SNE/SNC Product Bulletin

LIT-12013296
Release 11.0
2020-11-20

Introduction

The Metasys SNE series network engines and SNC series network control engines are Ethernet-based, supervisory controllers that connect Building Automation System (BAS) networks to IP networks.

The SNE series succeed the NAE series, and the SNC series succeed the NCE series. This allows for the further expansion and enhancement of Metasys supervisory control capabilities.

The SNE and SNC perform a key role in the Metasys system architecture. They provide network management and system-wide control coordination over one or more networks of equipment 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

These devices monitor and control networks of field-level building automation devices, including HVAC equipment, lighting, security, and fire safety equipment.

Network engines provide building control scheduling, alarm and event management, energy management, data exchange, historical data storage and management, and custom control logic. Network engines include an embedded user interface called the Site Management Portal (SMP). Users access the SMP for system navigation and operation using web browser connections. Network engines use password protection, permission access control, and IT security best practices to secure them from unauthorized access.

In addition to providing supervisory control capabilities, the SNC series also feature onboard input and output interfaces (I/O) and direct digital control capabilities of a controller.

Figure 1: SNE series Network Engines and SNC series Network Control Engines

SNE Series

- SNE2200x-0 succeeds the NAE55 series network engines.
- SNE1100x-0 succeeds the NAE45 series network engines.
- SNE1050x-0 succeeds the NAE35 series network engines.
- SNE110Lx-0 succeeds the NAE45-Lite series of network engines, and functions with the ADS-Lite-A server that is available in select regions.

SNC Series

- SNC2515x-0 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 the *SNC Installation Guide (Part No. 24-10143-01892)* for more information about how to install an SNC.

See Ordering information for SNE models and Ordering information for SNC models for more information on the model types available. In addition, refer to the Metasys for Validated Environments, Extended Architecture Product Bulletin (LIT-12011326) for information about which network engines are validated for use at facilities that require regulatory compliance.

Features and benefits

The following features and benefits are applicable to SNEs and SNCs:

Multiple models available

Multiple models are available with varying device capacities for integrations and 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-supported operating system.

User interface

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

Encrypted communications

All SNE and 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).

Memory

The memory of the SNE and SNC has 2 GB RAM and 16 GB Flash non-volatile 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 System Configuration Tool (SCT) to the SNE or SNC while it 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.

Smaller, modularized packaging

The size of the SNE is smaller than the NAE. This reduces the amount of space you need for mounting, and can potentially reduce the size and cost of control panels.

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 installation and servicing.

Support for different site directors

The SNE and SNC communicate 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, Zettler Fire Panel, Tyco C•CURE, victor, and other third-party protocols.

No battery

The SNE and SNC use 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 SNE and 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.

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 provides the Metasys system with the ability 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.

Additional SNC features and benefits

The following features and benefits are specific to the SNC:

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

Generic SA Bus object (SNC only)

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 (SNC only)

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 a onboard, 2.4 in., 320 x 240 resolution display and associated keypad, which provides 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.

Field equipment network management and integration

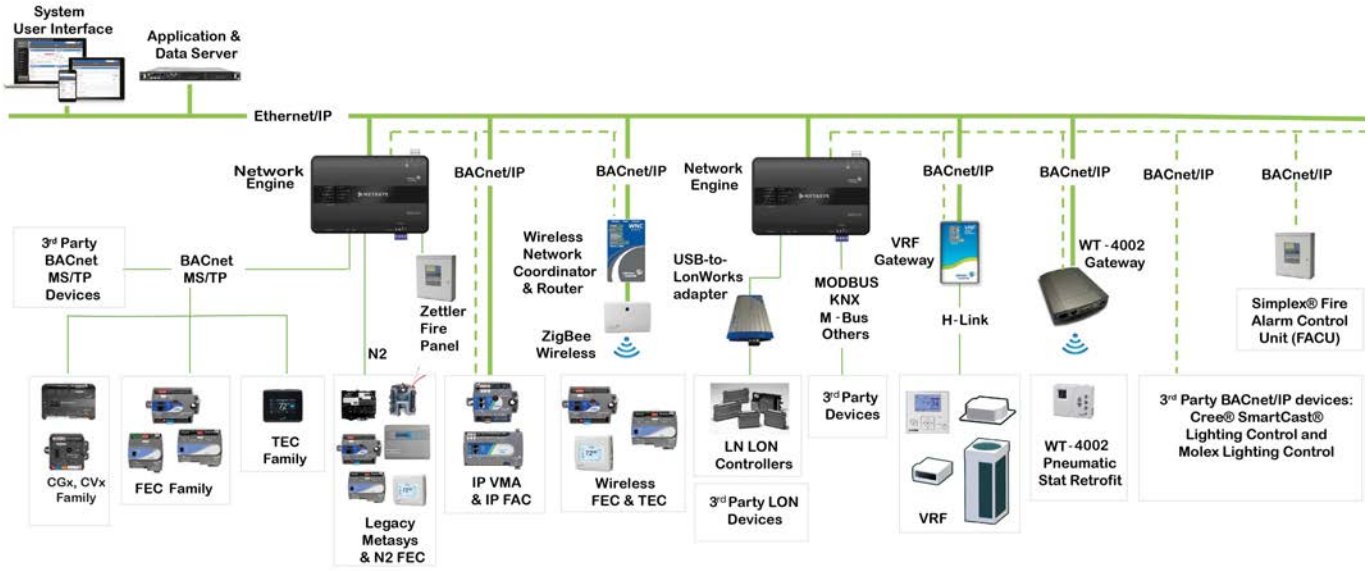
Metasys network engines provide network management over one or more networks of controllers and other field devices. The SNE and SNCs feature several optional communication port and protocol selections to integrate Metasys equipment controllers, types of non-Metasys devices, and third-party devices typically found in commercial buildings.

The following list includes a brief description of the supported integrations:

- **BACnet/IP**—for Metasys IP-based equipment controllers and other third-party BACnet/IP devices. The following are BACnet/IP integrations available:
  - **Simplex® Fire Alarm Control Unit (FACU)**—to interface with and provide secondary monitoring of a Simplex fire control system.
  - **Cree® SmartCast Lighting Control and Molex® Lighting Control**—to manage lighting control in the building.
- **BACnet MS/TP**—for Metasys equipment controllers and TEC equipment controllers, non-Metasys BACnet controllers, and other third-party BACnet MS/TP devices.
- **Tyco® C•CURE® 9000 Access Control System and victor® Video Management**—to manage building access control networks and video management systems.
- **N2 Bus**—to manage networks of N2-based Metasys equipment controllers, such as UNTs, VMA1400s, and DX-9100s, N2-configured Metasys FEC, FAC, VMA, CGM, and CVM series equipment controllers and third-party N2 Open devices.
- **LonWorks**—to manage networks of Metasys LN Series LonWorks controllers, legacy LonWorks equipment controllers, such as DX-9200s and Terminal Control Units (TCUs), as well as third-party LonWorks devices.
- **Modbus**—to manage networks of third-party Modbus devices, such as energy meters and process controllers.
- **KNX** —to manage networks of KNX devices, such as window blinds and shading controls, lights, and meters.
- **M-Bus**—to manage networks of M-Bus devices, such as heat meters.
- **Zettler® Fire Panel**—to interface with and provide secondary monitoring of a Zettler fire detection system.
- **Remote Field Bus Applications**—to reduce the installed cost of BACnet MS/TP field devices throughout a facility. Any intra-building, inter-building, or remote location that has IP network connections readily available can use the remote field bus.
- **OPC Unified Architecture**— to provide integrated automation solutions for buildings / market segments like Data Centers, manufacturing facilities, and others where OPC UA type devices are popular.

The following is an example of a Metasys system network showing various integrations.

Figure 2: Device integrations for the Metasys network



Automated system-wide control and coordination

The SNE and SNC provide automated system-wide control and coordination over multiple field devices under one or more field device networks. Some examples of the system-wide control coordination capabilities include:

- **Scheduling:** The SNE and SNC can automatically command mechanical or electrical equipment to a operational state, such as On/Off, Occupied/ Unoccupied, Economy/Comfort, or Heating/Cooling/ Economizer/Auto based on a user-defined schedule. You can set the operating parameters according to time of day, days of the week, holidays, or calendar dates.
- **Alarm and event management:** The SNE and SNC can generate alarms based on user-defined criteria; to send alarm and event messages to web browsers, email servers, and Network Management Systems; and to store and view alarm and event logs, and transfer the data to the Application and Data Server.
- **Network-wide system interlocking:** The SNE and SNC can collect data from field devices, make logical comparisons between the data, and issue relevant commands to other field controllers, anywhere on the network.
- **Transaction recording:** Audits and logs all user actions performed through the system. Operators can review these logs to understand what changes have been made to the system, who made them, and when they were made.
- **Historical data:** Historical data can be collected and stored by the SNE and SNC for any monitored data point value based on user-defined intervals or on a change of value. The SNE and SNC can transfer the data logs to the Application and Data Server at defined intervals, or when the SNE and SNC logs are full.
- **Totalization:** The SNE and SNC can calculate rolling sums of any monitored data point value stream. Operators can use this information to monitor runtime information useful for service, maintenance, and early identification of building system problems.
- **Optimal start:** The SNE and SNC can automatically determine the best time to start heating and cooling systems to ensure that the facility is conditioned for occupancy. It adjusts to seasonal variations and reduces energy use.
- **Demand Limiting Load Rolling (DLLR):** The SNE and SNC can monitor energy meters, such as electricity, gas, steam, or water, and automatically shed equipment loads according to user-defined levels. Demand Limiting helps manage utility demand charges. Load Rolling controls equipment operating levels to reduce total energy consumption.
- **Access control system integration:** The SNE and SNC can monitor and control systems that notify the security guard when an access badge scan is permitted or denied, when access control devices go offline, and when monitored doors are locked and unlocked. The SNE and SNC can use building events to trigger logic and automate access control functions throughout a facility.
- **Video management system integration:** The SNE and SNC can access systems that track the health of video system components, and reports on a variety of analytics and events. Video streaming directly within theMetasys user interface is not available; you can view the surveillance system adjacent to the SMP UI in a separate browser window.
- **Fire panel integration:** The SNE and SNC is exposed to monitored points in the Simplex or Zettler fire alarm system to provide better and more effective interaction between the BAS and fire systems.

- **Lighting control system integration:** the SNE and SNC can access and control lighting groups, zones, and spaces without the engine needing a large number of points. Options include turning lights on and off, adjusting light levels, and obtaining sensor data that indicates such data as occupancy, ambient light level, and power consumption.

Scalable

Different SNE and SNC models are available, each with different field device capacities, so you can select the model that best meets the size, complexity, and scope of your specific project.

For projects that exceed the capacity of a single engine, you can network Metasys network engines together, and you can network them with the Application and Data Server for additional functionality and site unification.

Secure

The Metasys system uses industry-standard system security and encoding protocols to protect against unauthorized access to data and control systems. The Metasys system includes the following security features:

- Support for local users, Active Directory users and Microsoft® 365® users.
- Obscures user names and passwords.
- Enforces strong passwords.
- Provides an optional capability of sending its configured audit log entries and alarm notifications to an external, industry-standard Syslog server, conforming to Internet published RFC 3164.
- Provides dormant account settings for users and reports. Dormant User Account Reports are available in SMP. Dormant user account events are also included in the Audit Viewer and the Event Viewer.
- HTTPS with TLS 1.2 between Metasys components, including the Application and Data Server, Metasys UI, System Configuration Tool (SCT), and network engines. This enhancement ensures the highest level of security to protect your building automation system from unauthorized users and computer hackers.
- Self-signed certificates are installed on supported products, with the option of configuring trusted certificates.
- 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.

SNE series network engines

The following table contains a brief comparison of the features of the SNE Series network engines.

Note: Each device counts towards the overall limit of the SNE. For example, you cannot have 34 MS/TP devices and 43 BACnet/IP devices connected to an SNE10500.

Table 1: SNE series network engine details

Features	SNE22000 SNE22001	SNE11000 SNE11001	SNE10500 SNE10501	SNE110L0 SNE110L1[1]
Succeeds	NAE55 Series	NAE45 Series	NAE35 Series	NAE45-Lite
Communication interfaces	• 1 Ethernet port • 2 RS-485 ports • 2 USB ports[2]	• 1 Ethernet port • 1 RS-485 port • 2 USB ports[2]		
Maximum allowed devices across all integrations. For example, MS/TP +IP. Includes VND integrations and devices brought in through routers.	600	150	60	110
BACnet/IP maximum trunks	1	1	1	1
BACnet/IP maximum devices per trunk	200	100	50	10
BACnet MS/TP maximum trunks	2	1	1	1
BACnet MS/TP maximum devices per trunk	100	100	50	100

Table 1: SNE series network engine details

Features	SNE22000 SNE22001	SNE11000 SNE11001	SNE10500 SNE10501	SNE110L0 SNE110L1[1]
BACnet MS/TP maximum devices per trunk (with 3rd party)	64	64	50	64
N2 maximum trunks	2	1	1	N/A
Mapped N2 devices per trunk	100	100	50	N/A
LonWorks maximum trunks	1	1	1	0
LonWorks maximum devices	255	127	127	0
Remote Field Bus maximum trunks	6	3	3	N/A
Remote Field Bus maximum Johnson Controls Devices per bus	32	32	32	N/A
Remote Field Bus maximum devices per bus (with 3rd party devices)	16	16	16	N/A
Maximum objects in device[3]	5000	2500	2500	2500
Supported type of parent server	• ADS • ADX • OAS	• ADS • ADX • ADS-Lite-E • OAS	• ADS • ADX • ADS-Lite-E • OAS	ADS-Lite-A only
Supported integrations	• BACnet/IP - Simplex® Fire Alarm Control Unit (FACU) - Cree® SmartCast® Lighting Control - Molex® Lighting Control • BACnet MS/TP Field Controller (FC) Bus • N2 Bus ⓘ **Note:** The M4-SNE110Lx-0 model does not support the N2 Bus. • LonWorks® (requires USB to LON adapter) ⓘ **Note:** The M4-SNE110Lx-0 model does not support the LonWorks network interface. • 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 Unified Architecture (UA)			
Operating System	Wind River® Linux LTS 17 (LTS=long-term support)			
Microprocessor	NXP i.MX6 DualLite processor			
Memory	Flash 2GB of DDR3 RAM and 16 GB of eMMC Flash			
User Interface	Site Management Portal (SMP)			

1 These models are intended for use with the ADS-Lite-A servers (only) in Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Thailand, Vietnam, and select branches within regions of Africa and the Middle East.

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

SNC series network control engines

The following table contains a brief comparison of the features of the SNC models.

Note: The SNC is not an exact drop-in replacement for the NCE series network engines.

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 SNC25150-0.

Table 2: 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
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

Table 2: 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
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			
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: The SNC requires Release 11.0 or higher to support the Remote Field Bus integration.

SNC 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 3: 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 4: 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 SNE or SNC fails to operate within its specifications, replace the unit. For a replacement SNE or SNC, contact the nearest Johnson Controls representative.

Conclusion

The SNE and SNC affirm the position of Johnson Controls as a leader and innovator in the Building Automation System (BAS) industry. The integration of IT and Internet standards into the SNE and SNC platform, as well as the use of open protocols for field networks, bring the benefits of the global communications and control industries into one system. Web browser-based access from any location is a key to the effective use of the automation network.

The Metasys system continues to be the integrating network within buildings and has now been extended to bridge the gap between traditional control systems and the business and communication network systems of the enterprise.

Ordering information for SNE and SNC models

The SNE and 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 SNE and SNC are new models, a reconditioned model may not be available.

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

Ordering information for SNE models

Table 5: SNE ordering information

Product code number	Description
M4-SNExxxxx-xxx (base features of each SNE)	SNE Supervisory Network Engine Series Requires a 24 VAC or 24 VDC power supply. Each model includes one Ethernet port, one RS-485 communications port, two standard USB serial ports, and one micro-USB port (future use). **Supported IP integrations**: BACnet/IP, Modbus TCP/IP, KNX IP, C-Cure/victor, and OPC UA **Supported field bus integrations**: MS/TP (RS-485) FC Bus, N2 Bus, Modbus RTU, M-Bus, and Zettler
M4-SNE22000-0 (older model) M4-SNE22001-0 (newer model)	Supports two local field bus device integrations with a maximum of 100 devices on each trunk for a maximum of 200 devices per engine if only using the local field buses. The engine supports a total of 600 devices across all integrations. Also includes an RJ-12 connection for the FC Bus. An optional LonWorks adapter can be connected to USB port to add LON communications. Also supports one BACnet/IP device integration.
M4-SNE11000-0 (older model) M4-SNE11001-0 (newer model)	Supports one local field bus device integration with a maximum of 100 devices on the trunk. An optional LonWorks adapter can be connected to USB port to add LON communications. Also supports one BACnet/IP device integration.
M4-SNE10500-0 (older model) M4-SNE10501-0 (newer model)	Supports one local field bus device integration with a maximum of 50 devices on the trunk. An optional LonWorks adapter can be connected to USB port to add LON communications. Also supports one BACnet/IP device integration.
M4-SNE110L0-0 (older model) M4-SNE110L1-0 (newer model)	Supports one local field bus device integration with a maximum of 100 devices on the trunk. This model is intended for use with Metasys Server Lite (ADS-Lite-A) software in select regions of Australia, China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, New Zealand, Philippines, Singapore, Taiwan, Thailand, Vietnam, and select branches. ⓘ **Note:** This model does not support the N2 Bus or LonWorks network interface, but does support one BACnet/IP device integration.

ⓘ **Note:** See SNE series network engines for more information about the number of devices supported.

Ordering information for SNC models

Table 6: 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 7: SNC model features by product code number

	SNC25150-0 **SNC25151-0** **SNC25151-0H**	**SNC25150-04** **SNC25151-04** **SNC25151-04H**	**SNC16120-0** **SNC16121-0** **SNC16121-0H**	**SNC16120-04** **SNC16121-04** **SNC16121-04H**
Integral Equipment Controller	40 Integral I/O points - 25 inputs, 15 outputs • 14 UI • 11 BI • 4 AO • 7 BO • 4 CO		28 Integral I/O points - 16 inputs, 12 outputs • 10 UI • 6 BI • 4 AO • 4 BO • 4 CO	
Maximum MS/TP or N2 devices per local FC Bus trunk	50	4	50	4
Ethernet Port	**1**: SNC25150-0, SNC25150-4, SNC16120-0, SNC16120-04 **2**: SNC25151-0, SNC25151-0H, SNC25151-04, SNC25151-04H, SNC16121-0, SNC16121-0H, SNC16121-04, SNC16121-04H			
Field Controller (FC) Bus	1			
SA Bus	1			
USB Ports for LonWorks, RS-232, M-Bus[1]	2			

1 The qualified LonWorks and RS-232 adapters are available from Johnson Controls. The M-Bus adapters are available directly from suppliers.

Note: See SNC series network control engines for more information about the number of devices supported.

Accessories ordering information

Table 8: SNE accessories ordering information

Product code number or vendor model 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-PWRKIT-1A24	Power Supply, Desktop Kit, 90-264 VAC to 24 VDC, 65 W, includes AC cord with North American Plug.
ACC-PWRKIT-1E24	Power Supply, Desktop Kit, 90-264 VAC to 24 VDC, 65 W, includes AC cord with European Plug.
ACC-USBLON-0[1]	USB to LonWorks Adapter. Includes DIN Rail mounting bracket. Tested and qualified for use on the SNE.
ACC-USBRS232-0[1]	USB to RS-232 Adapter. Tested and qualified for use on the SNE.

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

Table 9: 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).
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.

Third-party integration accessory ordering information

Table 10: 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.	

Table 11: 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 12: 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

M4-SNE Series

Table 13: SNE1100x, SNE1050x, and SNE110Lx network engines

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) Alternate: Dedicated nominal 24 VDC, Class II power supply input; North America: ACC-PWRKIT-1A24; Europe: ACC-PWRKIT-1E24
Power consumption	38 VA maximum
Operating System	Wind River® Linux LTS 17 (LTS=long-term support)
Processor	NXP i.MX6 DualLite processor, dual core Cortex-A9 processor at 1.0 GHz with 512 KB of L2 cache
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
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 ⓘ **Note:** The SNE110Lx model supports one IP device integration, but does **not** support the N2 Bus or LonWorks network interface.
Network and Serial interfaces	One Ethernet port; 1000/100/10 Mbps; 8-pin RJ45 connector One FC port (RJ12 6-pin port; connects with 1.5 m [4.9 ft] RJ-12 field bus cable) One optically isolated RS-485 port; with a removable 4-pin terminal block Three USB ports (one Micro-B port, and two USB A ports). All support USB 2.0 and Open Host Controller Interface [Open HCI] specification; Micro-USB port currently inactive
Transmission speeds	Ethernet communication: 1000, 100, or 10 Mbps Optically isolated, serial communication (FC Bus): 76,800, 38,400, 19,200, 9600, or 1200 bps (selectable)

Table 13: SNE1100x, SNE1050x, and SNE110Lx network engines

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**: 10% 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 (Height x Width x Depth)	190 mm x 125 mm x 45.5 mm (7.48 in. x 4.92 in. x 1.75 in.)
Weight	0.387 kg (0.852 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
	Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment; Industry Canada Compliant, ICES-003
CE	**Europe:** CE Mark – Johnson Controls, Inc. 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
	FIPS 140-2 Level 1: Compliant and certified with Federal Information Processing Standard; https://csrc.nist.gov/Projects/cryptographic-module-validation-program/Certificate/3389

Table 14: SNE2200x network engine

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) Alternate: Dedicated nominal 24 VDC, Class II power supply input; North America: ACC-PWRKIT-1A24; Europe: ACC-PWRKIT-1E24
Power consumption	38 VA maximum
Operating System	Wind River® Linux LTS 17 (LTS=long-term support)
Processor	NXP i.MX6 DualLite processor, dual core Cortex-A9 processor at 1.0 GHz with 512 KB of L2 cache
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
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	One Ethernet port; 1000/100/10 Mbps; 8-pin RJ45 connector Two FC ports (RJ12 6-pin port; connects with 1.5 m [4.9 ft] RJ12 field bus cable) Two optically isolated RS-485 ports; with a removable 4-pin terminal block Three USB ports (one Micro-B port, and two USB A ports). All support USB 2.0 and Open Host Controller Interface [Open HCI] specification; Micro-USB port currently inactive
Transmission speeds	Ethernet communication: 1000, 100, or 10 Mbps Optically isolated, serial communication (FC Bus): 76,800, 38,400, 19,200, 9600, or 1200 bps (selectable)

Table 14: SNE2200x network engine

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**: 10% to 90% RH, 30°C (86°F) maximum dew point conditions
Housing	Black Polycarbonate and Acrylonitrile butadiene styrene (ABS) blend IP protection class: IP20 UL flammability rating: UL94-5VB
Mounting	On flat surface with screws on three mounting clips or a single 35 mm DIN rail
Dimensions (Height x Width x Depth)	190 mm x 125 mm x 44.5 mm (7.48 in. x 4.92 in. x 1.75 in.)
Weight	0.387 kg (0.852 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:** CE Mark – Johnson Controls, Inc. 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
	FIPS 140-2 Level 1: Compliant and certified with Federal Information Processing Standard; https://csrc.nist.gov/Projects/cryptographic-module-validation-program/Certificate/3389

M4-SNC Series

Table 15: 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
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

Table 15: SNC25151-0x and SNC16121-0x (display models)

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

Table 16: SNC25150 and SNC16120

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	32 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

Table 16: SNC25150 and SNC16120

Specification	Description
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 MS/TP, N2 Bus, LonWorks, Modbus, KNX, M-Bus, Zettler Fire Tyco C•CURE 9000-victor video management, Simplex FACU, Molex Lighting Control, Cree SmartCast Lighting Control
Network and serial interfaces	One supported Ethernet port (top); 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 magnetically isolated FC Bus port; with a removable 4-pin terminal block One 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.)
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 135-2016 Listed B-BC/B-RTR/B-BBMD, Protocol Revision 18
	FIPS 140-2 Level 1: Compliant and certified with Federal Information Processing Standard; https://csrc.nist.gov/Projects/cryptographic-module-validation-program/Certificate/3389

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.

Contact information

Contact your local branch office: www.johnsoncontrols.com/locations

Contact Johnson Controls: www.johnsoncontrols.com/contact-us

Patents

Patents: https://jcipat.com