SNE Catalog Page

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Introduction

The SNE Series of Network Engines are a new family of Metasys network engines. Network engines are Ethernet-based, supervisory engines that connect BAS networks to IP networks. The SNE network engines succeed the NAE Series of network engines to further the expansion and enhancement of Metasys supervisory control capabilities.

The SNE Series of network engines 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 Metasys controllers:

- 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. Among a wide host of features, 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) that provides system navigation and operation using web browser

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connections. Password protection, permission access control, and IT security best practices secure network engines from unauthorized access. Also, SNEs at Release 11.0 are FIPS 140-2 Level 1 compliant and certified by the National Institute of Standards and Technology (NIST). The Federal Information Processing Standard (FIPS)-140-2 is a United States government cybersecurity standard that approves cryptographic modules/algorithms used for encryption.

In addition to providing general comprehensive equipment monitoring and control, network engines also offer specialized capabilities by series and model to meet a variety of application requirements. These models are available (where x = 0 or 1):

- **SNE2200x-0**: succeeds NAE55 Series of network engines.
- **SNE1100x-0**: succeeds NAE45 Series of network engines.
- **SNE1050x-0**: succeeds NAE35 Series of network engines.
- **SNE110Lx-0**: succeeds NAE45-Lite Series of network engines.

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 engines are validated for use at facilities that require regulatory compliance.

Features and Benefits

Multiple models available

Multiple models are available with varying device capacities for integrations that meet the intended application.

Linux® operating system

The SNE runs on Linux, which is a robust, widely-accepted, and readily-supporting operating system.

User interface

You use the Site Management Portal (SMP) user interface 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 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).

FIPS compliance

All SNEs that run Release 11.0 firmware include the FIPS 140-2 feature that provides FIPS compliance and is certified by NIST. The FIPS 140-2 standard is an information technology security approval program for cryptographic modules produced by private sector vendors who seek to have their products certified for use in government departments and regulated industries. For a site to be fully FIPS compliant and certified, you need to upgrade all network engines to Release 11.0, then install and license the FIPS 140-2 feature on the Metasys Server. Additionally at Release 11.0, the SNEs are FIPS 140-2 validated.

Memory

The SNE has 2 GB RAM and 16 GB Flash non-volatile memory. This memory provides capacity for further upgrades and a longer operational life.

Background file transfer

You can transfer files such as firmware upgrades, archive databases, and security databases from the SCT to the SNE while the engine remains operational, minimizing system disruptions.

Device security

Device integrity is ensured 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 much smaller in comparison to the NAE. This smaller size 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 ease in installation and servicing.

Support for different site directors

The SNE communicates with a wide variety of Site Directors, which include the Application and Data Server (ADS), Extended Application and Data Server (ADX), Open Application Server (OAS), and Open Data Server (ODS). 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, OPC Unified Architecture (UA), and other third-party protocols.

No battery

The SNE 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 SNE can maintain the real time clock for up to 72 hours during AC power loss.

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SNE capabilities

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
BACnet MS/TP maximum devices per trunk (with 3rd party)	64	64	32	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

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Table 1: SNE series network engine details

Features	SNE22000 SNE22001	SNE11000 SNE11001	SNE10500 SNE10501	SNE110L0 SNE110L1[1]
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)			

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Table 1: SNE series network engine details

Features	SNE22000 SNE22001	SNE11000 SNE11001	SNE10500 SNE10501	SNE110L0 SNE110L1[1]
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.

Repair information

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

Ordering Information for SNE models

The SNE 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.

Table 2: 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.

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Accessories ordering information

Table 3: 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.

Third-party integration accessory ordering information

Table 4: Modbus accessories ordering information

Product code number	Description
IU-9100-8401 (Europe)	RS232-to-RS485 converter, 230 VAC
IU-9100-8404 (Europe) or BM485-CIP (North America)	RS232-to-RS485 converter, 24 VAC
ⓘ **Note:** For the European market, order this accessory in AOMS from the Johnson Controls Essen Distribution Center. For the North American market, order this accessory from duTec (http://www.interfaceconverter.com or 1-800-248-1632); specify vendor #290904.	

Table 5: 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

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Table 5: M-Bus accessories ordering information

Product Code Number	Description
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 6: 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.	

Technical Specifications

Table 7: 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

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Table 7: SNE2200x network engine

Specification	Description
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)
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.

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Table 7: SNE2200x network engine

Specification	Description
	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 8: 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

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Table 8: SNE1100x, SNE1050x, and SNE110Lx network engines

Specification	Description
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)
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

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.

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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.

Product warranty

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

Software terms

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

Patents

Patents: https://jcipat.com

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