

Cautions, warnings, and regulatory information

READ AND SAVE THESE INSTRUCTIONS Follow the instructions in this installation manual. These instructions must be followed to avoid damage to this product and associated equipment. Product operation and reliability depend upon proper installation.



DO NOT INSTALL ANY AUTOCALL™ PRODUCT THAT APPEARS DAMAGED Upon unpacking your Autocall product, inspect the contents of the carton for shipping damage. If damage is apparent, immediately file a claim with the carrier and notify an authorized Autocall product supplier.



ELECTRICAL HAZARD Disconnect electrical field power when making any internal adjustments or repairs. All repairs should be performed by a representative or an authorized agent of your local Autocall product supplier.



STATIC HAZARD Static electricity can damage components. Handle as follows:

- Ground yourself before opening or installing components.
- Prior to installation, keep components wrapped in anti-static material at all times.

FCC RULES AND REGULATIONS – PART 15. 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 own expense.

General Information About the BACpac Ethernet Module

The Autocall Model A010-9915 BACpac Ethernet Modules are microprocessor-based communication devices that provides seamless, one-way communications between a 4010ES Fire Alarm Control Unit (FACU) and the industry-standard Building Automation and Control Network (BACnet). The portal acts as a protocol translator between the Autocall 4100 Computer Port Protocol and the industry-standard BACnet® Protocol. When the BACpac Ethernet Module receives system status messages from the FACU, it translates the messages into BACnet Protocol and communicates the information to other BACnet devices.

The BACpac can be used with either a stand-alone FACU or a ES Net Network of up to 1500 points. See Figure 1.

BACpac Ethernet Module	Maximum number of points
A010-9915	1500 Points

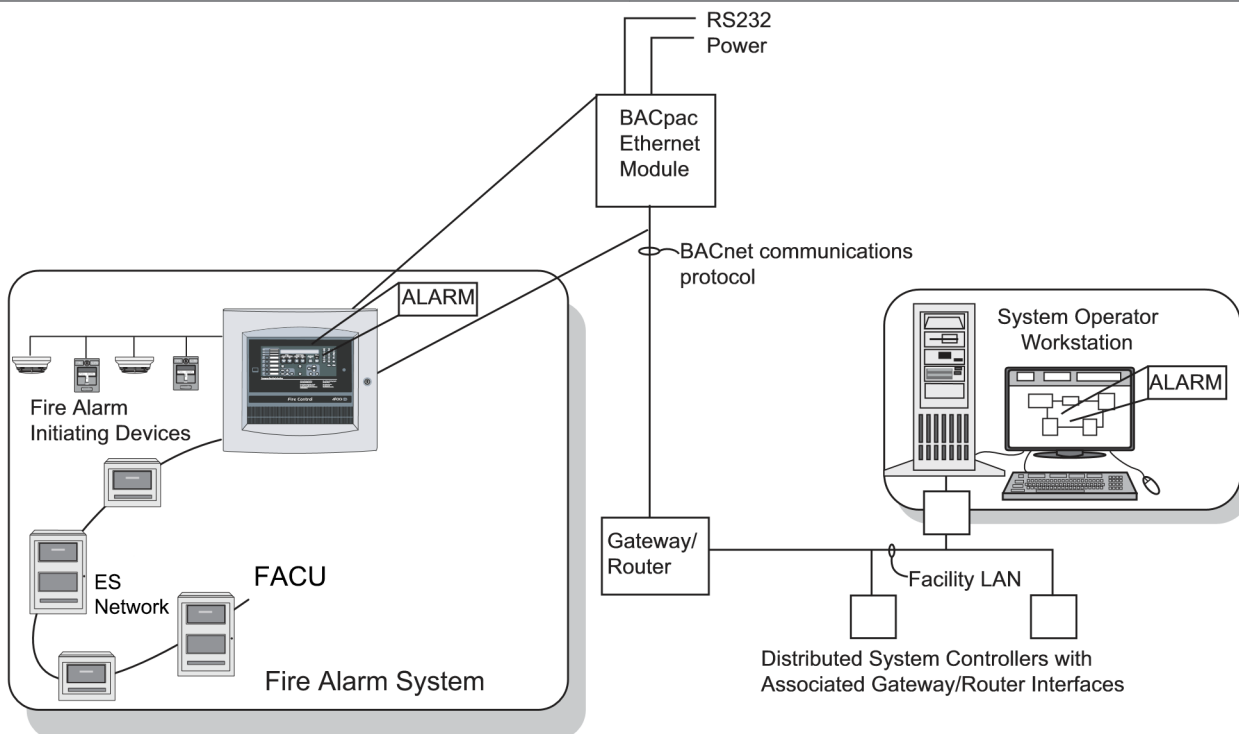


Figure 1: BACpac Ethernet Module Location with the Control Unit

The basic BACpac Ethernet Module assembly consists of two modules that consist of:

- the electronics of the BACpac Ethernet Module



- a suppressor through which the LAN interface must be connected

The BACpac Ethernet module installs in a 4" x 5" card block. Each BACpac Ethernet module contains a ProtoCessor module mounted onto a Protocarrier module which is plugged into a LAN suppressor. See Figure 2 for details.

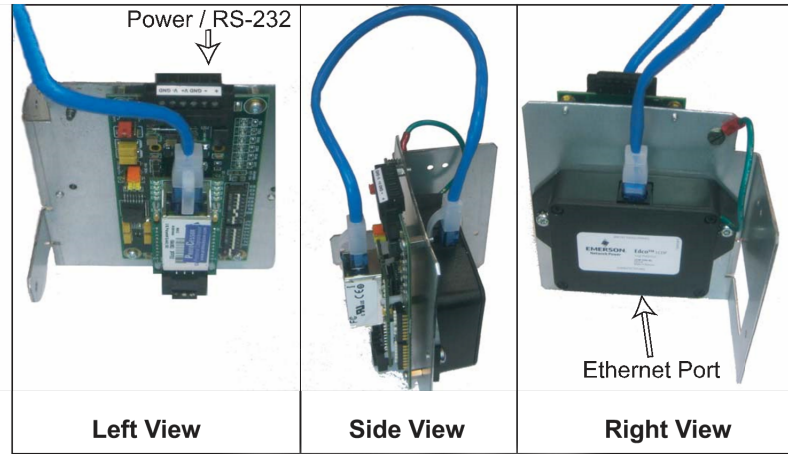


Figure 2: BACpac Ethernet Module

Related Documentation

Table 1: Related Documentation

Document	Document Number
4100 Field Wiring Diagram	841-731
4100 Interconnect Diagram	841-869

Specifications

Table 2: Power Requirements

Specification	Details
Voltage	24 VDC Nominal
Current	123 mA maximum

Table 3: Environmental Limitations

Environmental Limitation	Detail
Operating Temperature Range	32° to 120° F (0° to 49° C)
Humidity	10% to 95% RH (relative humidity) from 32° to 113° F (0° to 45° C), non-condensing

Portal Interface

3 terminals (TXD, RTX, GND) of 6 terminal strip

Status Indicators

The RS-232 Signal LEDs are each labeled and correspond to the respective data signals. The available signal types are: TXD, RTX, and 5V. See Figure 3.

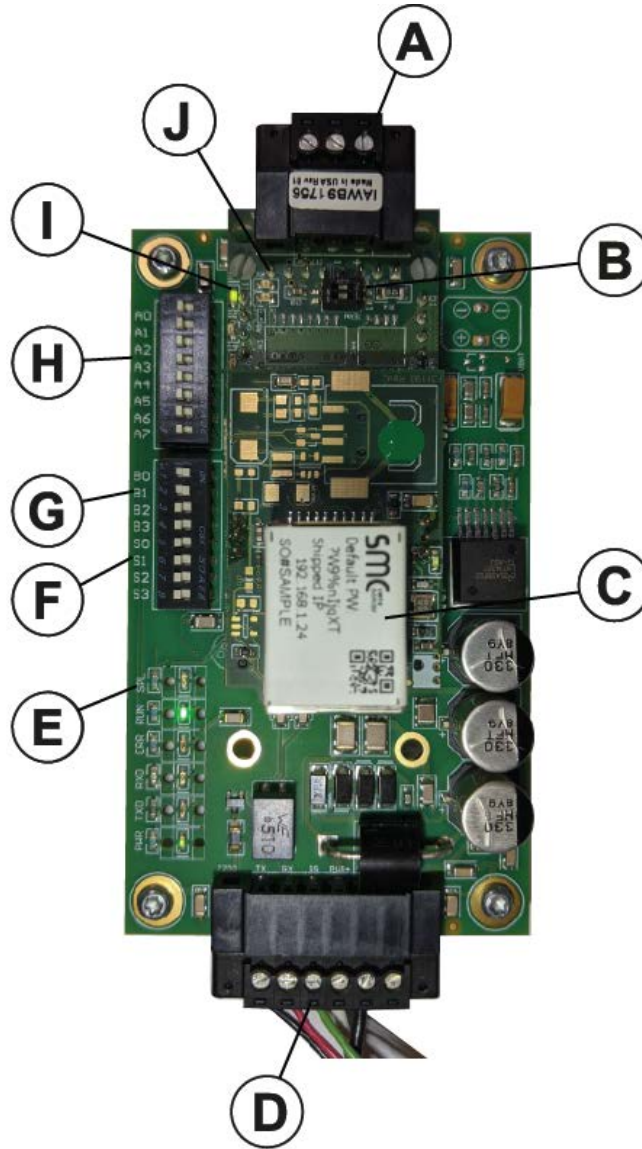


Figure 3: Protocarryer and ProtoCessor Status LEDs

Callout	Description
A	RS485 for MODBUS-RTU
B	End of line termination switch
C	Ethernet connector - default or initial password printed on top
D	RS232 to FACU
E	LEDs: <ul style="list-style-type: none"> • SPL • RUN • ERR • RXD • TXD • PWR
F	S bank - protocol or config
G	B bank - baud rate
H	A bank - node ID or MAC address

Callout	Description
I	LEDs: <ul style="list-style-type: none"> • Run • Sys config or error • Node offline • Hearbeat
J	RS485 field RX or TX LEDs

Table 4: ProtoCessor LEDs

LED	Function
PWR	The Power LED remains on steady green when power is applied to the unit.
SYS ERR	The System Error LED goes on solid 15 seconds after power up and turns off after 5 seconds. A steady red light indicates a system error on the BACpac. If this occurs, immediately report the related system error shown on the RUI interface to Tyco Fire Protection Products Technical Support.
COMM ERR	The Communications Error LED goes on solid 15 seconds after power up and turns off after 5 seconds. A steady red light indicates a communications problem if there is an offline configured node connected to the BACpac. To establish the cause of the error, go to the error screen of the RUI.
Config Err	The Configuration Error LED goes on solid 15 seconds after power up, and turns off after 5 seconds. A steady amber light indicates a configuration error in the active configuration, config.csv. See the error screen in the RUI for a description of the configuration error.
Node Offline	The Node Offline LED goes on solid 15 seconds after power up and turns off after 5 seconds. If the Node Offline LED stays on solid, a node offline condition has occurred.
RX	On normal BACpac operation, the Receive LED flashes when a message is received on the BACnet MSTP Port.
TX	On normal BACpac operation, the Transmit LED flashes when a message is sent over the BACnet MSTP Port.
RUN	The Run LED is OFF during the first 20 seconds of the BACpac startup, and then begins to flash. The flash indicates normal operation of the BACpac and that you can access the unit using the Remote User Interface.

BACpac Ethernet Module Programming and Installation

Installation of the BACpac Ethernet module into a 4010ES control panel is a three-step process:

1. Program the host panel to communicate with the BACpac Ethernet module.
2. Configure the host panel to send point information to the BACpac Ethernet module.
3. Physically install the BACpac Ethernet module into the system host panel.

Programming the 4010ES Host

Both the RS-232 card and the BACpac Ethernet Module ProtoCessor need to be configured for the same communications settings. Table 5 shows the options available for the RS-232 card. The Default RS-232 card settings are the preferred/recommended settings. Set these parameters in the Programmer. Other settings must be made, so do not yet build the job at this time.

Table 5: RS-232 Options

Settings	Default	Options
Baud rate	9600	75, 110, 134.5, 300, 600, 1200, 1800, 2000, 2400, 4800, 9600, 19200
Parity	EVEN	ODD, EVEN, MARK, SPACE, NONE
Data Bits	8	7 or 8
Stop Bits	1	1 or 2

* Odd or Even parity is recommended to provide additional error detection at the character level.

RS-232 Card Settings

IMPORTANT: USE PORT B, not port A. Port A was designed to support a service modem and broadcasts a modem startup string when the panel is powered up. The startup string can cause external programs to lock up. Port B does not have the startup string and is immune to this potential problem.

When you have finished entering the communication settings, click on the Port Data button, as seen in Figure 4.

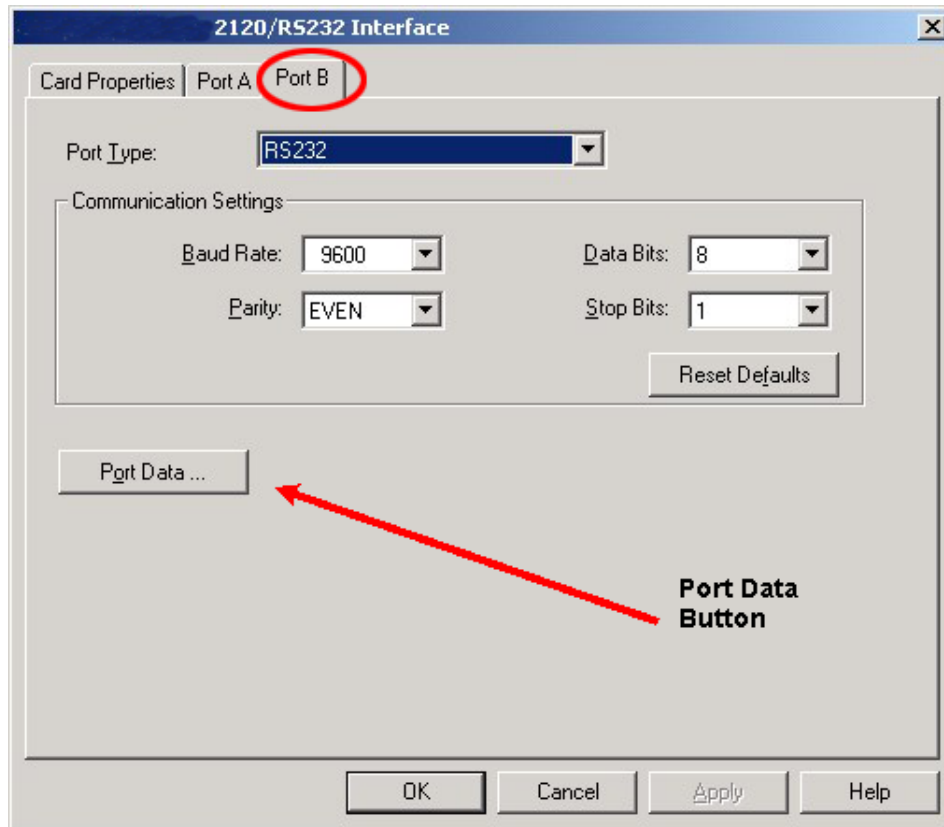


Figure 4: Port Data Button

The RS-232 card has a number of configuration options for the device type. Follow this procedure.

1. Configure the RS-232 card for COMPUTER.
2. Leave the Port default SET priority at the default of 9, as seen in Figure 5. This will restrict access to panel features, like Silence, Acknowledge and Reset. These features will only be available from the front panel or on another approved network device like a workstation, NDU or LCD Annunciator.
3. Change the Header and Port ID labels so they indicate BACnet or BACpac Ethernet interface.

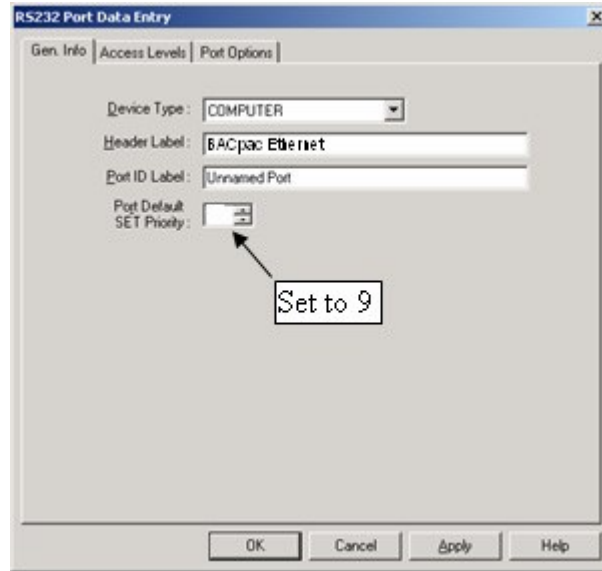


Figure 5: Port Default SET Priority

4. Leave access levels at the default settings. No changes are required. See Figure 6.

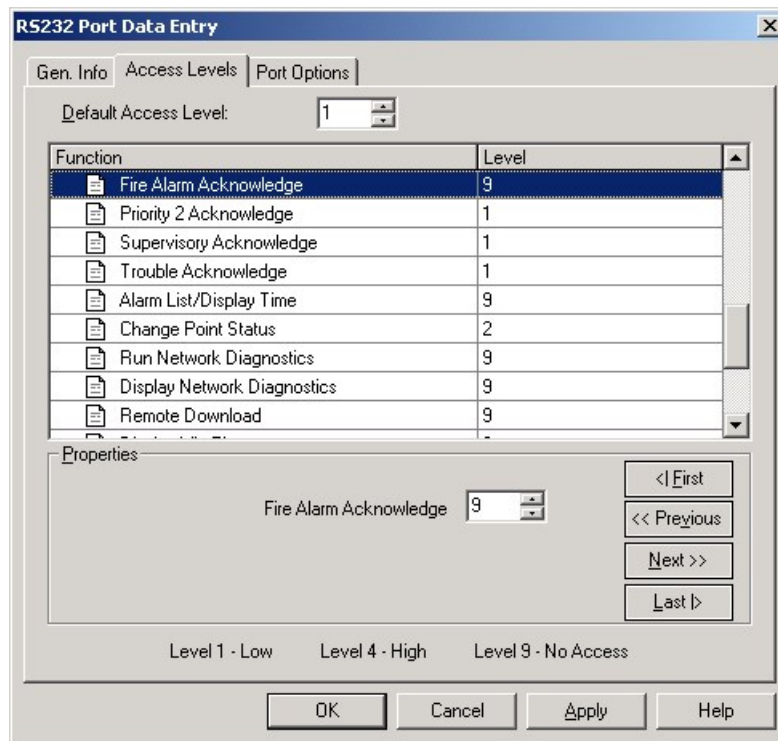
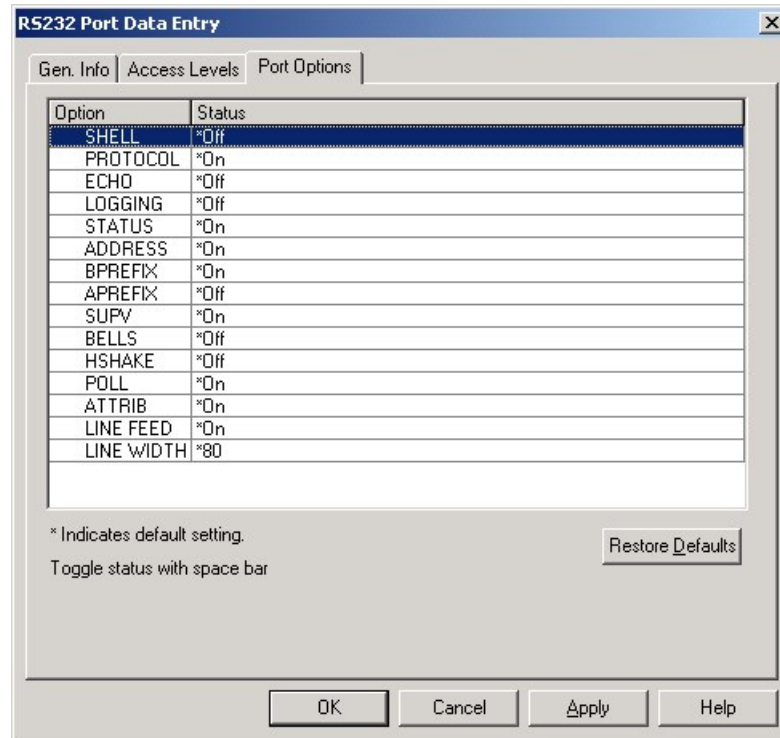


Figure 6: Access Levels

5. Leave the Port Options in the default state, as seen in Figure 7.


Figure 7: Port Options

A few of the more important items in this tab include:

- PROTOCOL
- SUPV
- POLL

These three options provide some important features:

PROTOCOL: Indicates that you will be using the Computer Port Protocol structure to send and receive messages. This protocol defines how to structure a message, which characters to use for the start and finish, how to maintain sequence numbers for the message and how to calculate and where to locate the checksum in the message. All of these features help to ensure that no messages are lost/missed and that the message is correct when it is received.

SUPV: Stands for supervision and refers to the monitoring of the physical line connecting the two devices. This must be used in conjunction with POLL.

POLL: Stands for polling and refers to the method of supervision used to monitor the line. In process control, this is sometimes referred to as a heartbeat. Every 30 seconds the fire panel will send a message to the external device. The external device is expected to ACK the message and then send a message back to the panel which the panel will ACK. If any part of the sequence does not happen, the panel will start the poll over. If any part fails again, the panel will report a Trouble, indicating Port B Abnormal, and begin trying to re-establish communications with the external device. Once the connection has been re-established, the trouble will clear.

Supervision and Polling ensure that the communication link is in place and that the messages sent to and from the panel are received intact/not corrupted.

Point Information Transfer Programming

The above procedure will allow the BACpac Ethernet Module and 4010ES to communicate. Next, use the ES Panel Programmer to select the points to export to the BACpac module. Download the job custom csv file into the BACpac module. See 574-849AC for more details.

System Options

In order for the 4010ES to properly send the pseudo point information to the BACpac module, pseudo point reporting must be activated for RS-232 Port B. To do so, select "Port Vectoring" in the Programmer, RS-232 port B and make sure Pseudo points are checked in the selection page.

Complete these steps for any point types you have selected, for example, Control or Utility points.

Installation

Install the BACpac Ethernet Module in any of the available 4X5 blocks in the 4010ES bay.

The power cable is 14 in. long and the RS-232 cable is 18 in. long. As shown in Figure 8 and detailed in the following steps, the power cable is connected to the terminal strip on the module and plugged into the PDI plug associated with the block. Make sure that the RS-232 module is installed close enough for the data harness to reach between the two assemblies.

The RS-232 signal connects between the Ethernet module large terminal strip terminals 1, 2 and 3 and the RS-232 module RCV, TXD and GND terminals of port B. See Figure 8.

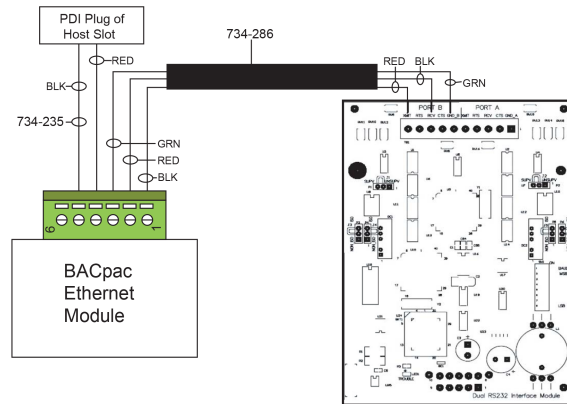


Figure 8: BACpac Ethernet Module Interconnect

1. Remove and inventory all parts. You should have the following parts:
 - 1 BACpac Ethernet Module Assembly
 - 1 0734286 Data harness
 - 1 0734235 Power harness
 - 2 screws
 - 2 lock washers
 2. Make sure the power is off to the system which will host the BACpac Ethernet Module.
 3. Connect the power harness to the module terminal block per Figure 8 (the red wire to terminal 4 and the black wire to terminal 5).
 4. Connect the RS-232 harness to the module terminal block per Figure 8 (the red wire to terminal #1, the black wire to terminal #2 and green wire to terminal #3).
 5. If the RS-232 module has not been installed yet, install it in a 4x5 block. Figure 9 shows it in the lower right block.
 6. Install the BACpac Module in a 4X5 block using the two screws and washers supplied.
- Note:** Make sure the module is close enough for the RS-2332 cable to reach. Figure 9 shows it in the lower left block.
7. Plug the power harness into the PDI plug for the slot containing the module.
 8. Connect the RS-232 harness wires to the RS-232 module per Figure 9 (Port B: Red to XMT, Black to RCV and Green to GND).

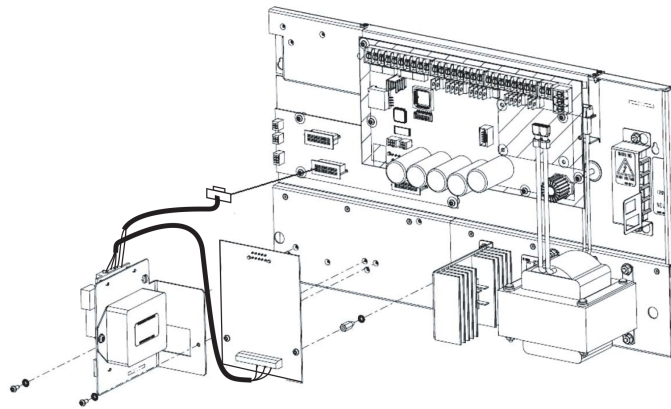


Figure 9: Installing the BACpac and RS-232 Modules in a 4010ES Bay

BACpac Ethernet Module Testing and Maintenance

Testing

After power is applied and the host 4010ES system has stabilized, the following should be observed if the BACpac Ethernet Module is properly installed:

- The Green "PWR" LED next to the power plug on the BACpac Ethernet Module should be lit.
- The 4010ES port (Programmed as type "Computer port") to which the BACpac Ethernet Module is connected should be in a normal state.
- There should be a periodic blink (about every 30 seconds) of the TX and RX LEDs on the ProtoCarrier, indicating the supervision handshake between the 4010ES and BACpac Ethernet Module.

Maintenance

For service, call your local Branch Office.

Testing the BACpac Using the Local Area Network

The following sections detail the procedures for testing the BACpac Local Area Network (LAN) hardware using the FieldServer Toolbox and the building LAN.

Installing the FieldServer Toolbox

To install the FieldServer Toolbox and discover BACpac modules on the network, complete the following steps.

1. Go to www.sierramonitor.com/customer-support and click **Software Downloads**.
2. Download the zip from the **FieldServerToolbox** link.
3. Unzip the package and double-click the **FieldServer_Toolbox.exe** file. Follow the on-screen installation instructions to install the application on your computer.
4. Run the application and on the application landing page, click **Discover Now**.

Note: For the application to discover the BACpac, you must first connect the BACpac module to the LAN and a power source.

The FieldServer Toolbox lists any BACpac modules on the network. To configure a module, see [Configuring the BACpac](#).

Logging on to the BACpac

To log on to the BACpac, complete the following steps:

1. Go to the default IP address: 192.168.1.24. If a security warning appears, click the link to proceed to the **SMC Log In** page.
2. In the **Username** field, enter admin. In the **Password** field, enter the default password that features on the top of the BACpac Ethernet module. See Figure 3 for the password location on the module. Click **Log In**.
3. On the **Mode** page, click one of the **Mode** options and then click **Save**.

Note: You can change these settings later.

Configuring the BACpac

To configure your BACpac, complete the following steps:

1. Log on to the **Fieldserver Toolbox**.

Note: See [Logging on to the BACpac](#) for instructions on logging in to the application.

2. On the **Configuration Parameters** page, enter the value 1 in the **Value** field to select the default protocol. Click **Submit**.
3. On the next **Configuration Parameters** page, enter the values as required by the job and click **Submit**.
4. To further configure the setup, click **Diagnostics & Debugging**, then in the **Navigation** pane, click **Setup** to configure the following options:
 - **File Transfer:** Upload configurations and firmware updates.
 - **Network Settings:** Configure the IP address.
 - **User Management:** Add users and change passwords.
 - **Security:** Change the Gateway's webpage security settings, and upload custom certificate.
 - **Time Settings:** Change the timezone.

5. To upload the point list to the configuration, complete the following steps:

- a. In the **Navigation** pane, click **File Transfer**.
- b. Click **Browse** and select the file that the Panel Programmer export utility generates. Click **Submit**.

6. When the application displays a restart prompt, click **System Restart**.

Note: Do not delete the configuration. If you delete the configuration, the application sets the unit to a blank state and resets the unit so it can no longer communicate with the panel under any conditions.

7. After you restart the application, click **Connect** to evaluate the internal data of the module.

Module data

Fire Alarm System Points are arranged in Data Arrays that correspond with the points you select for export into the BACpac module.

A separate data array is created for each card containing exported points. For example, if you select points from cards with addresses 1, 2, 65, 128, 144, and 175, you have the following data arrays:

- DA_001
- DA_002
- DA_065

- DA_128
- DA_144
- DA_175

Refer to *ES Panel Programmer's Manual For 4100ES and 4010ES Fire Alarm Control Panels 574-849AC* for more details about how to select points for export.

Testing the BACpac

To test the BACpac, complete the following steps:

1. In the **Navigation** pane, click **View, Data Arrays** and then click a data array.
2. Confirm that data is transferring from the FACU to the BACpac module.

To do this, export pseudo point P513 and activate the point in the FACU or the panel condition which is programmed in Custom Control to activate P513. If data is transferring, the LSB activates in the first cell of the array.

Note: If the data does not change when you turn the pseudo points on and off, check the program options to verify that the pseudo points are checked as being vectored out RS-232 Port B.

Note: If the pseudo was already on when the BACpac was connected to the FACU, it does not show as being on, because the status message was already sent out the port. The data arrays contain the last status received for a point.

After you test the BACpac, coordinate with the customer-supplied BACnet technician to test the interface between the FACU and the BACnet. You should test all mapped points.

Maintenance

For Service, call your local Autocall Branch Office.

Appendix A

Testing

This Appendix contains supplementary information for configuring and testing the BACpac Ethernet Module.

Table 6: BACpac Ethernet Module

Description	Part Number
BACpac Ethernet Module	A100-6069

BACpac Ethernet Module Default Configuration

The Autocall BACpac Ethernet Module is shipped with a default program configuration loaded in Portal Memory. Table 7 lists the default BACnet Network Settings.

Table 7: BACnet Default Settings

Description	Default Setting
Device Instance	32400
IP Address	192.168.1.24
Subnet Mask	255.255.255.0

Cross Reference of Data Arrays

As stated previously in this manual, the arrays that contain the pseudo points mapped to the BACpac module are labeled with pseudo point card addresses #130-133. The structure is as follows:

- DA-130 contains pseudo points P513-P762.
- DA-131 contains pseudo points P769-P1018.
- DA-132 contains pseudo points P1025-P1274.
- DA-133 contains pseudo points P1281-P1530.

More details can be obtained from the configurations file for the BACpac module. To obtain this file, download the RUIINET utility software from www.fieldserver.com. Select "U" in the main menu for the RUIINET utility to upload the configuration file. This file will be placed in the Fieldserver Utilities program area, which you can access by selecting **Start, All Programs**, and **Field Server Utilities** from the lower left corner of your screen.

Cross Reference of Data Arrays: Setting the Address of the BACpac Module

You can change the default address setting in one of two ways:

- Edit the configuration file in the BACpac. To do this
 - a. Extract the file from the BACpac.
 - b. Edit it.
 - c. Save it.
 - d. Put it back into the BACpac.
- Change the DIP switch settings on the A Bank of switches. Refer to the following tables

Table 8: BACnet Device Instance Address DIP Switches (Bank A - Partial)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
								0	32,400
On								1	32,401
	On							2	32,402
On	On							3	32,403
		On						4	32,404
On		On						5	32,405
	On	On						6	32,406
On	On	On						7	32,407
			On					8	32,408
On			On					9	32,409
	On		On					10	32,410
On	On		On					11	32,411
		On	On					12	32,412
On		On	On					13	32,413
	On	On	On					14	32,414
On	On	On	On					15	32,415
				On				16	32,416
On				On				17	32,417
	On			On				18	32,418

Table 8: BACnet Device Instance Address DIP Switches (Bank A - Partial)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
On	On			On				19	32,419
		On		On				20	32,420
On		On		On				21	32,421
	On	On		On				22	32,422
On	On	On		On				23	32,423
			On	On				24	32,424
On			On	On				25	32,425
	On		On	On				26	32,426
On	On		On	On				27	32,427
		On	On	On				28	32,428
On		On	On	On				29	32,429
	On	On	On	On				30	32,430
On	On	On	On	On				31	32,431
					On			32	32,432

Table 9: BACnet Device Instance Address DIP Switches (Bank A - Full)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
								0	32,400
On								1	32,401
	On							2	32,402
On	On							3	32,403
		On						4	32,404
On		On						5	32,405
	On	On						6	32,406
On	On	On						7	32,407
			On					8	32,408
On			On					9	32,409
	On		On					10	32,410
On	On		On					11	32,411
		On	On					12	32,412
On		On	On					13	32,413
	On	On	On					14	32,414
On	On	On	On					15	32,415
				On				16	32,416
On				On				17	32,417
	On			On				18	32,418
On	On			On				19	32,419
		On		On				20	32,420
On		On		On				21	32,421
	On	On		On				22	32,422
On	On	On		On				23	32,423
			On	On				24	32,424
On			On	On				25	32,425
	On		On	On				26	32,426
On	On		On	On				27	32,427
		On	On	On				28	32,428
On		On	On	On				29	32,429
	On	On	On	On				30	32,430
On	On	On	On	On				31	32,431

Table 9: BACnet Device Instance Address DIP Switches (Bank A - Full)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
					On			32	32,432
On					On			33	32,433
	On				On			34	32,434
On	On				On			35	32,435
		On			On			36	32,436
On		On			On			37	32,437
	On	On			On			38	32,438
On	On	On			On			39	32,439
			On		On			40	32,440
On			On		On			41	32,441
	On		On		On			42	32,442
On	On		On		On			43	32,443
		On	On		On			44	32,444
On		On	On		On			45	32,445
	On	On	On		On			46	32,446
On	On	On	On		On			47	32,447
				On	On			48	32,448
On				On	On			49	32,449
	On			On	On			50	32,450
On	On			On	On			51	32,451
		On		On	On			52	32,452
On		On		On	On			53	32,453
	On	On		On	On			54	32,454
On	On	On		On	On			55	32,455
			On	On	On			56	32,456
On			On	On	On			57	32,457
	On		On	On	On			58	32,458
On	On		On	On	On			59	32,459
		On	On	On	On			60	32,460
On		On	On	On	On			61	32,461
	On	On	On	On	On			62	32,462
On	On	On	On	On	On			63	32,463
						On		64	32,464
On						On		65	32,465
	On					On		66	32,466
On	On					On		67	32,467
		On				On		68	32,468
On		On				On		69	32,469
	On	On				On		70	32,470
On	On	On				On		71	32,471
			On			On		72	32,472
On			On			On		73	32,473
	On		On			On		74	32,474
On	On		On			On		75	32,475
		On	On			On		76	32,476
On		On	On			On		77	32,477
	On	On	On			On		78	32,478
On	On	On	On			On		79	32,479
				On		On		80	32,480

Table 9: BACnet Device Instance Address DIP Switches (Bank A - Full)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
On				On		On		81	32,481
	On			On		On		82	32,482
On	On			On		On		83	32,483
		On		On		On		84	32,484
On		On		On		On		85	32,485
	On	On		On		On		86	32,486
On	On	On		On		On		87	32,487
			On	On		On		88	32,488
On			On	On		On		89	32,489
	On		On	On		On		90	32,490
On	On		On	On		On		91	32,491
		On	On	On		On		92	32,492
On		On	On	On		On		93	32,493
	On	On	On	On		On		94	32,494
On	On	On	On	On		On		95	32,495
					On	On		96	32,496
On					On	On		97	32,497
	On				On	On		98	32,498
On	On				On	On		99	32,499
		On			On	On		100	32,500
On		On			On	On		101	32,501
	On	On			On	On		102	32,502
On	On	On			On	On		103	32,503
			On		On	On		104	32,504
On			On		On	On		105	32,505
	On		On		On	On		106	32,506
On	On		On		On	On		107	32,507
		On	On		On	On		108	32,508
On		On	On		On	On		109	32,509
	On	On	On		On	On		110	32,510
On	On	On	On		On	On		111	32,511
				On	On	On		112	32,512
On				On	On	On		113	32,513
	On			On	On	On		114	32,514
On	On			On	On	On		115	32,515
		On		On	On	On		116	32,516
On		On		On	On	On		117	32,517
	On	On		On	On	On		118	32,518
On	On	On		On	On	On		119	32,519
			On	On	On	On		120	32,520
On			On	On	On	On		121	32,521
	On		On	On	On	On		122	32,522
On	On		On	On	On	On		123	32,523
		On	On	On	On	On		124	32,524
On		On	On	On	On	On		125	32,525
	On	On	On	On	On	On		126	32,526
On	On	On	On	On	On	On		127	32,527
							On	128	32,528
On							On	129	32,529

Table 9: BACnet Device Instance Address DIP Switches (Bank A - Full)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
	On						On	130	32,530
On	On						On	131	32,531
		On					On	132	32,532
On		On					On	133	32,533
	On	On					On	134	32,534
On	On	On					On	135	32,535
			On				On	136	32,536
On			On				On	137	32,537
	On		On				On	138	32,538
On	On		On				On	139	32,539
		On	On				On	140	32,540
On		On	On				On	141	32,541
	On	On	On				On	142	32,542
On	On	On	On				On	143	32,543
				On			On	144	32,544
On				On			On	145	32,545
	On			On			On	146	32,546
On	On			On			On	147	32,547
		On		On			On	148	32,548
On		On		On			On	149	32,549
	On	On		On			On	150	32,550
On	On	On		On			On	151	32,551
			On	On			On	152	32,552
On			On	On			On	153	32,553
	On		On	On			On	154	32,554
On	On		On	On			On	155	32,555
		On	On	On			On	156	32,556
On		On	On	On			On	157	32,547
	On	On	On	On			On	158	32,558
On	On	On	On	On			On	159	32,559
					On		On	160	32,560
On					On		On	161	32,561
	On				On		On	162	32,562
On	On				On		On	163	32,563
		On			On		On	164	32,564
On		On			On		On	165	32,565
	On	On			On		On	166	32,566
On	On	On			On		On	167	32,567
			On		On		On	168	32,568
On			On		On		On	169	32,569
	On		On		On		On	170	32,570
On	On		On		On		On	171	32,571
		On	On		On		On	172	32,572
On		On	On		On		On	173	32,573
	On	On	On		On		On	174	32,574
On	On	On	On		On		On	175	32,575
				On	On		On	176	32,576
On				On	On		On	177	32,577
	On			On	On		On	178	32,578

Table 9: BACnet Device Instance Address DIP Switches (Bank A - Full)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
On	On			On	On		On	179	32,579
		On		On	On		On	180	32,580
On		On		On	On		On	181	32,581
	On	On		On	On		On	182	32,582
On	On	On		On	On		On	183	32,583
			On	On	On		On	184	32,584
On			On	On	On		On	185	32,585
	On		On	On	On		On	186	32,586
On	On		On	On	On		On	187	32,587
		On	On	On	On		On	188	32,588
On		On	On	On	On		On	189	32,589
	On	On	On	On	On		On	190	32,590
On	On	On	On	On	On		On	191	32,591
						On	On	192	32,592
On						On	On	193	32,593
	On					On	On	194	32,594
On	On					On	On	195	32,595
		On				On	On	196	32,596
On		On				On	On	197	32,597
	On	On				On	On	198	32,598
On	On	On				On	On	199	32,599
			On			On	On	200	32,600
On			On			On	On	201	32,601
	On		On			On	On	202	32,602
On	On		On			On	On	203	32,603
		On	On			On	On	204	32,604
On		On	On			On	On	205	32,605
	On	On	On			On	On	206	32,606
On	On	On	On			On	On	207	32,607
				On		On	On	208	32,608
On				On		On	On	209	32,609
	On			On		On	On	210	32,610
On	On			On		On	On	211	32,611
		On		On		On	On	212	32,612
On		On		On		On	On	213	32,613
	On	On		On		On	On	214	32,614
On	On	On		On		On	On	215	32,615
			On	On		On	On	216	32,616
On			On	On		On	On	217	32,617
	On		On	On		On	On	218	32,618
On	On		On	On		On	On	219	32,619
		On	On	On		On	On	220	32,620
On		On	On	On		On	On	221	32,621
	On	On	On	On		On	On	222	32,622
On	On	On	On	On		On	On	223	32,623
					On	On	On	224	32,624
On					On	On	On	225	32,625
	On				On	On	On	226	32,626
On	On				On	On	On	227	32,627

Table 9: BACnet Device Instance Address DIP Switches (Bank A - Full)

A0 (1)	A1 (2)	A2 (4)	A3 (8)	A4 (16)	A5 (32)	A6 (64)	A7 (128)	MSTP Address	BACnet IP Address
		On			On	On	On	228	32,628
On		On			On	On	On	229	32,629
	On	On			On	On	On	230	32,630
On	On	On			On	On	On	231	32,631
			On		On	On	On	232	32,632
On			On		On	On	On	233	32,633
	On		On		On	On	On	234	32,634
On	On		On		On	On	On	235	32,635
		On	On		On	On	On	236	32,636
On		On	On		On	On	On	237	32,637
	On	On	On		On	On	On	238	32,638
On	On	On	On		On	On	On	239	32,639
				On	On	On	On	240	32,640
On				On	On	On	On	241	32,641
	On			On	On	On	On	242	32,642
On	On			On	On	On	On	243	32,643
		On		On	On	On	On	244	32,644
On		On		On	On	On	On	245	32,645
	On	On		On	On	On	On	246	32,646
On	On	On		On	On	On	On	247	32,647
			On	On	On	On	On	248	32,648
On			On	On	On	On	On	249	32,649
	On		On	On	On	On	On	250	32,650
On	On		On	On	On	On	On	251	32,651
		On	On	On	On	On	On	252	32,652
On		On	On	On	On	On	On	253	32,653
	On	On	On	On	On	On	On	254	32,654
On	On	On	On	On	On	On	On	255	32,655

Cross Reference of Data Arrays: Setting the Baud Rate and Configuration on the New Module

Table 10: Baud Rate DIP Switches (Bank B)

B0	B1	B2	B3	Baud
				Auto
On				110
	On			300
On	On			600
		On		1200
On		On		2400
	On	On		4800
On	On	On		9600
			On	19,200
On			On	20,833
	On		On	28,800
On	On		On	38,400
		On	On	57,600
On		On	On	76,800
	On	On	On	115,200

Table 11: Configuration DIP Switches (Bank S)

S0	S1	S2	S3	Configuration
				BACnet IP/Modbus TCP (Default)
On				BACnet MSTP
	On			BACnet IP BACpac

By default, the BACpac Ethernet is configured for BACnet IP communication. In this default configuration, all of the S bank of switches are in the OFF position. If however you need to use MSTP (Master Slave Token Passing):

1. Put DIP Switch S0 into the ON position.
2. Set the baud rate of the MSTP network using the B Bank of DIP Switches.
3. Set the MSTP address using the A Bank of DIP Switches.
4. Restart the BACpac.

If you are replacing an older BACpac Ethernet to work like the older Portal, set DIP Switch S1 to ON and restart the BACpac. No panel programming is required in this configuration.

Cross Reference of Data Arrays: I/O Connections to Module

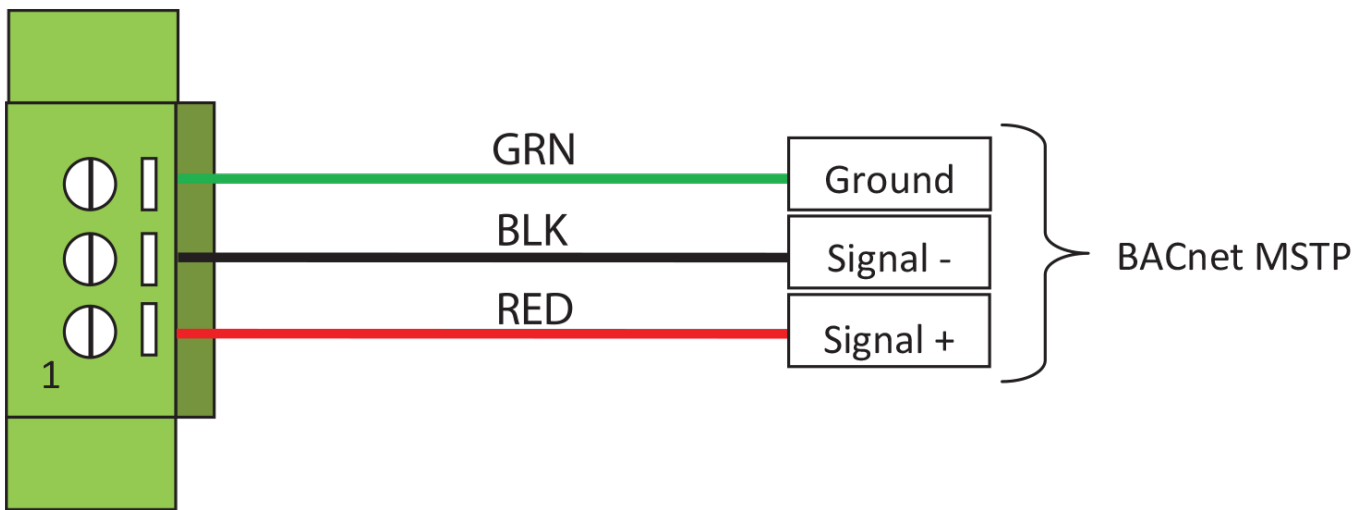


Figure 10: BACnet MSTP Wiring

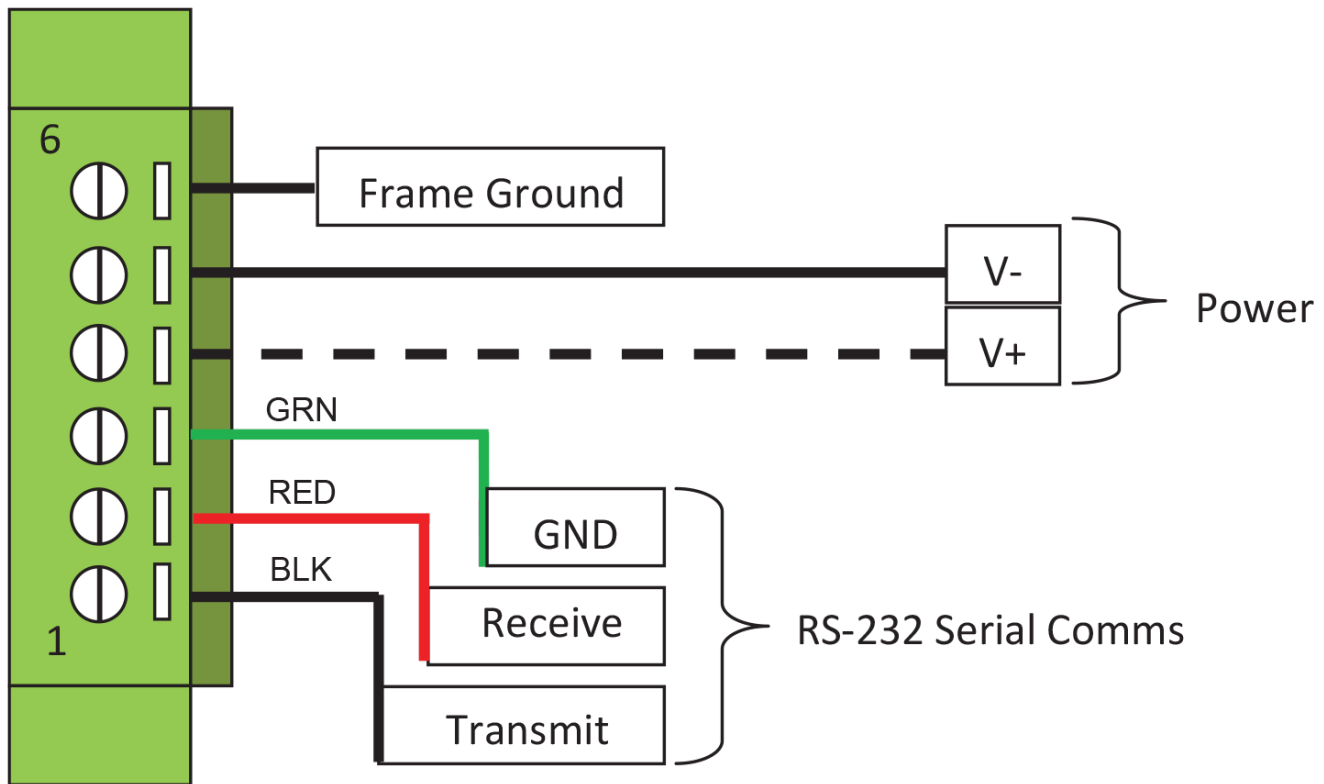


Figure 11: Power and Autocall Communications Wiring

BACnet Protocol Implementation Conformance Statement

BACnet Protocol

Date: July 13, 2006 Vendor Name: BACpac Ethernet Module Technologies

Product Name: BACpac Ethernet Module Product Model ASP-485 ProtoCessor Number: Product Description: This software product will provide bi-directional communication between various RTU, DCS, SCADA and PLC using most common protocols and a BACnet system. The BACpac Ethernet Module can perform protocol conversion (as opposed to routing) between the different BACnet Data Link Layer options. This is arranged by way of static mappings. Protocol Conversions: See BACpac Ethernet Module Technologies list of protocol drivers available to determine available protocol conversions.

BACnet Standardized Device Profile (Annexe L)

BACnet Smart Sensor (B-SS)

BACnet Smart Actuator (B-SA)

BACnet Application Specific Controller (B-ASC)

BACnet Interoperability Building Blocks Supported (Annex K):

K.1.2 BIBB -Data Sharing -ReadProperty-B (DS-RP-B)

K.1.8 BIBB -Data Sharing -WriteProperty-B (DS-WP-B)

K.5.2 BIBB -Device Management -Dynamic Device Binding-B (DM-DDB-B)

Segmentation Capability: None

Standard Object Types Supported

- Device Object
- Analog Input
- Analog Output
- Analog Value
- Binary Input
- Binary Output
- Binary Value
- Multi State Input Output
- Multi State Output
- Multi State Value

For all these properties the following apply:

- Does not support BACnet CreateObject
- Does not support BACnet DeleteObject
- Does not support any optional properties
- No additional writeable properties exist
- No proprietary properties exist
- No range restrictions exist

Data Link Layer Options:

- MS/TP master (Clause 9), baud rate up to 76800 bps
- MS/TP slave (Clause 9), baud rate up to 76800 bps

Device Address Binding:

- Not supported

Character Sets Supported:

Where support for multiple character sets is indicated, this does not imply that they can all be supported simultaneously.

- ANSI X3.4.
- ISO 10646 (ICS-4)
- ISO 10646 (UCS-2).
- ISO 8859-1
- IBM/Microsoft DBCS

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