P/N: 3015-5609
Revision 2
April 2017

BACnet® Protocol Converter Kit for Use with Bacharach MultiZone Gas Monitors

Installation Manual

1. Scope

The FieldServer™ ProtoNode is a BACnet protocol converter accessory for use with Bacharach's MultiZone family of gas monitors. This manual explains the installation procedure and outlines the MODBUS registers that are supported by the ProtoNode configuration files.

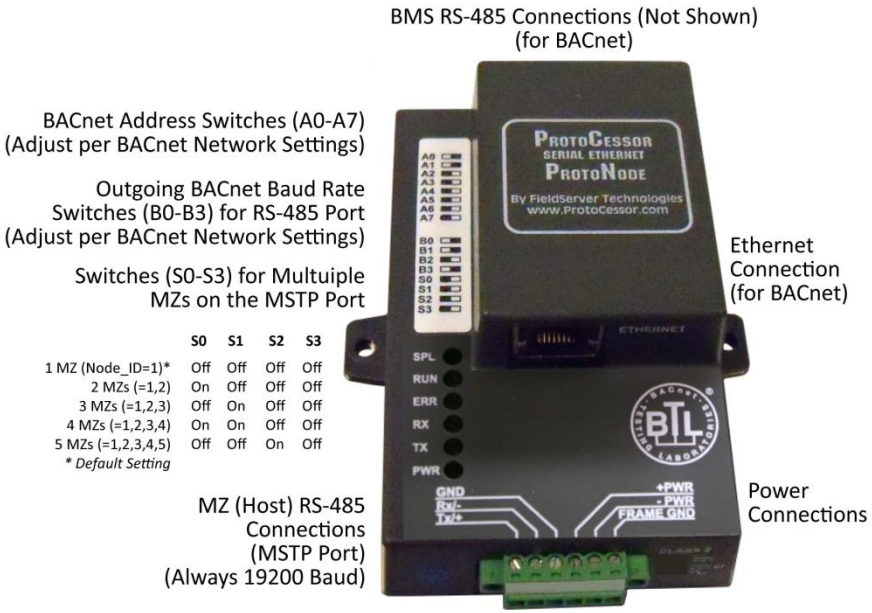

Figure 1. FieldServer™ ProtoNode

2. Items Required

- Medium Phillips head screwdriver
- Medium flat head screwdriver
- Small flat head screwdriver
- FieldServer ProtoNode-RER Protocol Converter Kit (3015-5705)

P/N	Qty	Description
3015-5703	1	FieldServer ProtoNode-RER Protocol Converter
3015-5616	1	Mounting Plate
3015-5704	1	Power Supply Cable Assembly
3015-5617	1	Ground Wire
0002-2162	4	Pan Head Screw (#6-32×5/16) with Washer
0002-7757	2	Pan Head Machine Screw (#8-32×1/2)
0102-3673	2	Hex Nut (#8-32) with Washer
3015-5609	1	FieldServer ProtoNode Installation Guide
0104-4601	4	Cable Tie Mount with Adhesive Base
0104-4550	4	Cable Ties (3/32" × 4" Long)

WARNING: Failure to comply with these instructions may void the warranty.

3. Mounting the ProtoNode

Bacharach recommends mounting the ProtoNode inside the MultiZone enclosure on the inside of the MZ door (see figures below) using the included hardware. As an alternative, the ProtoNode may be mounted at an appropriate location near the MultiZone using the mounting holes on the ProtoNode enclosure.

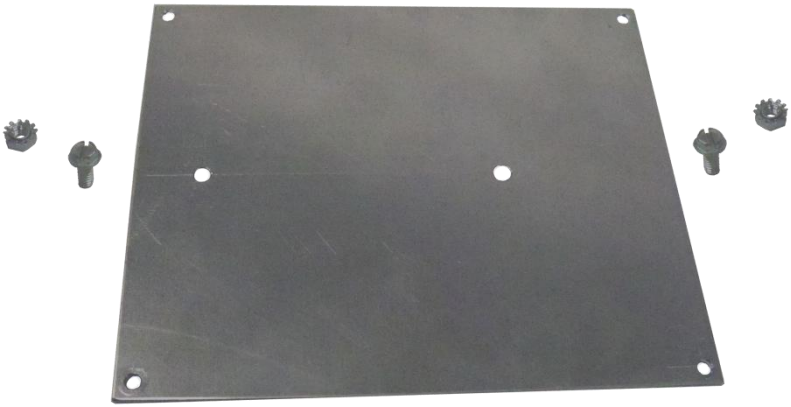

Figure 2. Mounting Plate and Hex Screws with Locking Nuts

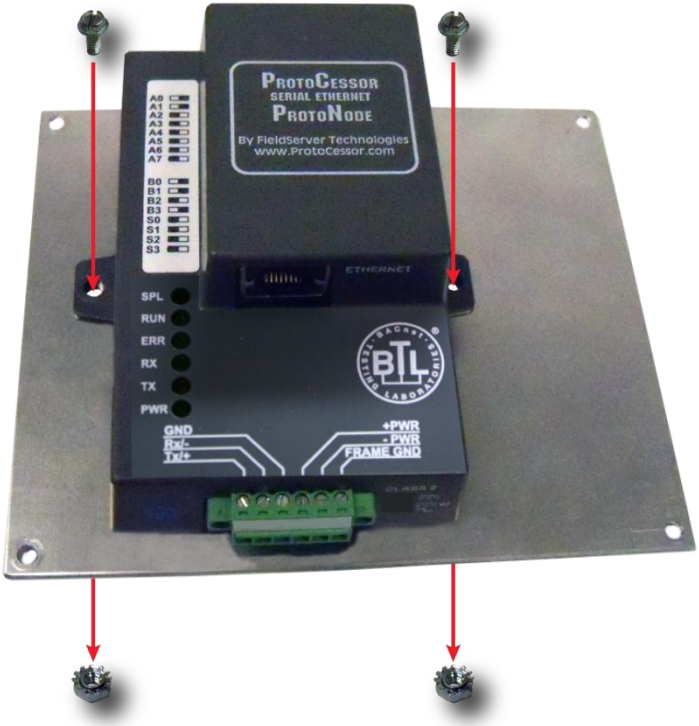

Figure 3. ProtoNode and Mounting Plate

Figure 4. ProtoNode Secured onto Mounting Plate (Back View)

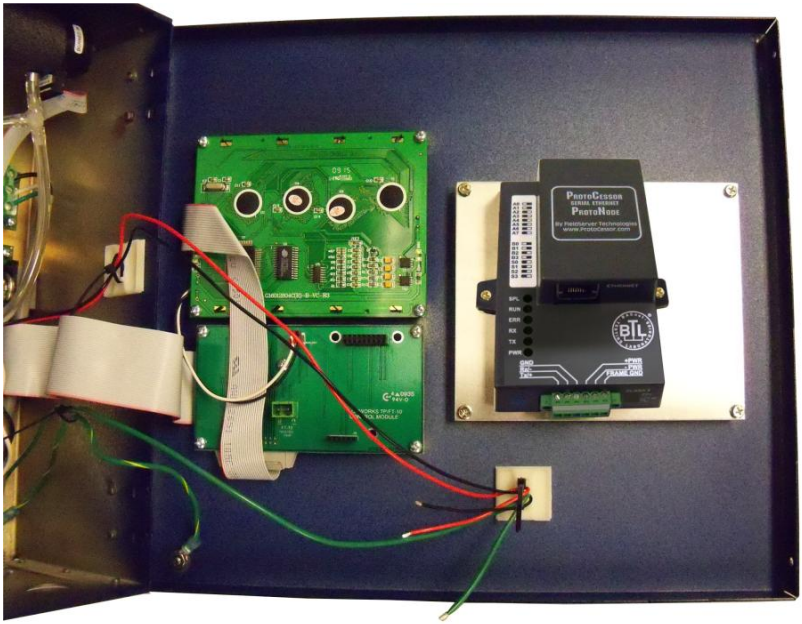

Figure 5. Mounted ProtoNode Showing Cable Ties and Mounts

4. Connecting the Power Supply

The ProtoNode can be powered by 9-30 VDC or 12-24 VAC. The ProtoNode converter kit contains a power cable so that the ProtoNode can be powered by the MZ. The power cable that is supplied with the kit is meant to replace the existing MZ cable. It plugs into J3 of the main board and J5 of the power supply board (see Figure 6). The 12V and ground wires of the new cable have been lengthened, and are un-terminated so that they can be inserted into the terminal block connector on the ProtoNode. The kit also contains a green cable for grounding. Connections are illustrated in the photo and chart below. (See Figure 5 and Figure 7.)

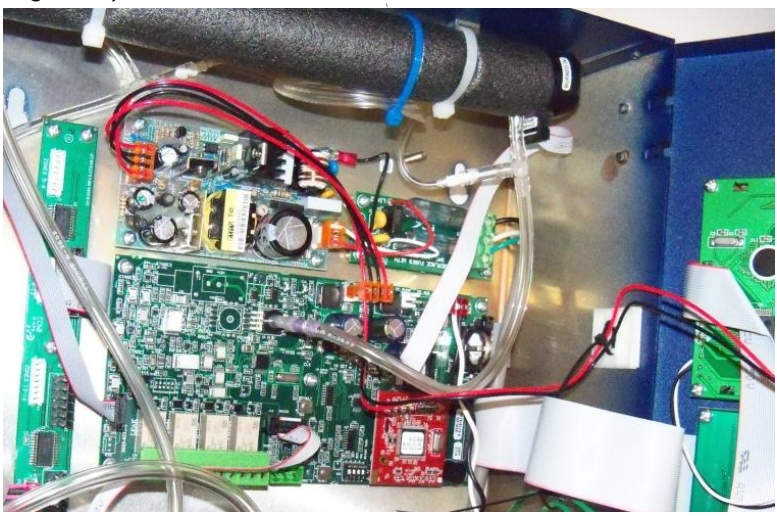

Figure 6. Power Supply Cable Assembly

Figure 7. Power Connections

Pin No	Silkscreen	Connector Labels
Pin 4	+ PWR	PWR +
Pin 5	- PWR	PWR -
Pin 6	FRAME GND	FG

NOTE: If you choose **NOT** to power the ProtoNode from the MZ, you must supply all necessary wiring and an appropriate power supply.

5. RS-485 Network Wiring (Host)

The RS-485 host bus should be wired in accordance with the practices described in the MZ manual and FieldServer's ProtoNode documentation. Connections are illustrated in the photo and chart below. Network wiring is not supplied in this kit.

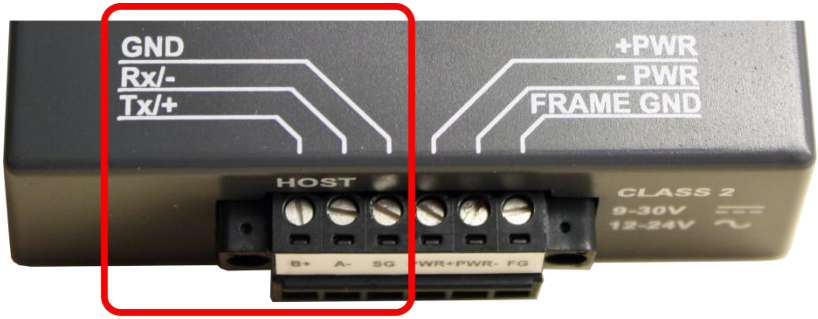

Figure 8. RS-485 Network Connections (Baud Always = 19200)

FieldServer's ProtoNode			Bacharach MZ
Pin No	**Silkscreen**	**Connector Labels**	**Connector**
Pin 1	Tx/+	B+	A
Pin 2	Rx/-	A–	B
Pin 3	GND	SG	GND

NOTE: Connectors "A" and "B" are opposite on the MZ and Protonode, so be sure to wire B+ to A and A- to B (see table above).

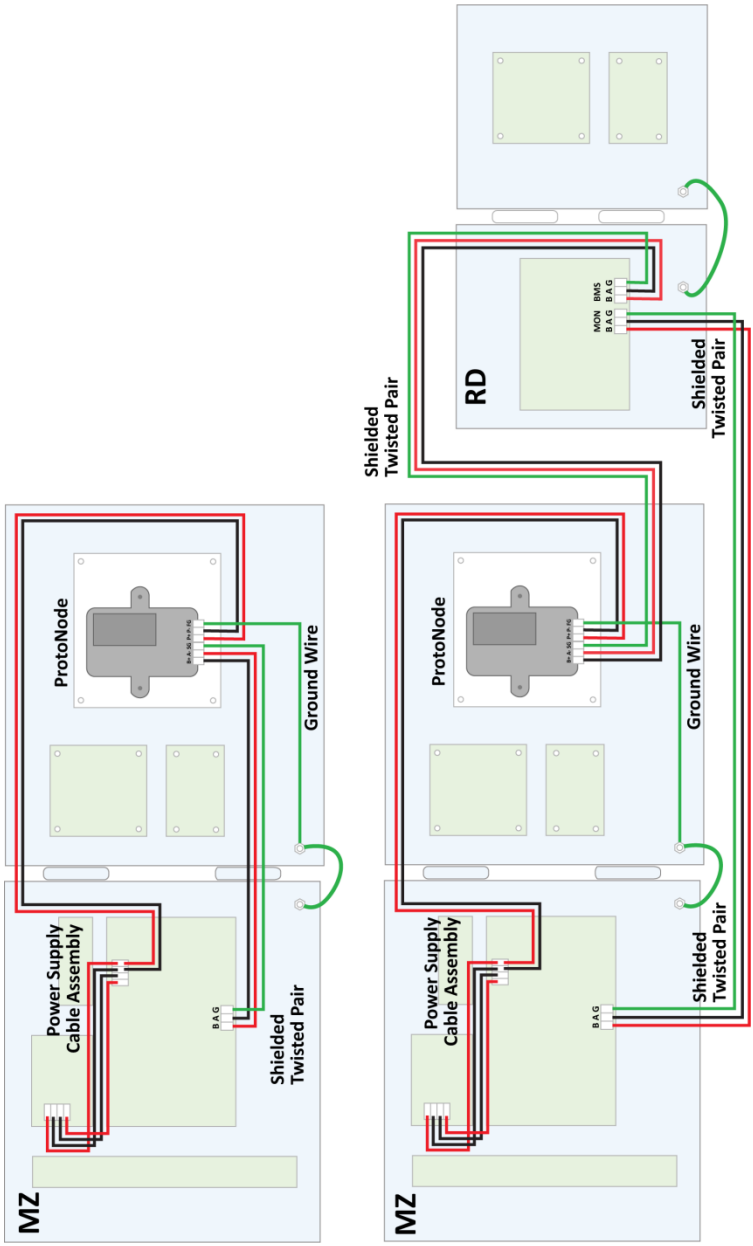

Figure 9. Wiring Summary for MZ and MZ+RD Configurations

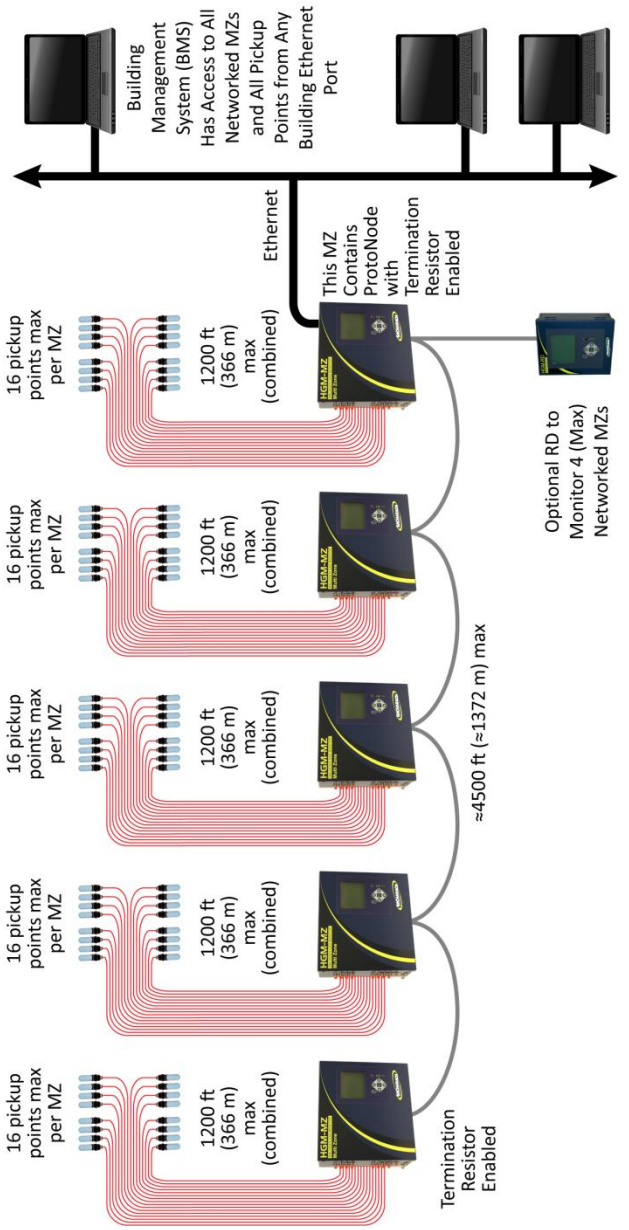

Figure 10. Networking Five MZs and RD to a BMS via Ethernet

NOTE: Enabling termination resistors at both ends is only recommended if the bus length exceeds 700ft (213 m).

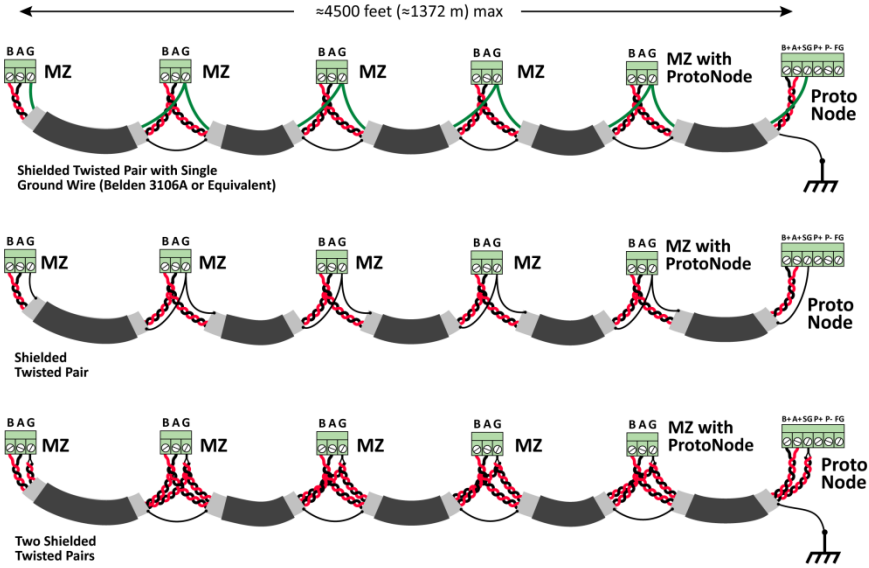

Figure 11. Ground Wiring Options for Multiple MZ Configuration

NOTE: The shield should be connected to chassis ground at one end only. This should be an earth ground connection such as the ground stud. The RS-485 ground connector pins (G) should be connected on all devices with a separate wire. One or two wires from a second twisted pair in the cable can be used for this. If a third wire is not available for this ground, and all nodes are on the same power circuit, then it can be omitted. Alternatively, the shield can be used for this purpose, in which case the shield will be connected to the ground screw terminal at each node, rather than an earth connection at a single node.

6. Network Configuration

The ProtoNode is factory-configured with the following defaults.

- Default IP Address 192.168.1.24
- Default Subnet Mask 255.255.255.0

If a different IP address or subnet mask is desired, or for other configuration settings, please refer to the appropriate FieldServer™ documentation.

NOTE: If communications between the Protonode converter and the Ethernet network cannot be established, it may be necessary to reboot the Protonode Converter **while the Ethernet is connected**.

7. Supported MODBUS Registers

The following is a list of the MZ's MODBUS registers that are supported by the current revision of our ProtoNode configuration files.

WARNING: Writing to the refrigerant type setting should only occur when the MZ is being configured. Frequent writes should be avoided.

BACnet Object ID	BACnet Object Description ([#]=Zone #)	BACnet Object Type	Access (R=Read, W=Write)	Source MODBUS Register Number	MODBUS Register Description
1	Active Zone	Analog Input	R	0x0011	Status
2	Fault	Analog Input	R		
3	PPM [1]	Analog Input	R	0x1201	Zone 1 Data
4	Refrig Type [1]	Analog Input	R		
5	Refrig Type [1]	Analog Value	W		
6	Alarm [1]	Analog Input	R		

BACnet Object ID	BACnet Object Description ([#]=Zone #)	BACnet Object Type	Access (R=Read, W=Write)	Source MODBUS Register Number	MODBUS Register Description
7	PPM [2]	Analog Input	R	0x1202	Zone 2 Data
8	Refrig Type [2]	Analog Input	R		
9	Refrig Type [2]	Analog Value	W		
10	Alarm [2]	Analog Input	R		
11	PPM [3]	Analog Input	R	0x1203	Zone 3 Data
12	Refrig Type [3]	Analog Input	R		
13	Refrig Type [3]	Analog Value	W		
14	Alarm [3]	Analog Input	R		
15	PPM [4]	Analog Input	R	0x1204	Zone 4 Data
16	Refrig Type [4]	Analog Input	R		
17	Refrig Type [4]	Analog Value	W		
18	Alarm [4]	Analog Input	R		
19	PPM [5]	Analog Input	R	0x1205	Zone 5 Data
20	Refrig Type [5]	Analog Input	R		
21	Refrig Type [5]	Analog Value	W		
22	Alarm [5]	Analog Input	R		
23	PPM [6]	Analog Input	R	0x1206	Zone 6 Data
24	Refrig Type [6]	Analog Input	R		
25	Refrig Type [6]	Analog Value	W		
26	Alarm [6]	Analog Input	R		
27	PPM [7]	Analog Input	R	0x1207	Zone 7 Data
28	Refrig Type [7]	Analog Input	R		
29	Refrig Type [7]	Analog Value	W		
30	Alarm [7]	Analog Input	R		
31	PPM [8]	Analog Input	R	0x1208	Zone 8 Data
32	Refrig Type [8]	Analog Input	R		
33	Refrig Type [8]	Analog Value	W		
34	Alarm [8]	Analog Input	R		

BACnet Object ID	BACnet Object Description ([#]=Zone #)	BACnet Object Type	Access (R=Read, W=Write)	Source MODBUS Register Number	MODBUS Register Description
35	PPM [9]	Analog Input	R	0x1209	Zone 9 Data
36	Refrig Type [9]	Analog Input	R		
37	Refrig Type [9]	Analog Value	W		
38	Alarm [9]	Analog Input	R		
39	PPM [10]	Analog Input	R	0x120A	Zone 10 Data
40	Refrig Type [10]	Analog Input	R		
41	Refrig Type [10]	Analog Value	W		
42	Alarm [10]	Analog Input	R		
43	PPM [11]	Analog Input	R	0x120B	Zone 11 Data
44	Refrig Type [11]	Analog Input	R		
45	Refrig Type [11]	Analog Value	W		
46	Alarm [11]	Analog Input	R		
47	PPM [12]	Analog Input	R	0x120C	Zone 12 Data
48	Refrig Type [12]	Analog Input	R		
49	Refrig Type [12]	Analog Value	W		
50	Alarm [12]	Analog Input	R		
51	PPM [13]	Analog Input	R	0x120D	Zone 13 Data
52	Refrig Type [13]	Analog Input	R		
53	Refrig Type [13]	Analog Value	W		
54	Alarm [13]	Analog Input	R		
55	PPM [14]	Analog Input	R	0x120E	Zone 14 Data
56	Refrig Type [14]	Analog Input	R		
57	Refrig Type [14]	Analog Value	W		
58	Alarm [14]	Analog Input	R		
59	PPM [15]	Analog Input	R	0x120F	Zone 15 Data
60	Refrig Type [15]	Analog Input	R		
61	Refrig Type [15]	Analog Value	W		
62	Alarm [15]	Analog Input	R		

BACnet Object ID	BACnet Object Description ([#]=Zone #)	BACnet Object Type	Access (R=Read, W=Write)	Source MODBUS Register Number	MODBUS Register Description
63	PPM [16]	Analog Input	R	0x1210	Zone 16 Data
64	Refrig Type [16]	Analog Input	R		
65	Refrig Type [16]	Analog Value	W		
66	Alarm [16]	Analog Input	R		

NOTE: Each zone's refrigerant type is assigned two BACnet objects: an Analog Value and an Analog Input. The Analog Value is used to write the refrigerant type. The Analog Input object is used to read the refrigerant type.

8. Additional Information

For configuration information on BACnet files and setup, refer to the ProtoNode Startup Guide for BACnet Setup, which is available on the Bacharach website www.MyBacharach.com.

For additional information on Bacharach's MultiZone Gas Monitor, refer to the MZ Instruction Manual (P/N 3015-5074) provided with your MZ. You may also access the latest MZ instruction manual at the Bacharach website www.MyBacharach.com.

For additional information on the FieldServer ProtoNode, refer to the FieldServer documentation. You may also refer to the FieldServer website at www.fieldserver.com.

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