SNC Catalog Page

Introduction

The Metasys SNC series network control engine is a hybrid offering that provides both supervisory and equipment control in a unified offering. The SNC series network control engines perform a key role in the Metasys system architecture. When used as a network engine, SNCs connect Building Automation System (BAS) networks to IP networks. They provide network management and system-wide control coordination over one or more networks controllers, including the following devices:

• CGM series general purpose equipment controllers

• CVM series VAV box controllers

• FEC and FAC series field equipment controllers

• VMA series VAV box controllers

• TEC series terminal equipment controllers

• LN series equipment controllers

• Third-party 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.

The SNC series succeed the NCE series network control engines, providing future-ready Metasys supervisory and equipment control capabilities.

- SNC2515x succeeds the NCE25 series network control engines.

- SNC2515x-04 succeeds the NCE2500 series network control engines.

- SNC1612x-0 succeeds the NCE25 series network control engines.

- SNC1612x-04 succeeds the NCE2500 series network control engines.

- ⓘ **Note:** The SNC is not an exact drop-in replacement for the NCE. Refer to *SNC Installation Guide (Part No. 24-10143-01892)* for more information about how to install an SNC.

Figure 1: SNC Network Control Engines

Ethernet integrations supported

- BACnet/IP that includes the following:

    - Johnson Controls and 3rd party BACnet/IP devices

    - Simplex® Fire Alarm Control Unit (FACU)

    - Cree® SmartCast® Lighting Control

    - Molex® Lighting Control

- Tyco® C•CURE® 9000 or victor® Video Management

- Modbus TCP/IP

- KNX IP

- OPC UA

Field Bus integrations supported

- BACnet MS/TP

- N2 Bus

- LonWorks® with an approved USB adapter

- Modbus Remote Terminal Unit (RTU) with an approved USB adapter

- M-Bus

- Zettler® Fire Panel

ⓘ **Note:** For LonWorks, Modbus, and Zettler Fire Panel integrations, use the appropriate USB adapter. Only the qualified USB adapters function in the USB ports. The USB adapter is not required for Modbus. It can be used but is not required.

ⓘ **Note:** For M-Bus an approved USB adapter is required if not using an IP connection.

Application documentation

Refer to the *SNE/SNC Product Bulletin (LIT-12013296)* for important product application information. In addition, refer to the *Metasys for Validated Environments, Extended Architecture Product Bulletin (LIT-12011326)* for information about which network control engines are validated for use at facilities that require regulatory compliance.

Features and benefits

The following features and benefits are applicable to the SNC:

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.

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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 SNC network engines 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.

Support for different site directors

The SNC communicates with a wide variety of Site Directors, which include the Application and Data Server (ADS), Extended Application and Data Server (ADX), and Open Application Server (OAS). The ADS-Lite-A (Asia) and ADS-Lite-E (Europe) site directors are supported for select regions only.

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, BACnet MS/TP, N2 Bus, LonWorks, Modbus TCP/IP, Modbus RTU, M-Bus, KNX, OPC UA, Zettler Fire Panel, Tyco C•CURE, victor, and other third-party protocols.

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.

Certified FIPS 140-2 Level 1 compliance

FIPS 140-2 is a U.S. government cybersecurity standard used to approve cryptographic modules and algorithms used for encryption. Assures end customers that Metasys uses strong cybersecurity techniques to prevent unauthorized access to systems and data.

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OPC UA Integration Driver

OPC Unified Architecture (OPC UA) is a machine-to-machine communication protocol popular with industrial automation and process control type devices. This new OPC UA integration driver will enable Metasys to monitor, command, schedule, alarm, trend, interlock, and share data with OPC UA devices, including the new Johnson Controls PLC offering.

Updated BACnet Compliance

Network Engines 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

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

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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

Repair information

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

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
M4-SNCxxxxx-0x	SNC Network Control Engine 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, MS/TP, N2, LonWorks, Modbus RTU, Modbus TCP, M-Bus, KNX, Tyco C•CURE and victor Video Management, Simplex Fire, Molex and CREE Digital Lighting, Zettler Fire integrations, OPC UA servers ⓘ **Note:** The OPC UA integration is available starting at Release 11.0.

Table 4: SNC series Network Control Engines details

Features	SNC25150-0 SNC25151-0 SNC25151-0H	SNC25150-04 SNC25151-04 SNC25151-04H	SNC16120-0 SNC16121-0 SNC16121-0H	SNC16120-04 SNC16121-04 SNC16121-04H
Succeeds	NCE25 Series	NCE2500	NCE25 Series	NCE2500
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: SNC25150-0, SNC25150-4, SNC16120-0, SNC16120-04 • 2 Ethernet port: SNC25151-0, SNC25151-0H, SNC25151-04, SNC25151-04H, SNC16121-0, SNC16121-0H, SNC16121-04, SNC16121-04H • 1 RS-485 port • 2 USB ports for connecting external integration adapters[1]			
Maximum allowed devices across all integrations. For example, MS/TP +IP. Includes VND integrations and devices brought in through routers.	96	4	60	4
BACnet/IP maximum trunks	1	1	1	1

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Table 4: SNC series Network Control Engines details

Features	SNC25150-0 SNC25151-0 SNC25151-0H	SNC25150-04 SNC25151-04 SNC25151-04H	SNC16120-0 SNC16121-0 SNC16121-0H	SNC16120-04 SNC16121-04 SNC16121-04H
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
N2 maximum trunks	1	1	1	1
Mapped N2 devices per trunk	50	4	50	4
LON maximum devices per trunk	64	4	64	4
LON maximum trunks	1	1	1	1
Remote Field Bus maximum trunks[2]	3	0	3	0
Remote Field Bus maximum Johnson Controls Devices per bus	32	0	32	0
Remote Field Bus maximum devices per bus (with 3rd party devices)	16	0	16	0
Maximum objects in device[3]	2500	2500	2500	2500
Supported type of parent server	• ADS • ADX • ADS-Lite-E • OAS • ODS			

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Table 4: SNC series Network Control Engines details

Features	SNC25150-0 SNC25151-0 SNC25151-0H	SNC25150-04 SNC25151-04 SNC25151-04H	SNC16120-0 SNC16121-0 SNC16121-0H	SNC16120-04 SNC16121-04 SNC16121-04H

Supported integration drivers	• BACnet/IP
	   - Simplex® Fire Alarm Control Unit (FACU)
	   - Cree® SmartCast® Lighting Control
	   - Molex® Lighting Control
	• BACnet MS/TP
	• N2 Bus
	• LonWorks® (requires USB to LON adapter)
	• Modbus: Modbus TCP/IP on Ethernet and Modbus Remote Terminal Unit on RS-485
	• KNX IP
	• M-Bus
	• Tyco® C•CURE® 9000 and victor® Video Management
	• Zettler® Fire Panel
	• OPC UA			

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   The SNC requires Release 11.0 or higher to support the Remote Field Bus integration.
3   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 Metasys 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).

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Table 5: SNC accessories ordering information

Product code number	Description
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[1]	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.
MS-FCP-0	License enabling Metasys Equipment Controller Firmware Package Files required for the Controller Configuration Tool (CCT).
TL-CCT-0	License enabling Metasys 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.

Table 6: M-Bus accessories ordering information

Product Code Number	Description
SIS-MBUSSCLL-0E	M-Bus level converter for up to 100 unit loads; 24 VAC/VDC (RS-232 connection); requires ACC-USBRS232-0 adapter
SIS-MBUSNCLL-0E	M-Bus level converter for up to 100 unit loads; 24 VAC/VDC (IP connection)
SIS-MBUSNCLH-0E	M-Bus level converter for up to 100 unit loads; 230 VAC (IP connection)
SIS-MBUSRPLL-0E	M-Bus repeater for up to 100 unit loads, 24V AC/DC
SIS-MBUSRPLH-0E	M-Bus repeater for up to 100 unit loads; 230 VAC
INT-DX-KAB01	Optional serial connection cable SUB-D to RJ-12 for use with SIS-MBUSSCLL-0E
MR003USB	Mikro-Master USB–to–M-Bus adapter for up to 10 M-Bus devices ⓘ **Note:** Order this accessory directly from the supplier, made by Relay GmbH.
ⓘ **Note:** For the European market, order the SISMBUSxxxx-0E and INT-DX-KAB01 accessories in AOMS from the Johnson Controls Essen Distribution Center.	
ⓘ **Note:** Order the MR003USB accessory directly from the supplier, made by Relay GmbH.	

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Table 7: KNX accessories ordering information

Product code number	Description
SIS-KNXNIXL-0E	KNX IP interface module to connect KNX line through Ethernet to the network engine
SIS-KNXNRXL-0E	KNX IP router to connect KNX line through Ethernet to a network engine, including line or area coupler functionality
ⓘ **Note:** For the European market, order these KNX accessories in AOMS from the Johnson Controls Essen Distribution Center.	

Table 8: Modbus tool training course ordering information

Course number	Course title and description
C-10077-EN	VGE Tool Software Training (North America) The VGE tool is required to generate custom Modbus mapping tables.
PTK-CONT-26	VGE Tool Software Software Training (Europe and Asia) The VGE tool is required to generate custom Modbus mapping tables.
ⓘ **Note:** Modbus Integrations require one or more vendor Modbus definition (VMD) tables for specific third-party equipment. You can purchase tables from your regional System Integration Services (SIS) office, or you can create the tables with the VMD Generator Express (VGE) tool. To obtain a license, attend the training listed in this table.	

Technical specifications

Table 9: SNC25151-0x and SNC16121-0x (display models)

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
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

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Table 9: SNC25151-0x and SNC16121-0x (display models)

Specification	Description
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 MS/TP, N2 Bus, LonWorks, Modbus, KNX, M-Bus, Zettler Fire, OPC UA Tyco C•CURE 9000-victor video management, Simplex FACU, Molex Lighting Control, Cree SmartCast Lighting Control
Network and serial interfaces	Two Ethernet ports; 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 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
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	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.)

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Table 9: SNC25151-0x and SNC16121-0x (display models)

Specification	Description
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
$C\,E$	**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.

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.

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