtoAir 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 as shown in Figure 9.

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.

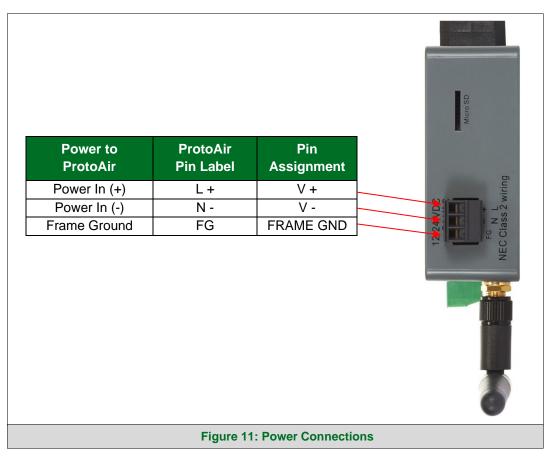
#### 3.5 Power-Up ProtoAir

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.			
Figure 10: Required Current Draw for the ProtoAir			

Apply power to the ProtoAir as shown below in **Figure 11.** Ensure that the power supply used complies with the specifications provided in **Section 12**.

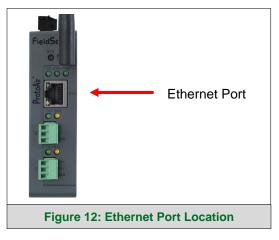
- The ProtoAir accepts 9-30VDC or 24VAC on pins L+ and N-.
- Frame GND should be connected.



#### 4 Connect the PC to the ProtoAir

#### 4.1 Connecting to the Gateway via Ethernet

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



#### 4.1.1 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:

- Find the search field in the local computer's taskbar (usually to the right of the windows icon  $\blacksquare$ ) 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:

• Ose the following IP address:	
<u>I</u> P address:	192.168.1.11
S <u>u</u> bnet mask:	255 . 255 . 255 . 0
Default gateway:	

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

#### 5 Setup Web Server Security

Navigate to the IP Address of the ProtoAir on the local PC by opening a web browser and entering the IP Address of the ProtoAir; the default Ethernet address is 192.168.1.24.

## NOTE: If the IP Address of the ProtoAir has been changed, the assigned IP Address can be discovered using the FS Toolbox utility. See Section 9.1 for instructions.

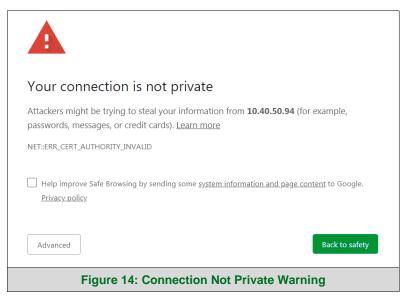
#### 5.1 Login to the FieldServer

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.

 s not yet been configured for the	
HTTP, which is not secure, or rath thout an internet connection your	
th an internet connection your bro https://192-168-1-24.gw.fieldj	

• 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 Figure 15 example this text is "Proceed to 10.40.50.94 (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.

CHROMALOX Adarent Terrent Technologie		
	Log In	
	Username	
	Password	
	Log In	
	Forgot Password?	
	Figure 16: FieldServer Login	

- 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 10.7.

#### 5.2 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 wit	th default trusted TLS certificate (requires internet connection to be trusted)
HTTPS with	th own trusted TLS certificate
HTTP (not	secure, vulnerable to man-in-the-middle attacks)
Save	
	Figure 17: Security Mode Selection Screen

NOTE: Cookies are used for authentication.

#### NOTE: To change the web server security mode after initial setup, go to Section 10.1.

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

### 5.2.1 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

XzyMbQZFiRuJZJPe7CTHLcHOrHLowoUFoVTaBMYd4d6VGdNklKazByWKcNQL7mrX A4IBAQBFM+IPvOx3T/47VEmaiXqE3bx3zEuBFJ6pWPIw7LHf2r2ZoHw+9xb+aNMU dVyAelhBMTMsni2ERvQVp0xj3psSv2EJyKXS1bOYNRLsq7UzpwuAdT/Wy3o6vUM5 K+Cwf9qEoQ0LuxDZTIECt67MkcHMiuFi5pk7TRicHnQF/sfOAYOulduHOy9exlk9 FmHFVDIZt/cJUaE+e74EuSph+gEr0IQo2wvmhyc7L22UXse1NoOfU2Zg0Eu1VVtu JRryaMWiRFEWuuzMGZtKFWVC+8q2JQsVcgiRWM7naoblLEhOCMH+sKHJMCxDoXGt vtZipZUoAL51YXxWSVcyZdGiAP5e -----END CERTIFICATE-----

#### Private Key

sHB0zZoHr4YQSDk2BbYVzzbl0LDuKtc8+JiO3ooGjoTuHnqkeAj/fKfbTAsKeAzw gKQe+H5UQNK0bdvZfOJrm6daDK2vVDmR5k+jUUhEj5N49upIroB97MQqYotzgfT+ THIbpq5t1SIK617k04ObKmHF5l8fck+ru545sVmpeezh0m5j5SURYAZMvbq5daCu J4I5NIihbEvxRF4UK41ZDMCvujoPcBKUWrb1a/3XXnDnM2K9xyz2wze998D6Wk46 +7aOFY9F+7j5ljmnkoS3GYtwCyH5jP+mPP1K6RnuiD019wvvGPb4dtN/RTnfd0eF GYeVSkl9fxxkxDOFtfdWRZbM/rPin4tmO1Xf8HqONVN1x/iaMynOXG4cukoi4+VO u0rZaUEsII2zNkfrn7fAASm5NBWg202Cy9IAYnuujs3aALI5uGBeekA62oTMxlzx -----END RSA PRIVATE KEY----Private Key Passphrase

Specify if encrypted



Figure 18: Security Mode Selection Screen – Certificate & Private Key

- 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.

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

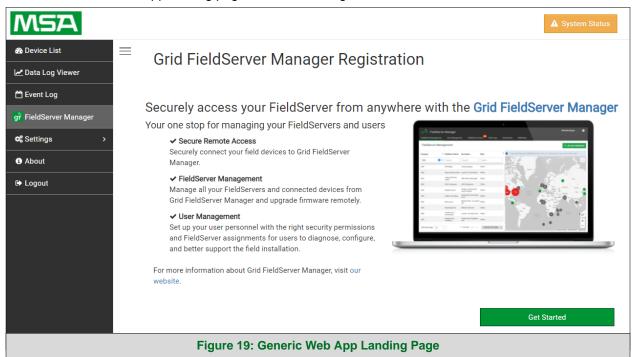
- Select one of these options and click the Save button. •
- A "Redirecting" message will appear. After a short time, the FieldServer GUI will open.

\*

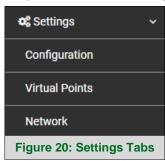
### 6 Configure Network Settings

#### 6.1 Navigate to the 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.

You are about to leave the registration process to connect your FieldServer with Grid FieldServer Manager
Exit Registration Cancel

#### 6.2 Change the ProtoAir IP Address

Configure the IP settings of the ProtoAir using the following tabs on the Network page:

- If using the Ethernet port to connect to the local network, go to "ETH 1" (Section 6.2.1).
- If connecting the ProtoAir to a local wireless network, go to "WiFi Client" (Section 6.2.2).
- If updating Wi-Fi Access Point settings, go to "WiFi Access Point" (Section 6.2.3).

#### 6.2.1 ETH 1

The ETH 1 tab is the landing page when selecting the Network Settings tab. 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 connected to a router, set the Gateway to the same IP Address as the router.

• Click the Save button to activate the new settings.

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

ETH 1 WiFi Client WiFi Access Point Routing		
Enable DHCP	Network Status	
IP Address	Connection Status	Connected
10.40.50.92	MAC Address	00:50:4e:60:01:fd
Netmask	Ethernet Tx Msgs	498,827
	Ethernet Rx Msgs	1,384,116
255.255.255.0	Ethernet Tx Msgs Dropped	0
Gateway	Ethernet Rx Msgs Dropped	0
10.40.50.1		
Domain Name Server 1 (Optional)		
10.40.2.24		
Domain Name Server 2 (Optional)		
10.15.130.15		
Cancel Save		
Figure 22: ETH 1	Port Network Settings	

#### 6.2.2 Wi-Fi Client

- Set the Wi-Fi Status to ENABLED for the ProtoAir to communicate with other devices via Wi-Fi.
- Enter the Wi-Fi SSID and Wi-Fi Password for the local wireless access point.
- Enable DHCP to automatically assign all Wi-Fi Client Settings fields or modify the Settings manually, via the fields immediately below the note (IP Address, Network, etc.).

#### NOTE: If connected to a router, set the IP gateway to the same IP Address as the router.

- Click the Save button to activate the new settings.
- Go to Router settings (Section 6.2.4) to set the default connection to Wi-Fi Client.

2 Enable	Network Status	
SSID	Connection Status	Connected
FieldSVR	MAC Address	A0:CC:2B:FF:AB:5
	WiFi BSSID	78:BC:1A:52:C8:42
assword (Optional)	WiFi Channel	2,462
••••••	WiFi Tx Msgs	1,484
Z Enable DHCP	WiFi Rx Msgs	1,799
P Address	WiFi Tx Msgs Dropped	0
10.40.50.37	WiFi Rx Msgs Dropped	16
	WiFi Pairwise Cipher	CCMP
Netmask	WiFi Group Cipher	CCMP
255.255.255.0	WiFi Key Mgmt	WPA2-PSK
Gateway	WiFi Link	19.5 MBit/s MCS
10.40.50.1	WiFi Signal Level	-86 dBm
Domain Name Server 1 (Optional)		
10.5.4.77		
Domain Name Server 2 (Optional)		
10.40.2.24		

#### 6.2.3 Wi-Fi Access Point

- Check the Enable tick box to allow connecting to the ProtoAir via Wi-Fi Access Point.
- Modify the Settings manually as needed, via these fields: SSID, Password, Channel, IP Address, Netmask, IP Pool Address Start, and IP Pool Address End.

#### NOTE: The default channel is 11. The default IP Address is 192.168.50.1.

- Click the Save button to activate the new settings.
- NOTE: If the webpage was open in a browser via Wi-Fi, the browser will need to be updated with the new Wi-Fi details before the webpage will be accessible again.

ETH 1 WiFi Client WiFi Access Point	t Routing		
Enable		Network Status	
SSID		Connection Status	Oisabled
ProtoAir-6001FD		Access Point MAC Address	a0:cc:2b:ff:ab:59
Password (Optional)		Access Point Tx Msgs	0
		Access Point Rx Msgs	0
	•	Access Point Tx Msgs Dropped	0
Channel		Access Point Rx Msgs Dropped	0
192.168.50.1 Netmask 255.255.255.0			
IP Pool Address Start			
192.168.50.120			
IP Pool Address End			
192.168.50.130			
Cancel Save			
	Figure 24: Wi-Fi AP Netv	vork Settings	

#### 6.2.4 Routing

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.
- 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.

#### NOTE: If using Wi-Fi Client and not Ethernet, make the top priority rule a Wi-Fi Client connection.

ETH 1 WiFi Cl	ient WiFi Access Point	Routing		
Set up the IP routir	ng rules of your FieldServer fo	r internet access and access to o	ther networks.	
If you want to reac routed to.	h another device that is not c	onnected to the local network, you	u can add a rule to determine on which gat	eway the device must be
Interface	Destination Network	Netmask	Gateway IP Address	Priority ⑦
WiFi Client	✓ Default	-	10.40.50.1	255
ETH 1	▶ 10.40.50.10	255.255.255.255	10.40.50.1	100
+ Add Rule				
Cancel Save				
		Figure 25: Routing Ne	twork Settings	

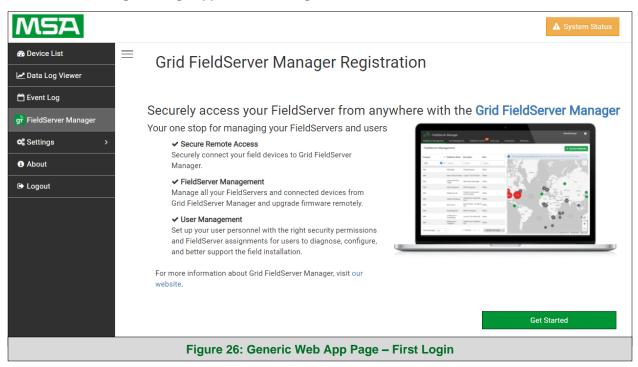
### 7 Grid User Setup, Registration and Login

The Grid is MSA Safety's device cloud solution for IIoT. Integration with the Grid enables 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 Grid, refer to the <u>MSA Grid Start-up Guide</u>.

#### 7.1 Choose Whether to Integrate the Grid

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

NOTE: If a warning message appears instead, go to Section 10.8 to resolve the connection issue.



- Either go through the Grid setup to integrate cloud functionality to the FieldServer or optout of Grid FieldServer Manager setup.
  - For Grid setup, continue with instructions in the following sections
  - To opt out of the Grid, 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 (skip to **Section 8** to continue FieldServer configuration)
  - To ignore Grid setup until the next time the FieldServer 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 (skip to Section 8 to continue FieldServer configuration)

A Warning	×
You are about to leave the registration process to connect your FieldServer with Grid FieldServer Manager	
Exit Registration Cancel	
Figure 27: Grid Opt Out Warning Window	

NOTE: If Grid integration with the ProtoAir is not desired, skip to Section 8 to continue gateway setup. If user setup is already complete go to Section 7.3.

#### 7.2 User Setup

Before the gateway can be connected to the Grid a user account must be created. Request an invitation to the Grid from the manufacturer's support team and follow the instructions below to set up login details:

• The "Welcome to the MSA Grid" email will appear as shown below.

ications@fieldpop.io ●	2:20 PM (16 minutes ago). 🚖
SMGsierra monitor	
Please complete SMC Cloud regis	tration
Hello from Sierra Monitor,	
You're one step closer to lloT-empoweri cloud for remote connectivity.	ng your devices with the SMC Cloud device
Click the link below to complete SMC Clo	ud registration.
Sincerely,	Registration
Sierra Monitor Corporation	
Copyright © Sierra Monitor Corporation +1 408 262-6611 www.sierramonitor.com	Follow us: in f t 😵 🖸
This email was sent to because v	ou indicated that you would like to register to SMC Cloud with this

NOTE: If no email was received, check the spam/junk folder for an email from <u>notification@fieldpop.io</u>. Contact the manufacturer's support team if no email is found.

•	Click the "Complete Registration'	' button and fill ir	n user details	accordingly.
---	-----------------------------------	----------------------	----------------	--------------

Email Address		
user@gmail.com		
First Name		
First Name		*
Last Name		
Last Name		*
Mobile Phone Number		
■ • (201) 555-0123		*
New Password	*Invalid Mobile Number	
password	۲	*
Confirm Password	* Please enter new password	
password	۲	*
By registering my account that I am agreeing to the Fi of Service and Privacy Poli	eldServer Manager Terms	*
	* Man	datory Field:
	Cancel	

• 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.

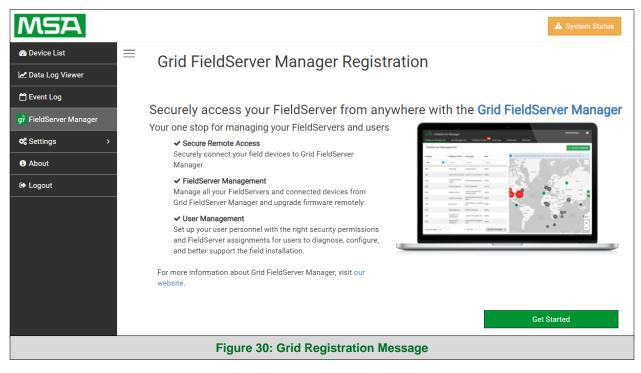
- Click "Save" to save the user details.
- Click "OK" when the Success message appears.
- Record the email account used and password for future use.

#### 7.3 Registration Process

Once Grid user credentials have been generated, the ProtoAir can be registered onto the Grid server.

• When first logging onto the ProtoAir, the Web App will open on the Grid FieldServer Manager page.

NOTE: If a warning message appears instead, go to Section 10.8 to resolve the connection issue.



• Click Get Started to view the Grid registration page.

NOTE: For information on the System Status button, go to Section 10.9.

• To register, fill in the user details, site details, gateway details and Grid account credentials.

1	2	3	4
Installer Details	Installation Site	FieldServer Details	Account Details
Installer Details			
Installer Name			
Company			
Telephone			
Email			
Installation Date	20-September-2021		
			Cancel Next
	Figure 31: Grid Regi	stration – Installer Details	

o Enter user details and click Next

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

-0-		2		3			
Installer Details		Installation Site		FieldServer De	etails		Account Details
lation Site Deta	ails						
						(43)	6
Search	Search Google Maps		Q	<sup>ad</sup> Map Satel	llite	Chalmers	Yeoman
Site Name	Enter a name for this l	ocation				*	VA V
				(18)	Round Grove	18 Brookston	18 Delphi
Building				Atkinson		43	
Street Address	Enter street address			Oxford	231	Battle Grou	Americus
Suburb				S2 Otte	erbein Montmorenci	Battle Glob	
				ine Village (26)	26	Bar Barry Heights	
City				Green	HII	52 Lafayette	26
State				55	Sha	deland 38	Dayton
Country				mer Independence	West Point	231	Mulbe
oountry				Attica (28)	Odell	South Raub	Stockwell
Postal Code					2	B Romney	Clarks Hill
Latitude	Enter latitude			Newtown	25 New		52
Longitude	Enter longitude			(41)	Richmo	nd Linden	Colfa
Longitude				Google	Keyboard shortcuts	(231) Map data @2021 God	ogle Terms of Use Rep
						Can	cel Previous

o Enter Name and Description (required) then click Next

Grid FieldServer Manager Registration						
	2	3	4			
Installer Details	Installation Site	FieldServer Details	Account Details			
FieldServer Detai	ls					
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			
	Figure 33: Grid Registr	ation – Gateway Details				

o Enter user credentials and click Register Device

Grid FieldServer Manager Registration							
	2	3	4				
Installer Details	Installation Site	FieldServer Details	Account Details				
New Users							
If you do not have Grid Field FieldServer Manager accou	lServer Manager credentials, you can c nt now	reate a new Grid Create a	n Grid FieldServer Manager account				
Existing Users - Ente	r FieldServer registration d	letails					
User Credentials							
Username							
Password							
		Cancel	Previous Register FieldServer				
Figure 34: Grid Registration – Grid Account							

• 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 ProtoAir.

Grid FieldServer Manager F	Registration					
FieldServer Registered						
FieldServer Details	Installer Details	Installation Site Details				
Name: Test1 Description: FS Test FieldServer Info: Timezone: America/Los_Angeles MAC Address: 00:50:4E:60:13:FE Tunnel Server URL: tunnel.fieldpop.io FieldServer ID: treedancer_KrgPKmLRY Product Name: Core Application - Default Product Version: 5.2.0	Installer Name: Test Company: MSA Safety Telephone: (408) 444-4444 Email: contactus@msasafety.com Installation Date: Sep 20, 2021	Site Name: Site#1 Building: Street Address: 1020 Canal Road Suburb: City: Lafayette State: Indiana Country: United States Postal Code: 47904				
		Update FieldServer Details				
Figure 35: Device Registered for the Grid						

NOTE: Update these details at any time by going to the device's FS-GUI webpage, clicking the FieldServer Manager button and then clicking the Update FieldServer Details button.

## 7.4 Login to the Grid

After the ProtoAir is registered, go to <u>www.smccloud.net</u> and type in the appropriate login information as per registration credentials.

grid - FieldServer Manager
Sign in
Email
Enter your email address
Password show •
Enter your password
Forgot Password
Keep me signed in
SIGN IN
 MSA   fieldserver
Figure 36: Grid Login Page

NOTE: If the login password is lost, see the MSA Grid Start-up Guide for recovery instructions.

ieldServer Management	User Management	FieldServer Eve	nts Audit Lo	gs Da	shboards	Webhooks	
FieldServer Mana	gement						MWARE
Company	↑ FieldServer Name	Description	State	:	If you ca	an't find your FieldServer in the table, try resetting the map in the bottom right.	
Select	Search	Search	Select				53
Eggers OEM	Jens's Brain 31	192.168.1.31	Offline	2		Contraction of the second s	
Eggers OEM	Jens MBP Core App	~/git/smc-core- application	Offline		1	206	
Eggers OEM	Jens's Dell Profile View	~/git/profile-view	Offline	1	3	196 226 298	
Eggers OEM	hd_test_log_to_fpop	testing_modbus	Offline	3		105 AFRICA 400	
Eggers OEM	Mbus demo	testing registration	Offline		OCEANIA	1 15 <b>356</b> 39 100 114	C
SMC	TestWall-PA2port 97	Testwall pa 2 97	Offline				+
SMC	TestWall-Lon152	Testwall unit	Offline				÷.
					eogle 🔬	Keyboard shortcuts Map data @2021	Terms of Us

NOTE: For additional Grid instructions see the <u>MSA Grid Start-up Guide</u>.

### 8 Configure the ProtoAir

#### 8.1 Navigate to the ProtoAir Web Configurator

• From the Web App landing page (Figure 38), click the Settings tab and then click Configuration.

CHROMALOX Advector Therest Thebringing		A System Status
🚯 Device List	$\equiv$ System View	
🜌 Data Log Viewer		
🛱 Event Log		
💼 FieldServer Manager		
of Settings >		
(i) About		
🗭 Logout		
	Copyright © 2021 All Rights Reserved - Diagnostics	fieldserver
	Figure 38: Web App Landing Page	

#### NOTE: For information on the System Status button, go to Section 10.9.

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

		A System Status			
🚯 Device List	Configuration				
🛃 Data Log Viewer					
🛱 Event Log	Profile Configuration Page				
<u>g</u> FieldServer Manager	Profiles Configuration				
😋 Settings 🗸 🗸					
Configuration					
Virtual Points	Reset Application				
Network	Warning: This will remove all data from the device				
OpenVPN	Reset Application				
<li>About</li>					
ເ⇔ Logout					
	Copyright © 2021 All Rights Reserved - Diagnostics	fieldserver			
Figure 39: Configure Tab					

NOTE: For Web App instructions to the System View, Data Log Viewer, Event Logger and Virtual Points functions, see the <u>MSA Grid Start-up Guide</u>.

#### 8.2 Select Field Protocol and Set Configuration Parameters

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

Configuration Pa	rameters							
Parameter Name	Parameter Description	Value						
protocol_select	Protocol Selector Set to 1 for BACnet IP/Modbus TCP Set to 2 for BACnet MSTP Set to 3 for Metasys N2 Set to 4 for BACnet MSTP (single node) Set to 5 for Ethernet IP Set to 6 for Modbus TCP/Modbus RTU	2	Submit					
mod_baud_rate	Modbus RTU Baud Rate This sets the Modbus RTU baud rate. (9600/19200/38400/57600)	19200	Submit					
mod parity HELP (?)	Modbus RTU Parity This sets the Modbus RTU parity. Profiles and Restart System Restart Diagnos	Even tics & Debugging	Submit	fieldserver				
	Figure 40: Web Configurator Showing Configuration Parameters							

- 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.
- NOTE: If Modbus TCP/IP was selected and is used for the field protocol, skip Section 8.3. Device profiles are NOT used for Modbus TCP/IP.
  - 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 ProtoAir, set the BACnet Virtual Server Nodes field to "Yes"; otherwise leave the field on the default "No" setting.

# 8.3 Setting ProtoAir 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, including previous Web Configurator additions. This list is empty for new installations, or after clearing all configurations. (Figure 41)

	rameters			
arameter Name	Parameter Description	Value		
	Protocol Selector Set to 1 for BACnet IP/Modbus TCP			
	Set to 2 for BACnet MSTP		0.11	
rotocol_select	Set to 3 for Metasys N2 Set to 4 for BACnet MSTP (single node)	2	Submit	
	Set to 5 for Ethernet IP			
	Set to 6 for Modbus TCP/Modbus RTU			
	Modbus RTU Baud Rate			
nod_baud_rate	This sets the Modbus RTU baud rate. (9600/19200/38400/57600)	19200	Submit	
	(9000/19200/38400/37000/			
	Modbus RTU Parity			
nod_parity	This sets the Modbus RTU parity. (None/Even/Odd)	Even	Submit	
	(None/Even/Odd)			
	Modbus RTU Data Bits			
nod_data_bits	This sets the Modbus RTU data bits. (7 or 8)	8	Submit	
	(700)			
	Modbus RTU Stop Bits			
nod_stop_bits	This sets the Modbus RTU stop bits. (1 or 2)	1	Submit	
	BACnet Network Number			
etwork_nr	This sets the BACnet network number of the Gateway. (1 - 65535)	50	Submit	
	[			
	BACnet Node Offset			
ode_offset	This is used to set the BACnet device instance. The device instance will be sum of the Modbus device	50000	Submit	
	address and the node offset.			
	(0 - 4194303)			
	BACnet MSTP Mac Address			
ac_mac_addr	This sets the BACnet MSTP MAC address.	127	Submit	
	(1 - 127)			
	BACnet MSTP Baud Rate			
ac_baud_rate	This sets the BACnet MSTP baud rate.	38400	Submit	
	(9600/19200/38400/76800)			
	BACnet MSTP Max Master			
ac_max_master	This sets the BACnet MSTP max master. (1 - 127)	127	Submit	
	(1 - 127)			
	BACnet COV			
ac_cov_option	This enables or disables COVs for the BACnet connection. Use COV_Enable to enable. Use COV_Disable to disable.	COV_Disable	Submit	
	(COV_Enable/COV_Disable)			
	RACoot Virtual Server Nedas			
ac virt nodes	BACnet Virtual Server Nodes Set to NO if the unit is only converting 1 device to BACnet.	No	Submit	
ac_virt_nodes	Set to YES if the unit is converting multiple devices. (No/Yes)		Submit	
Active profiles	(110/103)			
Node ID Curre	ent profile Parameters			
Add				
ELP (?) Clear	Profiles and Restart System Restart Diagnostics & De	bugging		fieldse

- To add an active profile to support a device, click the Add button under the Active Profiles heading. This will present a profile 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 2.3.2**.
- If the device is connected via Modbus TCP/IP, the "ip\_address" and "tcp\_id" under the Parameters heading must be gathered from settings on the device. These correspond to the device IP Address and Node-ID. (Section 2.3.3)
- If the device is connected via EtherNet/IP, the "ip\_address" under the Parameters heading. These are gathered from settings on the device and correspond to the device IP Address. (Section 2.3.3)
- 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 in Figure 42.

Ac	Active profiles							
Nr	Node ID	Current profile	Parameters					
1	1	MOD_TCP_to_BAC_MSTP_ITC1	ip_address tcp_id	: 192.168.1.1 : 1	Remove			
2	22	EIP_to_BAC_MSTP_MV	ip_address	: 192.168.1.22	Remove			
3	33	MOD_RTU_to_BAC_MSTP_1020			Remove			
Ad	d							
HEL	.P (?)	Clear Profiles and Restart System Restart	Diagnostics & Deb	ugging		fieldserver		
	Figure 42: Web Configurator Showing Active Profile Additions							

#### 8.4 Verify Device Communications

- Check that the port R1 TX1 and RX1 LEDs are rapidly flashing. See Section 9.4 for additional LED information and images.
- Confirm the software shows good communications without errors (Section 9.2).

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

- Follow the steps outlined in Section 5.1 to access the ProtoAir Web Configurator.
- 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:

#### Device Instance (desired) = Node\_Offset + 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:

 $50,001 = Node_Offset + 1$ 

#### > 50,000 = 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.		_			
node_offset	The device instance will be sum of the Modbus device	50000	Submit			
	address and the node offset. (0 - 4194303)					
Figure 43: Web Configurator Node Offset Field						

A	ctive profi	les						
Nr	Node ID	Current profile		Parameters				
1	1	MOD_TCP_to_BAC_MSTP_IT	C1	ip_address tcp_id	: 192.168.1.1 : 1	Remove		
2	22	EIP_to_BAC_MSTP_MV		ip_address	: 192.168.1.22	Remove		
3	33	MOD_RTU_to_BAC_MSTP_10	20			Remove		
A	dd							
HE	LP (?)	Clear Profiles and Restart	System Restart	Diagnostics & I	Debugging		fieldserver	
	Figure 44: Active Profiles							

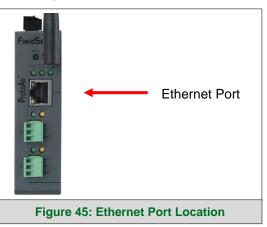
# 8.6 How to Start the Installation Over: Clearing Profiles

- Follow the steps outlined in **Section 5.1** 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.

# 9 Troubleshooting

#### 9.1 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.

smc FieldServer Too	lbox						-		$\times$
FieldSer		olbox				S	ſ		erra onitor
DEVICES	÷	IP ADDRESS	MAC ADDRESS		<sup>:</sup> AVORITE (	CONNECTIVITY			
E8951 Gateway		10.40.50.90	00:50:4E:60:06:36	C2	*	•		Conr	hect -
									10

#### 9.2 Viewing Diagnostic Information

- Type the IP Address of the ProtoAir into the web browser or use the FieldServer Toolbox to connect to the ProtoAir.
- 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 9.3** for the relevant wiring and settings.

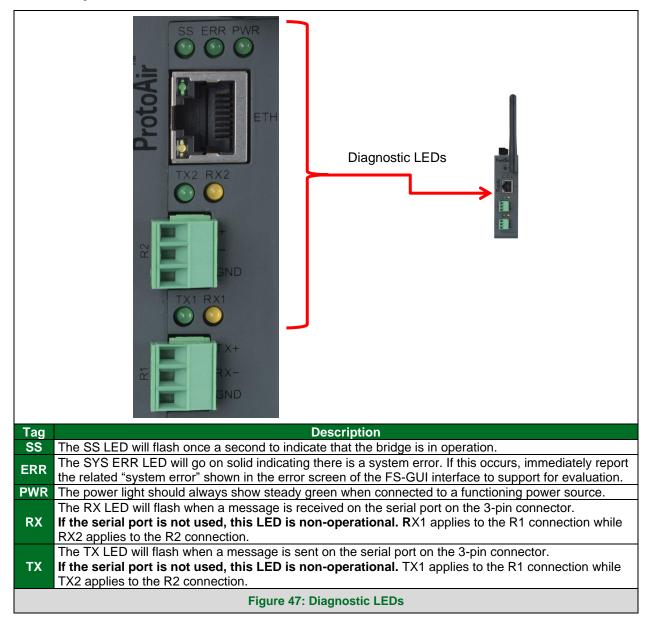
Navigation	Conne	ections					
<ul> <li>CN1853 Chromalox v11.00a</li> <li>About</li> </ul>	Ove	erview					
<ul> <li>Setup</li> <li>View</li> </ul>	Connectio	ns					
✓ Connections	Index	Name	Tx Msg	Rx Msg	Tx Char	Rx Char	Errors
• R1 - MODBUS_RTU	0 M	ODBUS_RTU	13	0	104	0	13
ETH1 - Modbus/TCP	1 M	TH1 - odbus/TCP	0	0	0	0	14
<ul> <li>ETH1 - Ethernet/IP</li> <li>R2 - BACnet_MSTP</li> </ul>		TH1 - thernet/IP	0	0	0	0	13
Data Arrays	2 R	2 - ACnet_MSTP	6	5	84	70	0
<ul> <li>Nodes</li> <li>Map Descriptors</li> <li>User Messages</li> <li>Diagnostics</li> </ul>							
Home HELP (?) Contact Us	Reset St		Logout				fieldserve

### 9.3 Checking Wiring and Settings

- No COMS on Modbus RTU side. If the Tx/Rx LEDs are not flashing rapidly then there is a COM issue. To fix this, check the following:
  - Visual observations of LEDs on ProtoAir (Section 9.4)
  - o Check baud rate, parity, data bits, stop bits
  - Check device address
  - Verify wiring
  - Verify the device was listed in the Web Configurator (Section 8.3)
- No COMS on the Modbus TCP/IP or EtherNet/IP side. To fix, check the following:
  - Visual observations of LEDs on ProtoAir (Section 9.4)
  - Check device address
  - $\circ$  Verify wiring
  - Verify the device was listed in the Web Configurator (Section 8.3)
- Field COM problems:
  - Visual observations of LEDs on the ProtoAir (Section 9.4)
  - Verify IP Address setting
  - o Verify wiring
- NOTE: If the problem persists, a Diagnostic Capture needs to be taken and sent to support. (Section 9.5)

#### 9.4 LED Diagnostics for Communications Between ProtoAir and Devices

See the diagram below for ProtoAir LED Locations.



#### 9.5 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. If the FieldServer bios is updated/released on November 2017 or later then the Diagnostic Capture is performed via the gateway's on-board system.

- 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

Navigation	Diagnostics	
<ul> <li>DCC000 QS.CSV v1.00a</li> <li>About</li> </ul>	Captures	
<ul> <li>Setup</li> <li>View</li> <li>User Messages</li> <li>Diagnostics</li> </ul>	Full Diagnostic	
	Set capture period (max 1200 secs):	
	300	
	Start	
	Serial Capture	
	Set capture period (max 1200 secs):	
	300	
	Ctart	

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

Full Diagnostic							
Set capture period (max 1200 secs):							
300							
100% Complete							
Start Download							

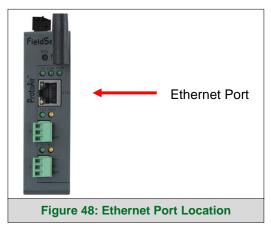
- Click Download for the capture to be downloaded to the local PC.
- Email the diagnostic zip file to technical support.
- NOTE: Diagnostic captures of BACnet MS/TP communication are output in a ".PCAP" file extension which is compatible with Wireshark.

#### 9.5.1 Taking a Capture with Older Firmware

If the FieldServer firmware is from before November 2017, the Diagnostic Capture can be done by downloading the FieldServer Toolbox software but network connections (such as Ethernet and Wi-Fi) cannot be captured (if a network diagnostic is needed take a Wire Shark capture).

Once the Diagnostic Capture is complete, email it to technical support. The Diagnostic Capture will accelerate diagnosis of the problem.

- 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 PC and ProtoAir. •
- Double click on the FS Toolbox Utility. ٠
- Step 1: Take a Log
  - Click on the diagnose icon 4 for the desired device

FieldServer Toc	box						-		×
FieldSei		Toolbox				S	ſſ	sie	erra onitor
DEVICES	÷	IP ADDRESS	MAC ADDRESS		<sup>:</sup> AVORITE C	ONNECTIVITY			
E8951 Gateway		10.40.50.90	00:50:4E:60:06:36	다기	*	•		Con	nect –
						1			

o Select "Full Diagnostic" from the drop down menu



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

o Click on the Start Diagnostic button



- o Wait for the capture period to finish and the Diagnostic Test Complete window will appear
- Step 2: Send Log
  - o Once the diagnostic test is complete, a .zip file is saved on the PC

Diagnostic_2015-02-18_12-28.zip Do you want to open the containing folder?	Diagnostic test completed and the results have been added to
Do you want to open the containing folder?	
	Do you want to open the containing folder?

- o Choose "Open" to launch explorer and have it point directly at the correct folder
- o Send the Diagnostic zip file to technical support

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

#### 9.6 Wi-Fi Signal Strength

Wi-Fi
<60dBm – Excellent
<70dBm – Very good
<80dBm – Good
>80dBm – Weak
Figure 49: Wi-Fi Signal Strength Listing

# NOTE: If the signal is weak or spotty, try to improve the signal strength by checking the antenna and the ProtoAir position.

#### 9.7 Factory Reset Instructions

For instructions on how to reset a FieldServer back to its factory released state, see <u>ENOTE - FieldServer</u> <u>Next Gen Recovery</u>.

#### 9.8 Internet Browsers Not Supported

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.

# **10** Additional Information

#### 10.1 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.
  - o Default IP Address is 192.168.1.24
  - Use the FS Toolbox utility if the IP Address is unknown (Section 9.1)
- 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 "Firmware" tab
- 5. In the Firmware tab, click on "Choose Files" and select the firmware file extracted in step 1.
- 6. Click on the orange "Submit" button.
- 7. When the download is complete, click on the "System Restart" button.

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

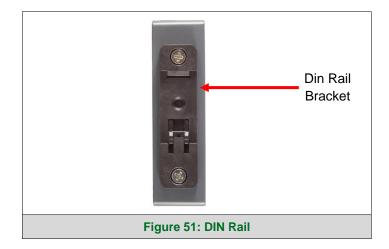
For both BACnet MS/TP and BACnet/IP, if more than one ProtoAir is connected to the same subnet, they must be assigned unique Network\_Number values.

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

	(1 - 65535) Figure 50: Web Configurator – Networ	k Number Field	
network_nr	BACnet Network Number This sets the BACnet network number of the Gateway.	50	Submit

#### 10.3 Mounting

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



#### 10.4 Certification

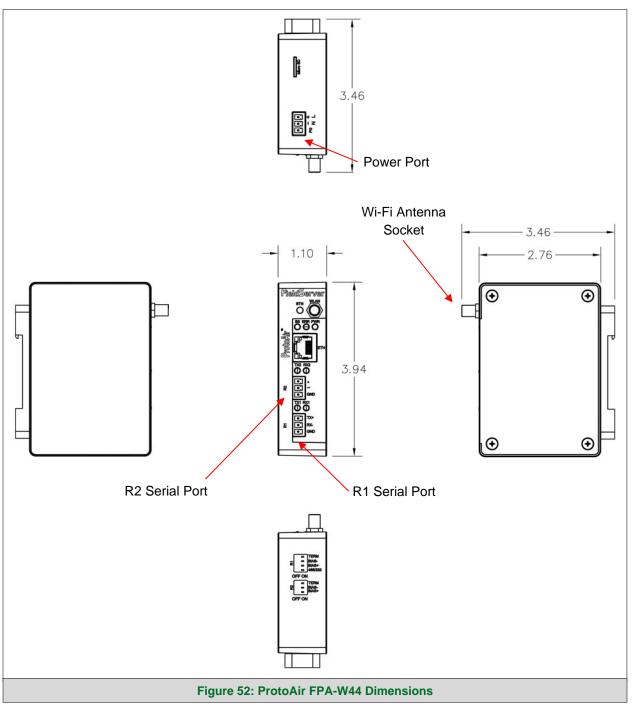
#### 10.4.1 BTL Mark – BACnet® Testing Laboratory



The BTL Mark on ProtoAir 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 <u>www.BACnetInternational.net</u> for more information about the BACnet Testing Laboratory. Click <u>here</u> for the BACnet PIC Statement.

NOTE: BACnet is a registered trademark of ASHRAE.



# 10.5 Physical Dimension Drawing

# 10.6 Change Web Server Security Settings After Initial Setup

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

• From the FS-GUI page, click Setup in the Navigation panel.

Status Settings	Info Stats	
Status		
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	
Application Memory:		
Protocol_Engine_Memory_Used	0.68%	
	Status         Driver_Configuration         DCC_Version         Kernel_Version         Release_Status         Build_Revision         Build_Revision         Build_Revision         FieldServer_Model         Serial_Number         Carrier Type         Data_Points_Used         Data_Points_Max         Application Memory:	Status           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           Application Memory:         -           Protocol_Engine_Memory_Used         0.68%

# 10.6.1 Change Security Mode

• Click Security in the Navigation panel.

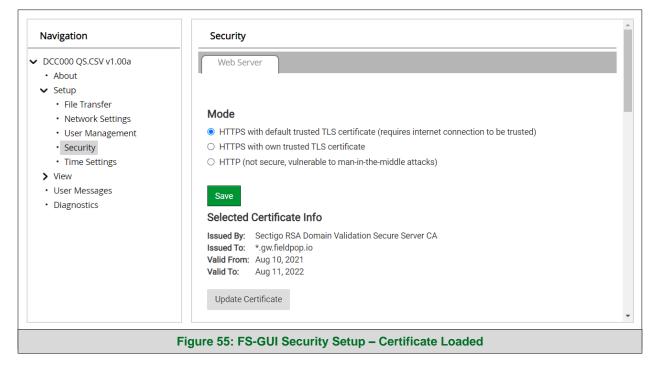
Navigation	Security
<ul> <li>DCC000 QS.CSV v1.00a</li> </ul>	Web Server
• About	
✓ Setup	
<ul><li>File Transfer</li><li>Network Settings</li></ul>	Mode
User Management	ITTPS with default trusted TLS certificate (requires internet connection to be trusted)
Security	<ul> <li>HTTPS with own trusted TLS certificate</li> </ul>
Time Settings	○ HTTP (not secure, vulnerable to man-in-the-middle attacks)
<ul><li>View</li><li>User Messages</li></ul>	Save
Diagnostics	Selected Certificate Info
	Issued By:Sectigo RSA Domain Validation Secure Server CAIssued To:*.gw.fieldpop.ioValid From:Aug 10, 2021Valid To:Aug 11, 2022
	Update Certificate

- Click the Mode desired.
  - o If HTTPS with own trusted TLS certificate is selected, follow instructions in Section 5.2.1
- Click the Save button.

### 10.6.2 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.

#### 10.7 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 ProtoNode, ProtoCessor or ProtoCarrier recovery instructions, see the <u>FieldServer Recovery Instructions document</u>. For ProtoNode FPC-N54, ProtoNode FPC-N64 or ProtoAir recovery instructions, see the <u>FieldServer Next</u> <u>Gen Recovery document</u>. 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.

Navigation	User Management	<b>A</b>
<ul> <li>DCC000 QS.CSV v1.00a</li> <li>About</li> <li>Setup</li> <li>File Transfer</li> <li>Network Settings</li> <li>User Management</li> <li>Security</li> <li>Time Settings</li> </ul>	Users Password Username · Groups	Actions*
<ul> <li>View</li> <li>User Messages</li> <li>Diagnostics</li> </ul>	∢ Create User	
	Figure 56: FS-GUI User Management	

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.

#### 10.7.1 Create Users

• Click the Create User button.

Create Us	ser	×
Username:		
Enter a unique username		
Security Groups:		
Admin		
Operator		
✓ Viewer		
Password:		Weak
Enter password		
Show Passwords		
Confirm Password:		
Confirm password		
Generate Password		
	Create	Cancel
Figure 57: Create Us	er Window	

- 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.

#### 10.7.2 Edit Users

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

Users Passwo	rd	
Username	✓ Groups	✓ Actions
User A	Viewer	Ø 🛍
User B	Admin, Operator, Viewer	<i>I</i> □
4		•
Create User		

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

Edit User		
Username:		
User A		
Security Groups:		
Admin		
Operator		
✓ Viewer		
Password:		
Optional		
□ Show passwords		
Confirm Password:		
Optional		
Generate Password		
с	onfirm	Cancel
Figure 59: Edit User V	Vindow	

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

#### 10.7.3 Delete Users

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

Users Passwo	ord		
Jsername	~ Groups	~	Actions
User A	Viewer		<i>I</i> □
Jser B	Admin, Operator, Viewer		<i>I</i> ∎
4			•
Create User			, , , , , , , , , , , , , , , , , , ,

• When the warning message appears, click Confirm.

	×
Warning	
Are you sure you want to delete user: User A?	
Confirm Cancel	
Figure 61: User Delete Warning	

# 10.7.4 Change FieldServer Password

• Click the Password tab.

Navigation	User Management		<u>^</u>
<ul> <li>DCC000 QS.CSV v1.00a</li> <li>About</li> <li>Setup</li> <li>File Transfer</li> </ul>	Users Password		
<ul> <li>Network Settings</li> <li>User Management</li> <li>Security</li> <li>Time Settings</li> <li>View</li> <li>User Messages</li> <li>Diagnostics</li> </ul>	Password:         Enter password         Show passwords         Confirm Password:         Confirm password         Generate Password	O Weak	
	Figure 62: FieldServer Passwor	Confirm	•

- 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.

#### 10.8 Grid Connection Warning Message

- If a warning message appears instead of the page as shown in **Figure 30**, follow the suggestion that appears on screen.
  - o If the ProtoAir cannot reach the Grid server, the following message will appear

G	rid 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: EAL_AGAIN         • 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

#### Figure 63: Grid Connection Problems Message

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

#### 10.9 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, Grid connectivity and device alert level.

MSA		System Status
🚳 Device List	$\equiv$ System View	
🜌 Data Log Viewer	-	
🗂 Event Log		
FieldServer Manager		

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.

CPU Load	RAM Usage	Disk Usage	Loop Delay
10%	80 / 240 MB smoothly	124 / 435 MB	11 ms
System View	rmal state		
System View Conf			
	nfiguration errors		
	lanager		

NOTE: If it was selected to opt out of the Grid (Figure 27), the Grid FieldServer status will not show in the System Status window. This means the status will show as green even if the gateway is not connected to the Grid.

# 11 Vendor Information – Chromalox

See document "Chromalox Vendor Mappings" for the complete point list for all the devices referenced in this manual. Only the protocols listed as supported for this FieldServer are supported (see **Section 1.1**). Ignore all points referring to unsupported protocols when using this FieldServer.

# 12 Specifications

FC	OHS ABOR			
	ProtoAir FPA-W44 <sup>2</sup>			
Electrical Connections	One 3-pin Phoenix connector with: One 3-pin Phoenix connector with: One 3-pin Phoenix connector with: One Ethernet 10/100 BaseT port			
Power Requirements	Input Voltage: 9-30VDC or 24VAC Max Power: 3 Watts	Current draw: 24VAC 0.125A 9-30VDC 0.25A @12VDC		
Approvals	CE and FCC Class B & C Part 15, UL 60950-1, WEEE compliant, IC Canada, RoHS3 compliant, REACH compliant			
Physical Dimensions	4 x 1.1 x 2.7 in (10.16 x 2.8 x 6.8 cm)			
Weight	0.4 lbs (0.2 Kg)			
<b>Operating Temperature</b>	-20°C to 70°C (-4°F to 158°F)			
Humidity	10-95% RH non-condensing			
Wi-Fi 802.11 b/g/n	Frequency: 2.4 GHz Antenna Type: SMA	Channels: 1 to 11 (inclusive) Encryption: TKIP, WPA & AES		
Figure 64: Specifications				

#### 12.1.1 Compliance with UL Regulations

•

For UL 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 ProtoAir
- Furthermore, the interconnecting power cable shall:
  - Be of length not exceeding 3.05m (118.3")
  - $\circ$   $\,$  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.

<sup>&</sup>lt;sup>2</sup> Specifications subject to change without notice.

# 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.