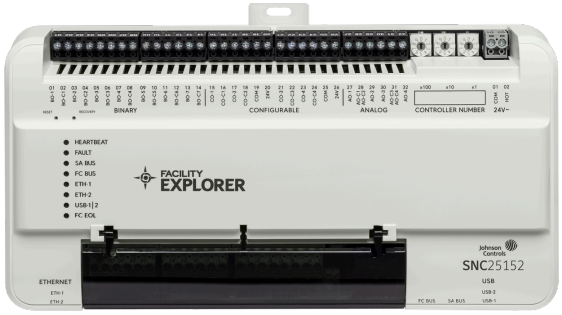

Introduction

The Facility Explorer SNC series (F4-SNC) are Ethernet-based, supervisory controllers that connect Building Automation System (BAS) networks to IP networks. The SNC features onboard inputs and outputs for direct control of equipment. This device monitors and controls networks of field-level building automation devices, including HVAC equipment, lighting, security, and fire safety equipment.

The SNC series perform a key role in the Facility Explorer system architecture. They provide network management and system-wide control coordination over one or more networks controllers, including the following devices:

- CG series general purpose equipment controllers
- CV series VAV box controllers
- PCA and PCG series programmable controllers
- PCV series VAV box controllers
- TEC series terminal equipment controllers
- Third-party BACnet equipment controllers

In addition to providing supervisory control capabilities, the SNC series also feature onboard input and output interfaces (I/O) and programmable logic to provide direct control over HVAC and other building system equipment. The SNC2515x has a total of 40 I/O points - with 25 inputs and 15 outputs. The SNC1612x has a total of 28 I/O points - with 16 inputs and 12 outputs. The first two numbers of the product code represent the number of inputs (SNC2515x) and the next two numbers represent the number of outputs (SNC2515x). For a full list of controllers and features, refer to Table 4. Those SNCs with an -0H and -04H suffix feature a color display and navigation keypad.

Application documentation

Refer to the *F4-SNC Product Bulletin (LIT-12013669)* for important product application information.

Features and benefits

Multiple models available

Multiple models are available with varying device capacities for integrations. Integral control I/O provides flexibility to select the appropriate model for the intended application.

Linux® operating system

Provides a robust, widely-accepted, and readily-supporting operating system.

User interface

You can use the Site Management Portal (SMP) user interface (UI) to access system data in the SNC from any supported web browser device connected to the network, including remote users connected by Virtual Private Network (VPN).

Encrypted Communications

All SNCs have self-signed certificates that provide encrypted communication. Optionally, you can deploy trusted certificates from the customer's IT department or from a Certificate Authority (CA).

Onboard Inputs and Outputs

Provides direct equipment-level control including central plant and large air-handler applications combined with enterprise-level IP network connectivity. The SNC2515x has 25 inputs and 15 outputs, and the SNC1612x has 16 inputs and 12 outputs.

Expandable I/O point capacity, NS sensor connectivity, and Variable Frequency Drive (VFD) control on SA Bus

You can connect multiple I/O Expansion Modules, NS Series Network Sensors, and VFD connections to the SA Bus, which greatly expands control capabilities.

Memory

The memory of the SNC has 2 GB RAM and 16 GB Flash nonvolatile memory. This memory provides capacity for further upgrades and a longer operational life.

Supports background file transfer

You can transfer files such as firmware upgrades, archive databases, or security transfers from SCT to the SNC, while the SNC remains operational, minimizing system disruptions.

Device security

Ensures device integrity while the system is rebooting and during normal operation. Embedded technology provides trusted boot operation, firmware protection, secure storage, secure communications, and secure firmware updates complying with strong cyber security practices.

Diagnostic multi-color LEDs

The use of multi-color LEDs can decrease installation and troubleshooting time.

Removable terminal blocks

The use of removable terminal blocks facilitates ease in installation and servicing.

Supervision of controller networks including Johnson Controls devices and third-party protocol devices

Supports connectivity to open network standards for complete flexibility in the selection of field devices. They include BACnet/IP and BACnet MS/TP

No battery

The SNC uses a supercapacitor, not a battery, to provide temporary power for data backups during shutdown due to AC power loss. This design is more environmentally friendly and saves the eventual cost of replacing the battery. When the supercapacitor is fully charged, the SNC can maintain the real time clock for up to 72 hours during power loss.

BACnet/SC

BACnet Secure Connect (BACnet/SC) is a recent update to the BACnet interoperability standard aimed at improving cybersecurity and network infrastructure integrity. BACnet/SC identifies a secure, encrypted datalink layer specifically designed to meet the requirements, policies, and constraints of IT networking infrastructures.

Updated BACnet Compliance

The SNCs are enhanced to support BACnet Protocol Revision 18. Assures end customers of compliance to BACnet standard to support interoperability with third-party BACnet devices.

Generic SA Bus object

A more nimble method for supporting the integration of approved BACnet MS/TP edge devices on the SA Bus. Provides system designers with more SA Bus device options to cost-effectively meet controls project requirements

SA Bus Provisioning expanded to support XPM and NS8000 SA Bus devices

SA Bus devices (for example, XPMs and NS8000s) can be updated through the host controller. Saves field technicians time by streamlining upgrade workflows.

Optional onboard or remote user interface

Certain SNC models feature on onboard, 2.4 in. (61 mm), 320 x 240 resolution display and associated keypad providing local user interface capabilities. Alternatively, you can connect an optional display with keypad, product code F4-DLK0350-0, to the SNC and mount it remotely. These user interfaces provide field technicians with the ability to quickly, clearly, and conveniently monitor equipment status, view alarms, see trends, issue overrides, and change setpoints and parameters.

ⓘ **Note:** Only the SNC models that end in **H** feature the built-in display.

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Point type counts

The SNC2515x supports up to 40 hard-wired onboard I/O points, 25 inputs and 15 outputs. The SNC1612x supports up to 28 hard-wired onboard I/O points, 16 inputs and 12 outputs.

Table 1: Onboard I/O points

SNC	Total I/O	Universal Inputs (UI)	Binary Inputs (BI)	Configurable Outputs (CO)	Analog Outputs (AO)	Binary Outputs (BO)
SNC2515x	40	14	11	4	4	7
SNC1612x	28	10	6	4	4	4

Table 2: Input and output terminals

Type of Point	Options
Universal Inputs	• Voltage Analog inputs (0-10 VDC) • Current Analog inputs (4-20 mA) • Resistive Analog inputs (0-2k Ohm) - RTD: 1k Nickel, 1k Platinum, or A99B SI - NTC: 10k Type L or 2.225k Type 2 • Dry contact Binary inputs
Binary Inputs	• Dry contact maintained • Pulse counter mode (100 Hz)
Configurable Outputs	• Voltage Analog outputs (0-10 VDC) • Binary Outputs (24 VAC Rated Triac)
Analog Outputs	• Voltage Analog outputs (0-10 VDC) • Current Analog outputs (4-20 mA)
Binary Outputs	24 VAC Rated Triac

Ordering information

The SNC models listed in the following tables are also available as reconditioned models. To order a reconditioned version add an **R** after the product code number.

ⓘ **Note:** Since the SNC is a new model, the reconditioned model may not be available.

ⓘ **Note:** Engines ending in H are the engines with built-in displays.

ⓘ **Note:** Additional USB integration adapters can be expected at future releases.

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Table 3: SNC base features

Product code number	Description
F4-SNCxxxxx-xx (base features)	Supervisory Network Control Series Every SNC model includes the following functionality: • Pluggable terminal blocks • Site Management Portal (SMP) UI • Wind River® Linux Operating System • Three mounting clips for direct screw-mounting, or for DIN Rail mounting • Support for BACnet/IP, BACnet/SC, and BACnet MS/TP

Table 4: SNC series Network Control Engines details

Features	SNC2515x-0 SNC2515x-0H	SNC2515x-04 SNC2515x-04H	SNC1612x-0 SNC1612x-0H	SNC1612x-04 SNC1612x-04H
Onboard inputs and outputs	• 40 total onboard I/O: 14 UI, 11 BI, 4 CO, 4 AO, 7 BO • Supports SA Bus expansion		• 28 total onboard I/O: 10 UI, 6 BI, 4 CO, 4 AO, 4 BO • Supports SA Bus expansion	
Communication interfaces	• 1 Ethernet port: SNC25152-0, SNC25152-0H, SNC25152-04, SNC25152-04H, SNC16122-0, SNC16122-0H, SNC16122-04, and SNC16122-04H • 2 Ethernet ports: SNC25151-0, SNC25151-0H, SNC25151-04, SNC25151-04H, SNC16121-0, and SNC16121-04 • 1 RS-485 port • 2 USB ports for connecting external integration adapters			
Maximum allowed devices across all integrations.	96	4	60	4
BACnet/IP maximum trunks	1	1	1	1
BACnet/IP maximum devices per trunk	50	4	50	4
BACnet/SC maximum trunks	1	1	1	1
BACnet/SC maximum devices per trunk	50	4	50	4
BACnet MS/TP maximum trunks	1	1	1	1
BACnet MS/TP maximum devices per trunk (Johnson Controls devices only)	50	4	50	4
BACnet MS/TP maximum devices per trunk (with 3rd party)	50	4	50	4

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Table 4: SNC series Network Control Engines details

Features	SNC2515x-0 SNC2515x-0H	SNC2515x-04 SNC2515x-04H	SNC1612x-0 SNC1612x-0H	SNC1612x-04 SNC1612x-04H
Maximum objects in device ⓘ **Note:** This is a suggested object limit for performance considerations.	2500	2500	2500	2500
Supported integration drivers	• BACnet/SC • BACnet/IP • BACnet MS/TP			
Operating System	Wind River® Linux LTS 17 (LTS=long-term support)			
Microprocessor	NXP i.MX6 DualLite processor			
Memory	2 GB of DDR3 RAM and 16 GB of eMMC Flash			
User Interface	Site Management Portal (SMP)			

ⓘ **Note:** Each device counts towards the overall limit of the SNC. For example, you cannot have 50 MS/TP devices and 50 BACnet/IP devices connected to an SNC2515x-0.

Table 5: SNC accessories ordering information

Product code number	Description
TL-MAP1810-xx	Pocket-sized web server that provides a wireless mobile user interface to field controllers, thermostats, and smart rooftop units. Refer to the *Mobile Access Portal Gateway Catalog Page (LIT-1900869)* to identify the appropriate product for your region. ⓘ **Note:** The initial release only supports MAP communication with equipment controllers connected to the FC Bus and not with the application within the SNC (which comes at a later release).
AS-XFR100-1	Power transformer with enclosure, class 2, 24 VAC, 92 VA maximum output.
AS-XFR010-1	Power transformer, no enclosure, class 2, 24 VAC, 92 VA maximum output.
ACC-TBKINOUT-0	Input and Output terminal block replacement kit for SNC, CG, CV and XPM products. Kit includes 5 of each 2, 3, and 4 position Input and Output terminal blocks. 30 terminal blocks in total.
ACC-TBKPWFCSA-0	Replacement terminal block kit for power, FC Bus, SA Bus terminal blocks. All blocks are removable and labeled. Kit includes 5 of each terminal block type.
FX-FCP-0	License enabling Controller Firmware Package Files required for the Controller Configuration Tool (CCT).
TL-CCT-0	License enabling CCT software for one user.
TL-SCT-0	System Configuration Tool software for local installations. New project software for sites that do not have a previous version of SCT installed.
TL-SCT-6	System Configuration Tool software for local installations. Upgrade software for previous SCT versions being upgraded to the latest release.
F4-DLK0350-0	Local Controller Display, 3.5 in. (89 mm) color display with navigation keypad

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Table 5: SNC accessories ordering information

Product code number	Description
TL-BUNDLEFX-0	Tool Bundle Facility Explorer, New
F4-MULTENGSW-6	Network Engine images for all F4-SNCs on a site

Technical specifications

Table 6: SNC2515x-0xx and SNC1612x-0xx

Specification	Description
Power requirement	Dedicated nominal 24 VAC, Class 2 power supply (North America), SELV power supply (Europe), at 50/60 Hz (20 VAC minimum to 30 VAC maximum)
Power consumption	33 VA maximum from main power supply ⓘ **Note:** The VA rating does not include any power supplied to the peripheral devices connected to Binary Outputs (BOs) or Configurable Outputs (COs), which can consume up to 12 VA for each BO or CO, for a possible total consumption of an additional 132 VA (maximum).
Power source	+15 VDC power source terminals provide 100 mA total current; quantity of inputs: five, located in Universal Input terminals; for active (3-wire) input devices
Display Screen	2.4 in (61 mm), 320 x 240 resolution display (-0H and -04H models only)
SA Bus power	15 V at 240 mA maximum
Operating System	Wind River® Linux LTS 17 (LTS=long-term support)
Processor	NXP i.MX6DualLite Processor, 1GHz 32-bit dual core Cortex A9 processor
Memory	16 GB flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 2 GB SDRAM for operations data dynamic memory
Universal Input (UI) resolution	Input: 24-bit Analog to Digital converter
Analog Output (AO) accuracy	Output: +/- 200 mV accuracy in 0–10 VDC applications
Supported integrations	BACnet/IP, BACnet/SC, BACnet MS/TP
Network and serial interfaces	**1 Ethernet port:** SNC25152-0, SNC25152-0H, SNC25152-04, SNC25152-04H, SNC16122-0, SNC16122-0H, SNC16122-04, and SNC16122-04H **2 Ethernet ports:** SNC25151-0, SNC25151-0H, SNC25151-04, SNC25151-04H, SNC16121-0, and SNC16121-04 Ethernet port(s): 1000/100/10 Mbps; 8-pin RJ45 connector One FC port (RJ12 6-pin port; connects with 1.5 m [4.9 ft] RJ12 field bus cable) One SA port (RJ12 6-pin port; connects with 1.5 m [4.9 ft] RJ12 field bus cable) One optically isolated RS-485 port; with a removable 4-pin terminal block One optically isolated SA Bus port; with a removable 4-pin terminal block Two USB A ports. All support USB 2.0 and Open Host Controller Interface [Open HCI] specification.
Transmission speeds	Ethernet communication: 100 or 10 Mbps The supervisory controller can reside and interoperate on a 1 Gbps network, but does not itself transmit at 1 Gbps. Optically isolated, serial communication (FC Bus): 76,800, 38,400, 19,200, 9600, or 1200 bps (selectable) Sensor/actuator communication (SA Bus): 38,400 bps

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Table 6: SNC2515x-0xx and SNC1612x-0xx

Specification	Description
Ambient temperature conditions	Operating: 0°C to 50°C (32°F to 122°F) Non-operating: -40°C to 70°C (-40°F to 158°F)
Ambient humidity conditions	Storage: 5% to 95% RH, 30°C (86°F) maximum dew point conditions Operating: 0% to 90% RH, 30°C (86°F) maximum dew point conditions
Housing	White Polycarbonate and Acrylonitrile butadiene styrene (ABS) blend
Mounting	On flat surface with screws on three mounting clips or a single 35 mm DIN rail
Dimensions (width x height x depth)	250 mm x 145 mm x 45.5 mm (9.84 in. x 5.71 in. x 1.79 in.)
Weight	0.65 kg (1.433 lbs)
Compliance	**United States:** UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment; FCC Compliant to CFR47, Part 15, Subpart B, Class A, Conformance to FIPS 140-2 Level 1 and validated under NIST Certificate #3389
	Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada Compliant, ICES-003
CE	**Europe:** Johnson Controls declares that this product is in compliance with the essential requirements and other relevant provisions of the EMC Directive.
	Australia and New Zealand: RCM Mark, Australia/NZ Emissions Compliant
	BACnet International: BTL 135-2020 Listed B-BC/B-RTR/B-BBMD, Protocol Revision 18
UK CA	**United Kingdom:** Johnson Controls declares that this product is in compliance with Electromagnetic Compatibility Regulations, The Electrical Equipment (Safety) Regulations, and Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations.

The performance specifications are nominal and conform to acceptable industry standard. For application at conditions beyond these specifications, consult the local Johnson Controls® office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.

North American emissions compliance

United States

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 this 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 may cause harmful interference, in which case the users will be required to correct the interference at their own expense.

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canada

This Class (A) digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

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Cet appareil numérique de la Classe (A) respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Industry Canada Statement(s)

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1. This device may not cause interference, and
2. This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

1. L'appareil ne doit pas produire de brouillage, et
2. L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Repair information

If the SNC fails to operate within its specifications, replace the unit. For a replacement SNC, contact the nearest Johnson Controls® representative.

Product warranty

This product is covered by a limited warranty, details of which can be found at www.johnsoncontrols.com/buildingswarranty.

Software terms

Use of the software that is in (or constitutes) this product, or access to the cloud, or hosted services applicable to this product, if any, is subject to applicable end-user license, open-source software information, and other terms set forth at www.johnsoncontrols.com/techterms. Your use of this product constitutes an agreement to such terms.

Patents

Patents: https://jcipat.com

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