

FieldServer – EZ Gateway

Modbus to BACnet Start-up Guide

FS-EZX-MOD-BAC



APPLICABILITY & EFFECTIVITY

Effective for all systems manufactured after February 2020.





Technical Support

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

MSA Safety 1991 Tarob Court Milpitas, CA 95035

Website: www.sierramonitor.com

U.S. Support Information:

+1 408 964-4443

+1 800 727-4377

Email: smc-support@msasafety.com

EMEA Support Information:

+31 33 808 0590

Email: smc-support.emea@msasafety.com



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ABOUT THE EZ GATEWAY

EZ Gateway is a high performance, cost effective building and industrial automation multi-protocol gateway providing protocol translation between serial and Ethernet, devices and networks.

NOTE: For troubleshooting assistance refer to Appendix A, or any of the troubleshooting appendices in the related driver supplements. Check the <u>Sierra Monitor website</u> for technical support resources and documentation that may be of assistance.

The EZ Gateway is cloud ready and connects with MSA Safety's SMC Cloud. See **Section 5.2.2** for further information.

2 CERTIFICATION

2.1 BTL Mark – BACnet Testing Laboratory¹



The BTL Mark on EZ Gateway is a symbol that indicates that a product has passed a series of rigorous tests conducted by an independent laboratory which verifies that the product correctly implements the BACnet features claimed in the listing. The mark is a symbol of a high-quality BACnet product.

Go to <u>www.BACnetInternational.net</u> for more information about the BACnet Testing Laboratory. Click <u>here</u> for the BACnet PIC Statement.

3 SUPPLIED EQUIPMENT

EZ Gateway

- Preloaded with the Modbus and BACnet drivers.
- All instruction manuals, driver manuals, support utilities are available on the USB drive provided in the optional accessory kit, or on the <u>Sierra Monitor website</u>.

Accessory kit (optional) (Part # FS-8915-38-QS) includes:

- 7-ft Cat-5 cable with RJ45 connectors at both ends
- Power Supply -110/220V (p/n 69196)
- Screwdriver for connecting to terminals
- USB Flash drive loaded with:
 - o Modbus to BACnet Start-up Guide
 - FieldServer Configuration Manual
 - o All FieldServer Driver Manuals
 - o Support Utilities
 - Any additional folders related to special files configured for a specific EZ Gateway



o Additional components as required - see driver manual supplement for details

¹BACnet is a registered trademark of ASHRAE.



4 INSTALLING THE EZ GATEWAY

4.1 Mounting

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



NOTE: For dimension details see Appendix B.3.





4.2 DIP Switch Settings

4.2.1 Bias Resistors



To enable Bias Resistors, move both the BIAS- and BIAS+ dip switches to the right in the orientation shown in Figure 3.

The EZ Gateway 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 EZ 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.



4.2.2 Termination Resistor



If the EZ 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 Figure 4.

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

- NOTE: The R1 and R2 DIP Switches apply settings to the respective serial port.
- NOTE: If the gateway is already powered on, DIP switch settings will not take effect unless the unit is power cycled.



4.3 Connecting the R1 Port

For the R1 Port only: Switch between RS-485 and RS-232 by moving the number 4 DIP Switch left for RS-485 and right for RS-232 (Figure 4).

The R2 Port is RS-485.

Connect to the 3-pin connector(s) as shown below.



4.3.1 Wiring

RS-	485	RS-232			
BMS RS-485 Wiring	Gateway Pin Assignment	BMS RS-232 Wiring	Gateway Pin Assignment		
RS-485 +	TX +	RS-232 -	TX +		
RS-485 -	RX -	RS-232 +	RX -		
GND	GND	GND	GND		

NOTE: Use standard grounding principles for GND.

4.3.2 Supported RS-485 Baud Rates by Protocol

The supported baud rates for either port is based on the protocol of the connected devices.

The following baud rates are supported for Modbus RTU: 2400, 4800, 9600, 19200, 38400, 57600, 76800, 115200

The following baud rates are supported for BACnet MS/TP: 9600, 19200, 38400, 76800

4.4 Power Up the Device

Check power requirements in the table below:

Power Requirement for External Gateway		
	Current Draw Type	
EZ Gateway Family	12VDC	24VDC/AC
FS-EZ3-MOD-BAC (Typical)	250mA	125mA
FS-EZ4-MOD-BAC (Typical)	250mA	125mA
NOTE: These values are 'nominal' and a safety mathematical the host system. A safety margin of 25% is recom	argin should be added to mended.	the power supply of
Figure 6: Required Currer	nt Draw for the Gateway	

Apply power to the EZ Gateway as shown below in **Figure 7**. Ensure that the power supply used complies with the specifications provided in **Appendix B.1**.

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



5 CONNECT THE PC TO THE EZ 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 EZ Gateway.



5.1.1 Changing the Subnet of the Connected PC

The default IP Address for the EZ Gateway is **192.168.2.101**, Subnet Mask is **255.255.255.0**. If the PC and EZ Gateway 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:

Ostable Use the following IP address: —	
<u>I</u> P address:	192.168.1.11
S <u>u</u> bnet mask:	255 . 255 . 255 . 0
<u>D</u> efault gateway:	

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



5.2 Using Web Configurator GUI

- Open a web browser and connect to the EZ Gateway's default IP Address. The default IP Address of the FieldServer is **192.168.2.101**, Subnet Mask is **255.255.255.0**.
- If the PC and the EZ Gateway are on different IP networks, assign a static IP Address to the PC on the 192.168.2.X network.

SMC	Settings	About	SMC Cloud™	BACnet Explorer	Diagnostics	FieldServer EZ Gateway Modbus to BACnet
Sections III Gateway III Connections IIII Device Proxy™ IIII Device Profiles	Ge Title Ne	neral Modbus to Ba	ACnet EZ Gateway			Controls Reload Defaults Save Restart
	IP Set Passw	tings 💉 vords 🖍				Status Gateway is online
						Log 16:27:12: Loaded Settings Clear Log
			Figure 9: EZ	Gateway Landin	ig Page	

5.2.1 Controls, Status and Log Functions

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

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

5.2.2 Accessing SMC Cloud

The SMC Cloud[™] tab **SMC Cloud[™]** (see Figure 9) allows users to connect to the SMC Cloud, MSA Safety's device cloud solution for IIoT. The SMC Cloud enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about the SMC Cloud, refer to the <u>SMC Cloud Start-up Guide</u>.



6 CONFIGURING THE EZ GATEWAY

6.1 Setting up the Connections

• Open the Connections page to configure the connection ports and parameters.

SMC	Settings Abo	out SMC Cloud™	BACnet Explorer	Diagnostics	FieldServer	EZ Gatewa	y Modbus to BACnet
Sections	Modb	us RTU R1	Modbu	is TCP	BACnet	MSTP R1	Controls
	Enable	2	Enable	2	Enable	20,400	Reload Defaults
■ DeviceProxy [™]	Port		Max Concurre	nt	Baud Rate	38400	Save Restart
Device Profiles	Baud Rale	None -	Messages	1	Parity	None V	
	Panty Data Bita	None V			Data Bits	• •	
	Data Bits	• •	BAChe	t IP	Stop Bits	1 V	Status
	Stop Bits	1 ▼	Enable		Max Master	127	Gateway is online
	Foir Delay	0.1	IP Port	47808	Max Info Eramon	1	
	Modb	us RTU R2	Enable BBMD Public IP Addr	ess -	MAC Address	1	Log
	Enable (Public IP Port	-	BACnet		16:27:12: Loaded Settings
	Port	R2	Broadcast Distribution Ta	ble	BACHELI		Clear Log
	Baud Rate	9600 🔻			Enable		
	Parity	None 🔻	BACne	t IP Settings	Baud Rate	38400 🔻	
	Data Bits	8 🔻			Parity	None 🔻	
	Stop Bits	1 🔻	Virtual Network	k Number 1100	Data Bits	8 🔻	
	Poll Delay	0.1	Internal Netwo	rk Number 1 1200	Stop Bits	1 🔻	
			Internal Netwo	rk Number 2 1201	Mode	Master V	
					Max Master	127	
			BACne	t MSTP Setting	S Max Info Frames	1	
			Virtual Notwork	k Number 1101	MAC Address	2	
			Internal Network	rk Number 1 1202			
			Internal Netwo	rk Number 2 1202			
			internal Netwo				
			Figure 10:	Connections	Page		

- Click the Save button in the Controls section once completed.
- Then click Restart to implement the new settings.



6.2 Creating Device EZ Profiles

• Open the Device Profiles page to create a new profile.

SMC	Settings	About	SMC Cloud™	BACnet Explorer	Diagnostics	FieldServer EZ Gateway Modbus to BACnet
Sections Gateway Connections Device Proxy TM Device Profiles	Pro Nev	vice Pr file Name v_Profile dd Impo	ofiles ^{tt}			Controls Reload Defaults Save Restart
	Fi	rst Previou	is 1 Next La	ast		Status
	Down	nload Exce	Profile Generato	or		Gateway is online
						Log
						16:27:12: Loaded Settings
						Clear Log
			Figure 11	: Device Profiles	s Page	

- Create a data map using one of two methods:
 - Create Modbus to BACnet mapping using the Web Interface (Section 6.2.1)
 - Create Modbus to BACnet mapping using Excel Profile Generator (Section 6.2.2)
- After saving the data map, complete the profile setup by updating State Tables and Notification Classes as needed. (Section 6.2.3)



6.2.1 Using the Device Web Interface to Map BACnet Objects

NOTE: The Add button creates another blank profile that must be mapped using the Web Interface.

- Click on the Edit button (pencil icon) next to the name of the profile to map.
- Enter the Modbus and BACnet parameters.

NOTE: See for Appendix B.4 additional information on Address Type.

Edit Profile				×
Device Settings	Data Map	State Tables	Notification Classes	
Modbus Address Type Enable Write Multiple Write Length	Application Data	Unit V		
BACnet Enable COV @				
		Figure 12: Ed	it Profile Window	

• Click on the Data Map tab and add the first Modbus address range.

Edit Profile	Data Map State Tables	Notification Classes				×
Address	Data Type	Function	Length	Scan Interval	Signed Value	
1	Holding Register	Read Continuously	v 1	1		
Add First Previous 1	Next Last					
		Figure 13: I)ata Man V	Nindow		

NOTE: Check the Signed Value checkbox (right of the data map entry) if signed values are needed.



• Click on the blue plus sign icon on the left side of the Address to map the BACnet Addresses to the Modbus Registers.

evice Settings	Data Map	State Tables	Notificatio	n Classes						
Address		Data Type		Function		Length	Scan Int	erval	Signed Value	
40100		Holding Register	•	Read Continuou	usly 🔻	6	1			Î
40101		32-Bit Register	۲	Write Continuou	isly 🔻	5	2	\$		Û
ddress Offset	Object	Instance	Object Name		Object Type	Units		Description	Advanced	
1	1	\$	Device 1		Analog Input		•	6 1		Û
2	2	\$	Device 2		Analog Value	•	۲	-		Î
3	3	\$	Device 3		Binary Value	•	•	-		â
Add	1 Next Las									
Add										
irst Previous	Next Last									
S										

NOTE: The Advanced button (eye icon) allows additional settings, including: Intrinsic Reporting, Bit Extraction, scaling and more.

- Repeat for all of the Modbus registers.
- Once all mappings are defined, click the "Save" button in the bottom left corner of the window to record the Profile.





6.2.2 Using Excel Profile Generator to Map BACnet Objects

- From the Device Profiles page (Figure 11), click on the "Download Excel Profile Generator" link to download the Excel spreadsheet used to create the profile to the default download folder on the local PC.
- Open the downloaded Excel spreadsheet and ensure that the content is not disabled by security settings (yellow security warning bar across the top of the spread sheet).

AutoSave 💽 🕅 🕤 - 👌 - = ez-gateway-modbus-bacnet-profile-generator-v-1-0-0xks	m - Excel		a –	
File Home Insert Page Layout Formulas Data Review View Help Acrobat 🔎 Te	ell me what you want to	do		🖻 Share
$ \begin{array}{c c} & & \\ \hline & & \\ Paste & \\ \bullet $	itional Format as Cell atting - Table - Styles -	Insert Delete Format	$ \begin{array}{c} \Sigma & \bullet & \mathbf{A} \\ \hline \bullet & \mathbf{Z} \\ \hline \bullet & \bullet & \mathbf{Sort } \& \\ \hline Filter & \bullet \\ \end{array} $	Find & Select *
Clipboard 🗔 Font 🗔 Alignment 🗔 Number 🗔	Styles	Cells	Editing	, ^
SECURITY WARNING Some active content has been disabled. Click for more details.				×
A1 🔹 E X 🗸 fx FieldServer EZ Gateway Modbus to BACnet - Profile Generator				~
AB	С	D E	F	G
1 FieldServer EZ Gateway Modbus to BACnet - Profile Generator	Version 1.0.0			
2 Profile Name My Modbus Profile	- 8-			
3 4 5 6				
Enter the profile name above and edit the "Data Map" sheet. When done click on the button above. This will				
generate a profile as a CSV file that can be imported into the EZ Gateway Modbus to BACnet. It will be saved in 7 the same directory as this spreadsheet.				
8				
10				
Generate Profile Data Map (+)	•			
Figure 16: Profile Generator Excel S	preadsheet			

NOTE: If the security warning is present simply click the Enable Content button found at the end of the warning.

- Click the Data Map tab (near the bottom of the Excel spreadsheet).
- Edit or copy in Modbus registers as needed.
- Once all the point mappings are complete, switch back to the Generate Profile tab.
- Click the Generate Profile button to create a new Excel .csv file titled "My Modbus Profile".
- Go back to the EZ Gateway Device Profiles page (Figure 11) and click the Import button.
- Select the Excel .csv file and click the checkbox to load the mapping.
- Once all mappings are loaded, click Save in the Controls section.



6.2.3 Completing Device Profile Setup

- Click on the Edit button (pencil icon) next to the name of the profile to complete setup.
- If a data map was loaded from a file created from the "Excel Profile Generator", go to the Device Settings tab to enter the Modbus and BACnet parameters.

NOTE: See for Appendix B.4 additional information on Address Type.

Edit Profile			
Device Settings	Data Map	State Tables	Notification Classes
Modbus Address Type Enable Write Multiple	Application Data	Jnit V	
Write Length BACnet	1	v	
Enable COV 🕑			
	Fig	gure 17: Devic	ce Settings Window

• If using a BACnet State Table, click on the "State Table" tab to define the table and its variables.

	5 Data Map	State Tables	Notification Classes
Table Name			
New_Table			â
State Value	State Text	State Class	
1	State 1	Normal	•
1	State 2	Specify the stat	te class
3	\$ State 3	Fault	
First Previous	1NextLast1NextLast		
First Previous			

NOTE: The Table Name field must be 14 characters or less. No commas allowed.

NOTE: The State Text field must be 50 characters or less. No commas allowed.



• To define a Notification Class, click the "Notification Class" tab and define the parameters as needed.

Edit Profile							>
Device Settings	Data Map State Table	s Notification Cl	asses				
Object Name	Object Type	Object Instance	Ack Required	Off Normal Priority	Fault Priority	Normal Priority	
New_Notification	Notification Class	1	Yes	▼ 90	100	110	
Add							
First Previous 1	Next Last						
H S							
There are unsaved settings	5.						
		Figur	e 19: Notificat	tion Class Windo	ow		

• Once all settings are defined, click the "Save" button in the bottom left corner of the window to record the Profile.



6.2.4 Export Profile for Backup or Future Use

• Back on the Device Profiles page, the profile can be exported for backup or future use by hitting the Export Profile button (hard drive icon).

Device Profiles	
Profile Name	
New_Profile] 📕 [
New_Profile2	Export profile
Add 👻	
First Previous 1 Next Last	
Figure 21: Export Profile	

• The profile downloads to the local computer in the format: <Profile Name>.profile



6.3 Importing a Device Profile

• Profiles on the local computer can be imported to the EZ Gateway by going to the Device Profiles page and clicking the Import button.

Device Profiles		
Profile Name		
New_Profile		
New_Profile2		
Add Import		
First Previous 1 Next Last		
Download Excel Profile Generator		
Figure 22: Importing a Device Pro	ofile	

NOTE: All profiles will need to be created or imported to the EZ Gateway before proceeding.

NOTE: There are two types of files that can be imported. The Excel spreadsheet generated files (Section 6.2.2) or an exported profile (Section 6.2.4). Files generated from the downloaded "Excel Profile Generator" only include Data Map information and must be completed by going through the steps found in Section 6.2.3 after being loaded. However, exported profiles include complete profile information and can be used immediately after load up.



6.4 Mapping BACnet Output with Device EZ Profiles

- Open the DeviceProxy[™] page.
- Choose the Device Profile to load from the drop down menu.

SMGierra Monitor	Settings	About	SMC Clou	id™ BA0	Cnet Explorer	Diagnost	tics			FieldSei	ver EZ (Gateway	Modbus to BA	ACnet
Sections		Device	eProxy™	м									Controls	
Gateway		Device	Moo Profile Con	dbus nnection	BACnet Connection	Modbus Node ID	Modbus Node IP Address	Modbus Node IP Port	BACnet Device Instance	BACnet Device Name	Advanced		Reload De	efaults
i≣DeviceProxy™		1 New_	Profile 🔻 R1	(Modbus 🔻	N1 (BACnet 🔻	1		502	0	Device_1			Save	lestart
Device Profiles		Add												
		First I	Previous 1	Next La	ast								Status	
													Gateway is online	
													Log	
													17:25:39: Loaded Settin	gs
													Clear Log	
					Figur	e 23: C	hoose	Profile	to Load	I				

NOTE: If required, click the Advanced Settings button (eye icon) to enter the Device Description and Device Location.

BACnet		
	Specify the BACnet device object's Location	
Device Descrip	property	
Device Locatio	n San Josel	

- Choose the appropriate connection and Node ID/BACnet Device Instance for both the incoming Modbus device and the mapped BACnet output.
- Click Add to include additional device profiles in the Configuration.
- Repeat for all Modbus devices intended to connect to the EZ Gateway.
- Click the Save button in the Controls section once all device EZ Profiles are added and then click the Restart button to reset the system.

	Controls		
	Reload	Defaults	
	Save	Restart	
	Status		
	Gateway is onlin	ie	
	There are unsav	ved settings.	
Fig	gure 24: Cor	ntrols Secti	on

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6.5 Test and Commission the EZ Gateway

- Connect the EZ Gateway to the third party device(s), and test the application.
- Click on the Diagnostic button to view to get to the FS-GUI.
- From the landing page of the FS-GUI click on View in the navigation tree, then Connections to see the number of messages on each protocol.

	Co	onnections					
Vodbus to BACnet EZ Gateway About Setup		Overview					
/ View	Conn	ections					_
✓ Connections	Inde	R1 -	I x Msg	Rx Msg	Tx Char	Rx Char	Errors
 R1 - MODBUS_RTU 	0	MODBUS_RTU	2,001	0	16,008	0	2,001
 N1 - Modbus/TCP 	1	N1 - Modbus/TCP	0	0	0	0	0
 N1 - BACnet_IP 47800 	2	N1 - BACnet_IP 47800	2,261	3	14	28	0
 N1 - BACnet_IP 	3	N1 - BACnet_IP	43	1,170	0	28	0
 R2 - BACnet_MSTP 	4	R2 -	8	0	0	0	0
> Data Arrays		BACHEL_MSTP					
> Nodes							
Map Descriptors							
 User Messages 							
 Diagnostics 							

- NOTE: For troubleshooting assistance refer to Appendix A, or any of the troubleshooting appendices in the related driver supplements and configuration manual. MSA Safety also offers a technical support on the <u>Sierra Monitor website</u>, which contains a significant number of resources and documentation that may be of assistance.
- NOTE: The SMC Cloud button SMC cloud (see Figure 25) allows users to connect to the SMC Cloud, MSA Safety's device cloud solution for IIoT. The SMC Cloud enables secure remote connection to field devices through a FieldServer and its local applications for configuration, management, maintenance. For more information about the SMC Cloud, refer to the SMC Cloud Start-up Guide.



7 USING THE EMBEDDED BACNET EXPLORER

The embedded BACnet Explorer allows installers of the product 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, click the BACnet Explorer tab at the top of the screen.

SMGierra	Settings About	SMC Cloud™	BACnet Explorer	Diagnostics	FieldServer EZ Gat Modbus to BA	eway Cnet
Sections	General Title Modbus to	BACnet EZ Gateway			Controls Reload De	faults
I∎DeviceProxy™ I∎Device Profiles	Network				Save	estart
	IP Settings 📝 Passwords 🏹				Status Gateway is online	
		Figure 26:	BACnet Explore	er Tab		

• Then login to the BACnet Explorer page using the supplied username and password.

NOTE: The default user name is "admin" and the default password is "admin".



NOTE: For BACnet/IP, click on the Connections page to ensure the EZ Gateway is on the BACnet/IP network subnet or to configure BBMD.



7.1 Discover Device List

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

SMC									🛔 Profile 🔻
击 BACnet Explorer	Ξ	A Discover	🛱 Remove All						
🖋 Settings	>	Search		Network	Device	Object	Property	Value	
Cloud Integrations	>	BACnet							
About									
				Total Items: 0	D				
		Copyrigh	t © Sierra Monitor Corpo	pration - Dia	gnostics	i			
		Figu	re 28: BACnet Ex	kplorer F	Page				

- To discover the devices connected to the same subnet as the BACnet Explorer, click the Discover button (h) (binocular icon).
- This will open the Discover window, click the checkboxes next to the desired search settings and click Discover to start the search.

			n Discove	r		
Devices	l Devices					
From device	0		to device	4194303		
Networks	l Networks					
Discover Spe	cific Network	0				
					Discove	Cancel
		Figure	e 29: Discover	Window		

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



NOTE: 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.

Search	Device	Object	Property	Value	
				4450	0
+ 13 (Dev_03)	1000 (BACnet Router)	device:1000 (BACnet Router)	max-apdu-length-accepted	1458	2
network:6	1000 (BACnet Router)	device:1000 (BACnet Router)	object-name	BACnet Router	0
+ 2	1000 (BACnet Router)	device:1000 (BACnet Router)	vendor-identifier	37	C
101 (New BACnet Node)	1991 (WeatherLink_1)	device:1991 (WeatherLink_1)	max-apdu-length-accepted	1458	C
network:50	1991 (WeatherLink_1)	device:1991 (WeatherLink_1)	object-name	WeatherLink_1	C
▲ 50001 (PIM10_1)	1991 (WeatherLink_1)	device:1991 (WeatherLink_1)	vendor-identifier	37	0
■ 50001 (RIM10_1)	2982 (Fike_Panel_01)	device:2982 (Fike_Panel_01)	max-apdu-length-accepted	1458	C
➡ 50002 (RIMT0_2)	2982 (Fike_Panel_01)	device:2982 (Fike_Panel_01)	object-name	Fike_Panel_01	3
+ 50022	2982 (Fike_Panel_01)	device:2982 (Fike_Panel_01)	vendor-identifier	153	C
- 50033	4499 (BACnet Router)	device:4499 (BACnet Router)	max-apdu-length-accepted	1458	0
- Tietwork.00001	4499 (BACnet Router)	device:4499 (BACnet Router)	object-name	BACnet Router	0
1000 (BACher Rouler)	4499 (BACnet Router)	device:4499 (BACnet Router)	vendor-identifier	37	C
 2982 (Fike_Panel_01) 4499 (BACnet Router) 	Total Items: 36 (Showing	Items: 12)			

7.2 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.
 - o This will show only some of the device properties for the selected aspect of a device

Search		Object	Property	Value		
T 12 (Dev_02)						
		device:1991 (Weatherl ink 1)	max-apdu-length-accepted	1458	0	
network:6		device:1001 (WeatherLink_1)	object_name	Weatherlink 1	0	
+ 2	- 54	device: 1001 (WeatherLink_1)	usedes identifies	07	~	
101 (New_BACnet_Node)		device:1991 (vveatherLink_1)	vendor-identifier	37		
network:50						
5 0002 (RIM10_2)						
 ★ 50002 (RIM10_2) ★ 50022 	1					
 50002 (RIM10_2) 50022 50033 	l					
 50002 (RIM10_2) 50022 50033 network:60001 	l					
 50002 (RIM10_2) 50022 50033 network:60001 1000 (BACnet Router) 	l					
 \$50002 (RIM10_2) \$50022 \$50033 network:60001 \$1000 (BACnet Router) \$1991 (WeatherLink_1) 	:					
 50002 (RIM10_2) 50022 50033 network:60001 1000 (BACnet Router) 1991 (WeatherLink_1) device:1991 (WeatherLink_1) 	:					
 50002 (RIM10_2) 50022 50033 network:60001 1000 (BACnet Router) 1991 (WeatherLink_1) device:1991 (WeatherLink_1) 2982 (Fike_Panel_01) 	:					

C /



• To view the full details of a device, highlighting the device directly (in Figure 32 "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.

earch	Object	Property	Value	
1 50022				
+ 50033	device:1991 (Weatherl ink, 1)	max-andu-length-accented	1458	a
network:60001	device. 1991 (WeatherLink_1)	max-apuu-lengin-accepteu	1400	~
1000 (BACnet Router)	device:1991 (WeatherLink_1)	object-name	vveatnerLink_1	~
- 1991 (WeatherLink_1) Q :	device:1991 (WeatherLink_1)	vendor-identifier	37	Ð
device:1991 (WeatherLink_1)	analog-input:1 (INSIDE_TEM	object-name	INSIDE_TEMPERATURE	C
analog-input 1 (INSIDE_TEMPERATURE)	analog-input:2 (OUTSIDE_T.	. object-name	OUTSIDE_TEMPERATURE	C
analog.input:2 (OUTSIDE_TEMPERATURE)	analog-input:3 (INSIDE_HU	object-name	INSIDE_HUMIDITY	C
analog input:2 (USIDE_HUMIDITY)	analog-input:4 (OUTSIDE_H.	. object-name	OUTSIDE_HUMIDITY	C
	analog-input:5 (WIND_SPEE	0) object-name	WIND_SPEED	C
analog-input:4 (OUTSIDE_HOMIDITY)	analog-input:6 (WIND SPEE	object-name	WIND SPEED AVG	C
analog-input:5 (WIND_SPEED)	analog-input 7 (STORM_RAI	 object-name 	STORM RAIN	0
analog-input:6 (WIND_SPEED_AVG)	analog input: 9 (WIND, DIPE	object name		a
analog-input:7 (STORM_RAIN)		. object-hame	WIND_DIRECTION	~
analog-input:8 (WIND_DIRECTION)				
2982 (Fike_Panel_01)				
+ 4499 (BACnet Router)	Total Items: 44 (Showing Item:	:: 11)		

• Now additional device details are viewable; however, the device can be explored even further

Discover	B Remove All		
Search		Property	Value
network:60001			
+ 1000 (BACnet Router)		object-name	WIND DIRECTION
1991 (WeatherLink_1)			
device:1991 (WeatherLink_1)			
analog-input:1 (INSIDE_TEMPERATUR	E)		
analog-input:2 (OUTSIDE_TEMPERATU	JRE)		
analog-input:3 (INSIDE_HUMIDITY)			
analog-input:4 (OUTSIDE_HUMIDITY)			
analog-input:5 (WIND_SPEED)			
analog-input:6 (WIND_SPEED_AVG)			
analog-input:7 (STORM_RAIN)			
analog-input:8 (WIND_DIRECTION)	۹		
+ 2982 (Fike_Panel_01)			
4499 (BACnet Router)	-	Total Items: 44 (Show	ing Items: 1)



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

Search	Property	Value	
network:60001	A		
1000 (BACnet Router)	cov-increment	0	2
1991 (WeatherLink_1)	description	WIND DIRECTION	2 /
device:1991 (WeatherLink_1)	event-state	normal	0
analog-input:1 (INSIDE_TEMPERATURE)	object-identifier	analog-input 8	3
analog-input:2 (OUTSIDE_TEMPERATURE)	object-name	WIND DIRECTION	2
analog-input:3 (INSIDE_HUMIDITY)	object-type	analog-input	3
analog-input:4 (OUTSIDE_HUMIDITY)	out-of-service	false	2
analog-input:5 (WIND_SPEED)	present-value	23	2
analog-input:6 (WIND_SPEED_AVG)	reliability	no-fault-detected	C
analog-input:7 (STORM_RAIN)	status-flags	[in-alarm: false; fault: false; overri	3
analog-input:8 (WIND_DIRECTION) Q	units	no-units	C
+ 2982 (Fike_Panel_01)	Total Harris 54/0	h	
+ 4499 (BACnet Router)	Total Items: 54 (S	howing Items: 11)	

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 (\Im) that appears to right of individual properties to refresh the value.

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

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

- Network number
 - \circ Device
 - Device object



7.2.1 Edit the Present Value Field

The only recommended field to edit via BACnet Explorer 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 BACnet Explorer is a discovery tool not a Building Management System (BMS).
 - To edit the present value, select it in the property listings.

Search		Property	Value		
network:60001					
1000 (BACnet Router)		cov-increment	0	C	
1991 (WeatherLink_1)		description	WIND_DIRECTION	C	1
device:1991 (WeatherLink_1)		event-state	normal	C	
analog-input:1 (INSIDE_TEMPERATURE)		object-identifier	analog-input 8	C	
analog-input:2 (OUTSIDE_TEMPERATURE)		object-name	WIND_DIRECTION	C	6
analog-input:3 (INSIDE_HUMIDITY)	1	object-type	analog-input	C	
analog-input:4 (OUTSIDE_HUMIDITY)		out-of-service	false	C	6
analog-input:5 (WIND_SPEED)		present-value	23	C	
analog-input:6 (WIND_SPEED_AVG)		reliability	no-fault-detected	C	Ċ
analog-input:7 (STORM_RAIN)	_	status-flags	[in-alarm: false; fault: false; overri	C	
analog-input:8 (WIND_DIRECTION)	٩	units	no-units	C	
2982 (Fike_Panel_01)		Tatal Itanaa E.4 (Ch.			
+ 4499 (BACnet Router)	-	Total Items: 54 (Sh	wing items. IT)		

	Write Property
present-value	2
	Write Cancel
Figure	36: Write Property Window



• 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.

Search		Property	Value		
network:60001					
1000 (BACnet Router)		cov-increment	0	C	6
1991 (WeatherLink_1)		description	WIND_DIRECTION	C	6
device:1991 (WeatherLink_1)		event-state	normal	C	
analog-input:1 (INSIDE_TEMPERATURE)		object-identifier	analog-input 8	C	
analog-input:2 (OUTSIDE_TEMPERATURE)		object-name	WIND_DIRECTION	C	6
analog-input:3 (INSIDE_HUMIDITY)		object-type	analog-input	C	
analog-input:4 (OUTSIDE_HUMIDITY)		out-of-service	false	C	6
analog-input:5 (WIND_SPEED)		present-value	2	C	6
analog-input:6 (WIND_SPEED_AVG)		reliability	no-fault-detected	C	
analog-input:7 (STORM_RAIN)		status-flags	[in-alarm: false; fault: false; overri	C	
analog-input:8 (WIND_DIRECTION)	2	units	no-units	C	
+ 2982 (Fike_Panel_01)		T-1-1/1			
+ 4499 (BACnet Router)	-	Total items: 54 (Sho	wing items. 11)		



8 CONNECTING TO THE SMC CLOUD

8.1 Create a New SMC Cloud Account

The first step to connecting to the SMC Cloud is to create an account.

• Click on the SMC Cloud[™] tab across the top of the screen.

SMG	Settings	About	SMC Cloud™	BACnet Explorer	Diagnostics	FieldSe Mo	rver EZ G odbus to	ateway BACnet
Sections EGateway Connections	Ge	neral Modbus to B	ACnet EZ Gateway				Controls Reload	Defaults
I DeviceProxy™ Device Profiles	Ne	twork					Save	Restart
	IP Set Passw	tings 🖍 rords 🖍					Status	
		Figure 3	8: Web App	Landing Page -	SMC Cloud	Гаb		

• The following informational splash page will appear, click Close to view the registration page.





- If a warning message appears instead of the splash page, follow the suggestion that appears on screen.
- If the EZ Gateway cannot reach the SMC Cloud server, the following message will appear.



 Follow the directions presented in the warning message and check that the DNS settings are set up with the following Domain Name Server (DNS) settings:

DNS1=8.8.8.8

DNS2=8.8.4.4

- Ensure that the EZ Gateway is properly connected to the Internet
- NOTE: If changes to the network settings are done, remember to click "Update IP Settings" and then power cycle the EZ Gateway.



- On the registration page, click the "Create a SMC Cloud account" button and enter a valid email.
 - o This will send a "Welcome to SMC Cloud" invite to the email address entered

Register this FieldServer	on SMC C	loud™			
New Users					
If you do not have SMC Cloud cr Cloud account now	edentials, you can crea	te a new SMC	Сгеа	te a SMC Cloud a	ccount
Existing Users - Enter device registrat	ion details				
User Credentials					
Username					
	Invalid value : Please en	ter a username			
Password					
	Invalid value : Please en	ter a password			
Device Details					
Device Name	Device Name				
Device Description	Device Description				
Device Location					
Automatically get current location					
Get Current Location		Select dev	vice location o	on map	
Enter the address and get device	location	Мар	Satellite		53
Enter place here					
				•	
Latitude:				•	
0.0000					
Lonaitude:					+
0.0000		Casala			_
]	Google		Map data	©2019 Terms of Use
				Reg	jister Device
Figure	41: SMC Cloud	Registrati	on Page		



• The "Welcome to SMC Cloud" email will appear as shown below.



NOTE: If no SMC Cloud email was received, check the spam/junk folder for an email from <u>notification@fieldpop.io</u>. Contact the manufacturer's support team if the email cannot be found.



• Click the "Complete Registration" button and fill in user details accordingly.

Complete Your Registration	
Email Address	
user@gmail.com	
First Name	
First Name	*
Last Name	
Last Name	*
Phone Number	
	*
New Password	
password ()	*
Confirm Password	
password 💿	*
By registering my account with SMC, I understand that I am agreeing to the SMC Cloud Terms of Service and Privacy Policy	*
* Man	datory Fields
Save Cancel	
Figure 43: Setting User Details	

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

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

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



8.2 Registration Process

Once SMC Cloud user credentials have been generated, the EZ Gateway can be registered onto the SMC Cloud server.

• On the registration page, fill in user credentials and all other device information fields for registration of each individual gateway in the field.

Register this FieldServe	r on SMC	Cloud™			
New Users					
If you do not have SMC Cloud o Cloud account now	redentials, you can c	create a new SMC	Create	a SMC Cloud accoun	t
Existing Users - Enter device registra	ation details				
User Credentials					
Username	Invalid value : Please	a enter a username			
Password	Invalid value : Please	enter a password			
Device Details					
Device Name	Device Name				
Device Description	Device Description				
Device Location					
Automatically get current locatio	n	Select dev	ice location or	n map	
Get Current Location		Map	Satallita		F 7
Enter the address and get devic	e location	wap	Satellite		
Enter place here					
l atitude:				•	A
0.0000					
Longitude:					+
0.0000		Google			_
				Map data ©2019 Register	Device
Figure 44: P	egister the G	atoway on t		aud	

- To input the device location, do one of the following:
 - o Enter the address in the address field
 - Click the "Get Current Location" button to auto-populate
- NOTE: This button will only work if location services have been enabled on the local browser. If using the Chrome browser and connected via LAN, this method will not work.
 - Drop a location directly on the Google map
 - Enter the latitude and longitude manually
 - Click Register Device.



• Once the device has successfully been registered, the following screen will appear listing the device details and additional information auto-populated by the EZ Gateway.

Register this FieldServer on SMC Cloud™
Device Registered
Device Name: Demo Gateway
Device Description: Demo Gateway
Device Location: 40.69725247980379, -111.85029669375001
MAC Address: 00:50:4E:60:12:C2
Tunnel Server URL: tunnel.fieldpop.io
Device ID: stickycowl_Jv4gw-Ny4
Product Name: Demo Gateway
Product Version: 7.1.1
Update Device Details
Figure 45: Device Registered for SMC Cloud



8.3 Login to SMC Cloud

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

← → C Secure https://www.fieldpop.io/fieldpop_user_mgr/#/login				
	SMC cloud			
	admin@siarramonitor.com			
	auningsierranomor.com			
	Password			
	•••••••			
	Keep me logged in Forgot Password?			
	Sign in			
	Copyright ${\small ©}$ 2018 Sierra Monitor Corporation			
Fig	gure 46: SMC Cloud Login Page			

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

On first login, the Privacy Policy window will appear. Read the Terms of Service, click the checkbox to accept the terms and then click the Continue button to access SMC Cloud.







NOTE: For additional SMC Cloud instructions see the SMC Cloud Start-up Guide.



Appendix A Troubleshooting

Appendix A.1. Communicating with the EZ Gateway Over the Network

- Confirm that the network cabling is correct.
- Confirm that the computer network card is operational and correctly configured.
- Confirm that there is an Ethernet adapter installed in the PC's Device Manager List, and that it is configured to run the TCP/IP protocol.
- Check that the IP netmask of the PC matches the EZ Gateway. The Default IP Address of the EZ Gateway is 192.168.2.X, Subnet Mask is 255.255.255.0.
 - Go to Start|Run
 - Type in "ipconfig"
 - The account settings should be displayed
 - o Ensure that the IP Address is 102.168.2.X and the netmask 255.255.255.0
- Ensure that the PC and EZ Gateway are on the same IP Network, or assign a Static IP Address to the PC on the 192.168.2.X network.

Appendix A.2. Notes Regarding Subnets and Subnet Masks

RFC standards allocate the IP Address range of 192.0.0.0 through to 223.255.255.255 to be used in Class-C subnetting (subnets listed as 255.255.255.xxx, where xxx can vary based on filtering required).

Consequently, the IP stack for this product will not allow any IP Addresses in this range to be allocated a subnet that does not fall within the Class C range.



Appendix A.3. Before Contacting Technical Support Take a Diagnostic Capture

When there is a problem on-site that cannot easily be resolved, perform a diagnostic capture before contacting support so that support can quickly solve the problem. There are two methods for taking diagnostic captures:

• FieldServer Toolbox:

This method requires installation of the FS Toolbox program. A FS Toolbox diagnostic capture takes a snapshot of the loaded configuration files and a log of all the communications on the serial ports over a specified period of time. If the problem occurs over an Ethernet connection, then take a Wire Shark capture.

• Gateway's FS-GUI Page:

This method doesn't require downloading software. The diagnostic capture utilities are embedded in the FS-GUI web interface. Starting a diagnostic capture takes a snapshot of the loaded configuration files and a log of all the communications over a specified period of time. This works for both serial and Ethernet connections.

NOTE: The information in the zipped files contains everything support needs to quickly resolve problems that occur on-site.

Appendix A.3.1. Using the FieldServer Toolbox

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

- NOTE: While all necessary documentation is shipped with the FieldServer on the USB flash drive, these documents are constantly being updated. Newer versions may be available on the <u>Sierra Monitor website</u>.
 - Ensure that FieldServer Toolbox is loaded onto the local PC. Otherwise, download the FieldServer-Toolbox.zip via the Sierra Monitor website's <u>Software Downloads</u>.
 - Extract the executable file and complete the installation.



- Connect a standard Cat-5 Ethernet cable between the PC and FieldServer.
- Double click on the FS Toolbox Utility.



- Step 1: Take a Log
 - \circ Click on the diagnose icon \fbox of the desired device

Smc FieldServer Toolbox							
FieldServe	er Toolbox				9	SM	sierra monitor
DEVICES	۲	IP ADDRESS	MAC ADDRESS	FAVORITE	CONNECTIVITY		
ProtoNode		192.168.3.110	00:50:4E:10:2C:92	*			Connect

• Ensure "Full Diagnostic" is selected (this is the default)

sinc FieldServer Toolbox		
FieldServer Toolt	200X	SMGsierra
DEVICES (+)	Device Diagnostics	FAVORITE CONNECTIVITY
ProtoNode	Device Diagnostics	* • Connect Q A
	ProtoNiode 192.168.3.110 Diagnostic Test Ful Diagnostic Snap Shot Set capture per(Serial Capture Ful Diagnostic Timestamp each character Enable Message logging Show advanced options	
	Start Diagnostic Open Containing Folder Close	

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



o Click on "Start Diagnostic"

smc FieldServer Toolbox			
FieldServer Tool	x	SM	sierra
DEVICES +	smc Device Diagnostics	FAVORITE CONNECTIVITY	
ProtoNode	Device Diagnostics	* •	Connect
	ProtoNode 192.168.3.110		
	Diagnostic Test Full Diagnostic		
	Set capture period 0:05:00		
	Timestamp each character		
	Show advanced options		
	Start Diagnostic		
	Open Containing Folder		
	Close		

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

ieldServer Toolbo	x							
FieldServ	er Toolb	ox					C	Sierr
setup	нер	STAC Device Diag	nostics	0	23			
DEVICES	÷		Davies Die			FAVORITE	CONNECTIVITY	
ProtoNode			Device Diag	Inostics		*	•	Connect
		ProtoNode		192.168.3.11	0			
		Discourse dis Ta		(3		
	Diagnost	ic Test Complete						
		iagnostic_2015-02-1 o you want to open	.8_12-28.zip the containing fo	Ider?	en Cancel)		
			Start Diagn Open Containir	ostic g Folder				
				Clos	se]			
		L			10			

 \circ $\,$ Choose "Open" to launch explorer and have it point directly at the correct folder

• Send the Diagnostic zip file to smc-support@msasafety.com

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



Appendix A.3.2. Using FS-GUI

Diagnostic Capture with FS-GUI is only available on FieldServers with a bios updated/released on November 2017 or later. Completing a Diagnostic Capture through the FieldServer allows network connections (such as Ethernet and Wi-Fi) to be captured.

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

- Open the FieldServer FS-GUI page.
- Click on Diagnostics in the Navigation panel.

Navigation	Diagnostics
 FieldServer Demo About 	Captures
 Setup View User Messages Diamocritic 	Full Diagnostic
Diagnostics	Set capture period (max 1200 secs):
	300
	Start
	Serial Capture
	Set capture period (max 1200 secs):
	300
	Start
Home HELP (F1) Contact U	s

- 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

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.
- Send the diagnostic zip file to smc-support@msasafety.com.
- NOTE: Diagnostic captures of BACnet MS/TP communication are output in a ".PCAP" file extension which is compatible with Wireshark.



Appendix A.4. LED Functions



Appendix A.5. 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>.

Appendix A.6. Internet Browsers Not Supported

- Internet Explorer 11
- NOTE: Internet Explorer is no longer supported as recommended by Microsoft. Please use the latest version of Chrome, Firefox or Edge.



Appendix B Reference

Appendix B.1. Specifications





	FS-EZ3-MOD-BAC & FS-EZ4-MOD-BAC ²					
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	RS-485/RS-232 (Tx+ / Rx- / gnd) RS-485 (Tx+ / Rx- / gnd) Power port (+ / - / Frame-gnd)				
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, RoHS compliant					
Physical Dimensions	4 x 1.1 x 2.7 in (10.16 x 2.8 x 6.8 cn	n)				
Weight	0.4 lbs (0.2 Kg)					
Operating Temperature	-20°C to 70°C (-4°F to158°F)					
Humidity	10-95% RH non-condensing					
Figure 51: Specifications						

"This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.
- **NOTE:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his expense.

Modifications not expressly approved by MSA Safety could void the user's authority to operate the equipment under FCC rules".

² Specifications subject to change without notice.



Appendix B.2. Compliance with UL Regulations

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

- The units shall be powered by listed LPS or Class 2 power supply suited to the expected operating temperature range.
- The interconnecting power connector and power cable shall:
 - Comply with local electrical code
 - o Be suited to the expected operating temperature range
 - o Meet the current and voltage rating for the EZ Gateway
- Furthermore, the interconnecting power cable shall:
 - Be of length not exceeding 3.05m (118.3")
 - Be constructed of materials rated VW-1, FT-1 or better
- If the unit is to be installed in an operating environment with a temperature above 65 °C, it should be installed in a Restricted Access Area requiring a key or a special tool to gain access.
- This device must not be connected to a LAN segment with outdoor wiring.

Appendix B.3. Dimension Drawing FS-EZX-MOD-BAC





Appendix B.4. Address Types and Data Types

If the node parameter Address_Type is set as ADU or PDU, then Data_Type must be specified as follows.

For Address_Type ADU:

Address range	Data_Type	Function Code (Write)	Function Code (Read)
1 - 65536	Coil	15	1
1 – 65536	Discrete_Input	n/a.	2
1 – 65536	Input_Register	n/a.	4
1 - 65536	Holding_Register	16	3

For Address_Type PDU:

Address range	Data_Type	Function Code (Write)	Function Code (Read)
0 - 65535	FC01	15	1
0 – 65535	FC02	n/a.	2
0 – 65535	FC04	n/a.	4
0 – 65535	FC03	16	3

For Address_Type Modicon_5digit:

When a Modbus address range is specified, a particular Data Type is implied. The defaults are shown below.

Address range	Data_Type	Function Code (Write)	Function Code (Read)
00001 - 09999	Coil	5,15	1
10001 - 19999	Discrete_Input	n/a.	2
30001 - 39999	Input_Register	n/a.	4
40001 - 49999	Holding_Register	6,16	3



Appendix C 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.