## 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

- LX series 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 .

## 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 provide 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 SNCss have self-signed certificates that provide for 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 the 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 AC power loss.

**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.

**New SNC models with onboard user interface**

New SNC models feature on onboard, 2.4 in., 320 x 240 resolution display and associated keypad providing local user interface capabilities. Provides end customers with the ability to quickly and clearly monitor equipment status, view alarms, see trends, issue overrides, and change setpoints and parameters.

**SNC models updated to include a second Ethernet port**

Updated SNC models contain two Ethernet ports that support daisy-chain IP networking topology. Provides system designers with the installation flexibility and reduced installation costs of daisy-chain network topology for IP controller installations

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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) <br><br> • Current Analog inputs (4-20 mA) <br><br> • Resistive Analog inputs (0-2k Ohm) <br>　　- RTD: 1k Nickel, 1k Platinum, or A99B SI <br><br>　　- NTC: 10k Type L or 2.225k Type 2 <br> • Dry contact Binary inputs |
| Binary Inputs | • Dry contact maintained <br><br> • Pulse counter mode (100 Hz) |
| Configurable Outputs | • Voltage Analog outputs (0-10 VDC) <br><br> • Binary Outputs (24 VAC Rated Triac) |
| Analog Outputs | • Voltage Analog outputs (0-10 VDC) <br><br> • 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:** 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<br><br>Every SNC model includes the following functionality:<br><br>• Pluggable terminal blocks<br><br>• Site Management Portal (SMP) UI<br><br>• Wind River® Linux Operating System<br><br>• Three mounting clips for direct screw-mounting, or for DIN Rail mounting<br><br>• Support for BACnet/IP and MS/TP, |

**Table 4: SNC series Network Control Engines details**

| Features | SNC25151-0<br>SNC25151-0H | SNC25151-04<br>SNC25151-04H | SNC16121-0 | SNC16121-04 |
|---|---|---|---|---|
| **Onboard inputs and outputs** | • 40 total onboard I/O: 14 UI, 11 BI, 4 CO, 4 AO, 7 BO<br><br>• Supports SA Bus expansion | | • 28 total onboard I/O: 10 UI, 6 BI, 4 CO, 4 AO, 4 BO<br><br>• Supports SA Bus expansion | |
| **Communication interfaces** | • 2 Ethernet port: SNC25151-0, SNC25151-0H, SNC25151-04, SNC25151-04H, SNC16121-0, SNC16121-04<br><br>• 1 RS-485 port<br><br>• 2 USB ports for connecting external integration adapters[1] | | | |
| **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 MS/TP maximum trunks** | 1 | 1 | 1 | 1 |
| **BACnet MS/TP maximum devices per trunk** | 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 | SNC25151-0<br>SNC25151-0H | SNC25151-04<br>SNC25151-04H | SNC16121-0 | SNC16121-04 |
|---|---|---|---|---|
| **Maximum objects in device**[2] | 2500 | 2500 | 2500 | 2500 |
| **Supported integration drivers** | • BACnet/IP<br>• 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) | | | |

1    Only the supported USB integration adapters function with the SNC. Other integration adapters that are not supported cannot function with the SNC.
2    Suggested object limit for performance considerations.

ⓘ    **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.<br><br>ⓘ    **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-USBLON-0[1] | USB to LonWorks Adapter. Includes DIN Rail mounting bracket. Tested and qualified for use on the SNC. |
| ACC-USBRS232-0 | USB to RS-232 Adapter. Tested and qualified for use on the SNC. |
| 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. |

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**Table 5: SNC accessories ordering information**

| Product code number | Description |
|---|---|
| MS-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. |

1    Non-qualified adapters do not function in USB ports of the SNC.

## Technical specifications

**Table 6: Technical specifications**

| 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<br><br>ⓘ   **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 |
| 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<br><br>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 MS/TP |

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**Table 6: Technical specifications**

| Specification | Description |
|---|---|
| Network and serial interfaces | Two Ethernet ports; 1000/100/10 Mbps; 8-pin RJ45 connector<br><br>One FC port (RJ12 6-pin port; connects with 1.5 m [4.9 ft] RJ12 field bus cable)<br><br>One SA port (RJ12 6-pin port; connects with 1.5 m [4.9 ft] RJ12 field bus cable)<br><br>One optically isolated RS-485 port; with a removable 4-pin terminal block<br><br>One optically isolated SA Bus port; with a removable 4-pin terminal block<br><br>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<br><br>Optically isolated, serial communication (FC Bus): 76,800, 38,400, 19,200, 9600, or 1200 bps (selectable)<br><br>Sensor/actuator communication (SA Bus): 38,400 bps |
| Ambient temperature conditions | Operating: 0°C to 50°C (32°F to 122°F)<br><br>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<br><br>Operating: 0% to 90% RH, 30°C (86°F) maximum dew point conditions |
| Housing | Black 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 |

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**Table 6: Technical specifications**

| Specification | Description |
|---|---|
| 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 135-2016 Listed B-BC/B-RTR/B-BBMD, Protocol Revision 18 |

*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.*

## Repair information

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

## 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.

### Canada

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

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

## Single point of contact

| APAC | Europe | NA/SA |
|---|---|---|
| JOHNSON CONTROLS C/O CONTROLS PRODUCT MANAGEMENT NO. 32 CHANGJIJANG RD NEW DISTRICT WUXI JIANGSU PROVINCE 214028 CHINA | JOHNSON CONTROLS WESTENDHOF 3 45143 ESSEN GERMANY | JOHNSON CONTROLS 507 E MICHIGAN ST MILWAUKEE WI 53202 USA |

## 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.

## Product warranty

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

## Patents

Patents: https://jcipat.com

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