Introducing New Facility Explorer Controller Models and Security Enhancements

Johnson Controls is excited to announce a new release of Facility Explorer products designed to help easily identify and solve issues while in the field, as well as maintain the latest IT security and networking standards.

Key features delivered with this release include:

- Compliance with the new BACnet Secure Connect (BACnet/SC) interoperability standard to stay current with the latest IT security protocols.
- New models of next-generation equipment controllers with an onboard display and keypad so technicians can quickly troubleshoot and restore operation while near mechanical equipment.

Cybersecurity and networking enhancements

BACnet/SC is an update to the BACnet interoperability standard aimed at improving cybersecurity and network infrastructure integrity.

BACnet/SC is defined in Annex AB of the ASHRAE 135-2020 BACnet protocol standard. BACnet/SC identifies a secure, encrypted datalink layer specifically designed to meet the requirements, policies, and constraints of IP networking infrastructures.

Note: BACnet Addendum CD "TLS v1.3 Cipher Suite Application Profile for BACnet/SC" is also supported.

The power behind **your mission**

BACnet/SC offers several advantages over traditional BACnet/IP, as shown in the following table.

Table 1: Comparison of BACnet/IP and BACnet/SC

Features	BACnet/IP	BACnet/SC
Data security	Messages are transmitted in an unencrypted manner	Messages are encrypted using TLS 1.3 with options for 128-bit and 256-bit elliptic curve cryptography (ECC)
Network protocol	IP/UDP	IP/TCP
Application protocol	BACnet-defined protocol, not well understood by IT departments	Standard IT protocols: HTTPS and secure Web Sockets
Network communication through routers	BACnet uses network broadcasts that can add network load	No broadcasts are sent, no BACnet Broadcast Management Devices (BBMDs) or static IP addresses are used

BACnet/SC is implemented in the following Facility Explorer components:

· SNC series supervisory controllers that are field-updated, or factory shipped with 12.0 software.
· CGE series, CVE series, PCA4911, and PCV1930 IP-based equipment controllers that are field-updated, or factory shipped with 10.0 firmware.

Note: You can upgrade existing FX-PCV1930 controllers in the field to support BACnet/SC, but this model is no longer manufactured.

The primary benefits of Facility Explorer BACnet/SC compliance include the following:
· Ensures Facility Explorer follows the latest IT security and infrastructure protocols while still maintaining interoperability.
· Addresses many concerns that IT departments have expressed over the original BACnet/IP protocol.

The following table outlines the features and benefits in more detail.

Table 2: BACnet/SC compliance features and benefits

Feature	Description	Benefit
Encrypted messages	BACnet messages are encrypted using TLS 1.3 with options for 128-bit and 256-bit elliptic curve cryptography	Helps to protect the confidentiality of digital data stored on the Facility Explorer system to reduce the risk of man-in the-middle attacks
Virtual hub and spoke topology	• A single, primary hub device does mutual authentication and directs traffic between nodes • A failover hub takes over when the primary hub is offline • Advanced structures are possible with BACnet/SC-to-BACnet/SC routers • Direct, node-to-node communication is optional	Helps to provide resiliency in BACnet/SC-based networks
ECC certificates	• Encrypts the data transferred between BACnet/SC devices • Smaller and more secure key with an ECC certificate • Customers may procure their own ECC certificates for he Facility Explorer and third-party BACnet/SC devices, if their IT Department is able. If unable to do so, customers may purchase the Certificate Authority (CA) and ECC certificates from Johnson Controls. See the following table for more information.	Provides system administrators with flexibility in how to acquire and manage certificates
Mixed system support	Facility Explorer support for BACnet/SC does not preclude support for BACnet/IP	Provides system designers with networking migration and modernization options

The following table lists the new product codes for ordering BACnet/SC ECC certificates if your customer does not have the ability to issue their own ECC certificates.

Table 3: New ECC certificates for BACnet/SC devices

Product Code Number	Description
M4-JCCA-0	• Johnson Controls Customer Certificate Authority (CA) for BACnet/ECC certificates only • Expires in 30 years
M4-JCCERT1-0	• Johnson Controls ECC Certificate – one (1) total • Expires in three years

Tools suite enhancements

The Johnson Controls Configuration Tool (JCT) is the program that will provide a workflow and instructions on how to determine which of your controllers can be running BACnet/SC. At this release, JCT supports a manual approach for certificate management whether the certificates are provided by the customer or purchased through Johnson Controls. We will soon publish more details to support the BACnet/SC workflow and implementation.

New models and enhancements to the next-generation equipment controller family

With this release, we are expanding the modernized equipment controller family with two new CG series General Purpose Application Controllers featuring an onboard 2.4-inch color display and navigation keypad, as well as a new remote mountable 3.5-inch color display. The CG series equipment controllers with onboard display and the remote mountable display provide a local interface for users to perform key tasks – like monitoring point values and status, viewing alarms and trends, adjusting setpoints, and overriding outputs – to quickly troubleshoot issues and restore operation while near associated mechanical equipment.

Table 4: New equipment controllers

	F4-CGM09090-0H	F4-CGE09090-0H
Description	General purpose application controller with onboard display and navigation keypad	
Display Details	2.4-inch, 320 x 240 resolution, color display	
Inputs and outputs	• 7 universal inputs (UIs) • 2 binary inputs (BIs) • 3 binary outputs (BOs) • 4 configurable outputs (COs) • 2 analog outputs (AOs)	
Onboard display and keypad	Yes	
Field Bus Networking	• FC bus (BACnet MS/TP) • N2 (software switchable) • ZigBee for ZFRPro2 Wireless Field Bus (using add-on modules)	• BACnet/IP • BACnet/SC
Succeeds	• FX-PCG2621-0 • FX-PCG1621-1	Not applicable, as this is a new offering
Supported CCT Release Mode	10.6	

Table 5: New remote mountable display

	F4-DLK0350-0
Description	Remote mountable display/keypad
Display details	3.5-inch, 320 x 240 resolution, color display
Keypad details	Seven push buttons: up, down, left, right, OK, menu, and back
Mounting style	Panel and surface mountable and portable
Power source	Can be powered by controller over SA bus or powered externally using 15 VDC external power supply
Compatibility	Connects to and communicates on the SA bus of the following compatible devices: • CG and CV series equipment controllers • PCA, PCG, and PCV series equipment controllers • SNC series supervisory controllers
Succeeds	FX-DIS1710-0

Like the previously released CG and CV series controllers, these new controllers feature removable screw terminal blocks for easy installation, three rotary switches to set the decimal MS/TP address or controller number, background file transfer, and more.

Additionally, the CGE and CVE equipment controllers are FIPS 140-2 Level 1 compliant with 10.0 firmware to help prevent unauthorized access to systems and data.

Ordering information

To place your order, contact:
Johnson Controls Product Sales Operations
Phone: 1-800-275-5676
Email: jciorder@jci.com
Fax: 1-800-356-1191

Sales and Technical Documentation available on Knowledge Exchange.

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