Features

Panel mounted modules provide fire alarm system status using the ASHRAE BACnet building automation communication protocol or Modbus communication protocol.

Communication protocol reference:

- BACnet Internet Protocol (IP) or BACnet MS/TP (serial) Reference ANSI/ASHRAE Standard 135
- Modbus TCP or Modbus RTU (serial)

Connections:

- To fire alarm system through RS-232 port B, configured for Computer Port Protocol. See Table 1 for model number reference for each panel.
- Output port provides Ethernet local area network (LAN) or RS-485 connection

BACpac Ethernet Module is pre-programmed:

- Module is pre-programmed with digital pseudo points linked to BACnet objects
- You can recognize up to 15000 status changes (monitor point status) from the fire alarm control unit (FACU)

Compatible Simplex fire alarm control units (FACU):

- 4100ES and 4100U Series FACUs and Network Display Units (NDU)
- 4010ES Series FACUs
- Installed legacy Models 4100/4100+ and 4120 Series FACUs and NDU; may require software revision update

Compatible with Metasys®

The module is compatible with Metasys®, Johnson Controls building automation system for 4100ES and 4010ES panels.

Listings reference:

- UL listed to Standard 864
- ULC listed to Standard S527

Description

The BACpac Ethernet module provides a supplementary communications interface that converts computer terminal information from a compatible Simplex FACU into the building automation protocol of BACnet or any industrial equipment using Modbus protocol. With this module, status information from the FACU can be provided to other components of the building automation network with the detail and information format required.

Providing this information allows other systems to properly respond to fire alarm system activity in addition to the primary fire alarm response that is under the control of the FACU.

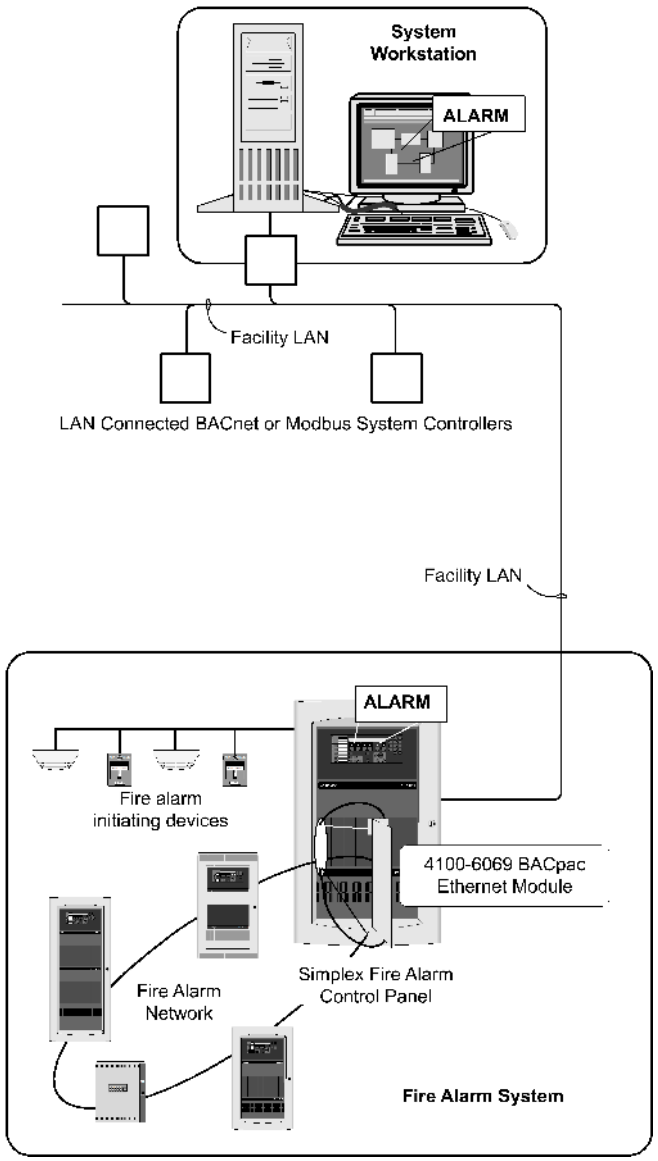


Figure 1: Typical Building Automation LAN with Simplex FACU and BACpac Portal (shown with 4100ES panel for reference)

This document is a summary of the flexibility available with BACnet communications. Please contact your local Simplex product supplier for further information concerning your specific application.

* This product has been approved by the California State Fire Marshal (CSFM) pursuant to Section 13144.1 of the California Health and Safety Code. See CSFM Listing 7165-0026:0251 (4100 Series) or 7165-0026:0369 (4010ES) for allowable values and/or conditions concerning material presented in this document. It is subject to re-examination, revision, and possible cancellation. This product was not approved by FM, or accepted by MEA (NYC) as of document revision date. Additional listings may be applicable; contact your local product supplier for the latest status. Listings and approvals under Time Recorder Co. are the property of Tyco Fire Protection Products.

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Systems responsibilities

Fire detection and alarm systems are distributed throughout buildings to monitor for indications of the presence of smoke or fire. When a fire alarm condition is determined, the fire alarm system communicates that information with sufficient detail to allow the proper fire response to begin. The fire alarm system may perform other control functions such as fan shutdown and elevator recall, or those actions may be performed by other systems that also handle those functions for normal conditions as well as for abnormal conditions.

Building automation systems. As buildings increase in size and complexity, control of the electrical and mechanical systems requires coordination. This process has evolved into the general category of Building Systems Automation and includes systems such as heating, ventilation, and air conditioning (HVAC), elevator controls, security controls, lighting controls, and other similar building functions.

Typical responses to fire alarm system status changes might include: HVAC fan control operation, elevator capture, lighting control, and security system awareness. Specific examples could include turning on lighting where needed, aiming security cameras on specific areas, providing door release, and implementing detailed fan exhaust and/or pressurization instructions.

Systems communications

Communications between systems. Traditional communication between systems includes simple relay interfaces, proprietary, and complicated interface devices (gateways), and uses a single supplier for all of the building automation functions. Each of these compromises has its limitations. With the Simplex BACpac Ethernet module, BACnet or Modbus protocol communications allow the Simplex fire alarm system to provide pertinent status to compatible systems using standardized formats.

Communications example

Figure 2 shows how a smoldering fire located on the first floor can be detected by the FACU, processed by the BACpac Ethernet module, and then sent to the building automation system using the BACnet or Modbus protocol over a LAN connection. It is the responsibility of the FACU to initiate the required notification and related fire responses. However, when connected to a BACpac Ethernet module, the fire alarm system can make status information available to the other building systems informing them about facility fire detection activity.

Note: Serial communication is also possible using the RS-485 output using BACnet MS/TP or Modbus RTU.

Diagnostic reference

This module uses a BACnet and a Modbus protocol converter from Fieldserver Technologies. PC compatible diagnostic programs are available at www.sierramonitor.com.

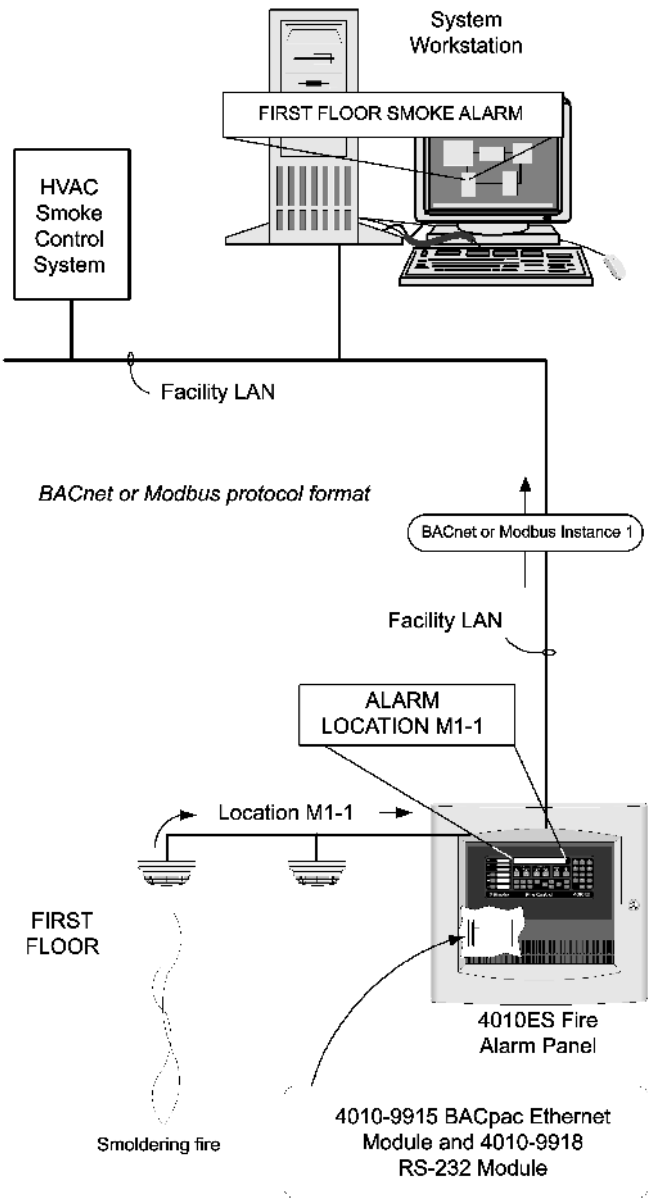


Figure 2: Typical BACpac Ethernet module alarm process reference (shown with 4010ES panel for reference)

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Product selection

Table 1: Product selection

SKU	Description	Maximum number of points	Required RS-232 module (ordered separately)*	Additional data sheet reference	Installation instructions
4100-6069	BACpac Ethernet module for 4100ES and 4100U series FACUs; single slot (2 in.) module	1500	4100-6038	*S4100-0031*	*579-842*
4100-6069	BACpac Ethernet module for 4100/4100+, and 4120 series FACUs; single slot (2 in.) module	1500	4100-0113	*S4100-0031*	*579-842*
4100-6110	BACpac Ethernet module for 4100ES and 4100U series FACUs; single slot (2 in.) module	5000	4100-6038	*S4100-0031*	*579-842*
4100-6110	BACpac Ethernet module 4100/4100+, and 4120 series FACUs; single slot (2 in.) module	5000	4100-0113	*S4100-0031*	*579-842*
4100-6111	BACpac Ethernet module for 4100ES and 4100U series FACUs; single slot (2 in.) module	15000	4100-6038	*S4100-0031*	*579-842*
4100-6111	BACpac Ethernet module for 4100/4100+, and 4120 series FACUs; single slot (2 in.) module	15000	4100-0113	*S4100-0031*	*579-842*
4010-9915	BACpac Ethernet module for 4010ES series FACUs; single block module (4 x 5)	1500	4010-9918	*S4010-0004* (*S4010-0006* for international applications)	*579-1051*

Note: *BACpac modules connect to Port B of these RS-232 modules.

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BACnet protocol implementation conformance (PIC) reference

Table 2: PIC reference

Category		Implementation
BACnet standardized device profile (Annex 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
Additional property details	Properties NOT supported	BACnet CreateObject BACnet DeleteObject Any optional properties
	Additional property details	No additional writeable properties exist No proprietary properties exist No range restrictions exist
Data link layer options		MS/TP main (Clause 9), baud rate up to 76,800 bps MS/TP subordinate (Clause 9), baud rate up to 76,800 bps
Device address binding		Not supported
Character sets supported		ANSI X3.4 ISO 10656 (ICS-4) ISO 10656 (UCS-2) ISO 8859-1 IBM/Microsoft DBCS

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Specifications

Table 3: Specifications

Specification		Rating			
Input power	**Voltage**	24 VDC from FACU; operation range 9 VDC to 30 VDC			
	Current	123 mA maximum from 24 VDC FACU supply			
	Connections	Wires to pluggable terminal block, harness included			
Data input **Note:** Connect to Port B of RS-232 Module	**Data type**	RS-232 Computer Port Protocol from FACU			
	Connections	Pluggable terminal block (same terminal block as used for input power) connects to RS-232 module in fire alarm control panel, harness included			
	Panel	4100ES	4010ES	4100U	4100/4100+/4120
	RS-232 Module	4100-6038	4010-9918	4100-6038	4100-0113
Data output	**Data type**	Ethernet compatible communications formatted as BACnet IP (internet protocol) or Modbus TCP. Serial communications formatted as BACnet MS/TP or Modbus RTU.			
	Connections	Ethernet RJ-45 jack located on LAN suppressor module (part of module assembly); LAN Ethernet output connector to be supplied separately. RS-485 connector (harness not included) used for serial communication.			
BACnet default settings		Device Instance = 32400; IP Address = 192.168.1.24; Subnet Mask = 255.255.255.0			
Status LED indications		Power, TX, RX, RTX, CTS, DTR, DSR, DCE, and RI; located on the processor assembly			
4100-6069, 4100-6110, and 4100-6111 module size		2 in. Slot type module, components are mounted on a metal bracket; bracket dimensions: 10 7/16 in. H x 2 in. W x 4 in. D (102 mm x 51 mm x 265 mm)			
4010-9915 module size		Single block module (4 x 5); uses the modules shown in Figure 3, but packaged differently			
Module description		RS-232 communications and power are connected to the on-board pc board assembly for processing; a pluggable harness (supplied) connects to a grounded LAN suppressor mounted on the chassis; standard Ethernet LAN cable is supplied separately			
Operating temperature range		32°F to 120°F (0°C to 49°C)			
Humidity range		Up to 93% RH, non-condensing @ 90°F (32°C) maximum			

BACpac Ethernet module details (4100-6069 shown for reference)

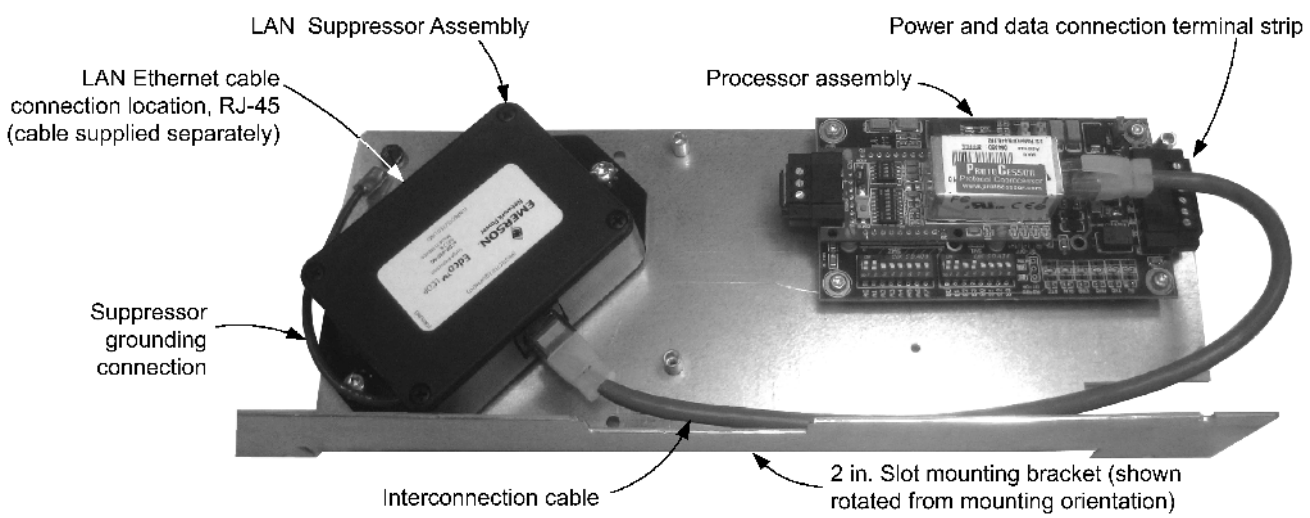


Figure 3: BACpac Ethernet module details

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S4100-0051 Rev. 6 10/2020

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