Network Control Engine Catalog Page

MS-NCE25xx-x

Johnson Controls
www.johnsoncontrols.com

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Johnson Controls

Introduction

The *Metasys*® Network Control Engine (NCE) Series controllers provide a cost-effective solution designed for integrating central plants and large built-up air handlers into your existing *Metasys* networks.

These network control engines combine the network supervisor capabilities and IP network connectivity of a Network Automation Engine (NAE) with the I/O point connectivity and direct digital control capabilities of a Field Equipment Controller (FEC), making them the ideal choice for expanding and improving your *Metasys* installation for greater data visibility and control over your energy usage.

NCEs provide supervisory control of a specified field bus trunk with up to 32 field controllers. NCE25 Series controllers provide integration to many network protocols, including BACnet®/IP, BACnet MS/TP, N2 Bus, Modbus® RTU, Modbus TCP, M-Bus (EN 13757-3), KNX IP, and other third-party protocols. The MS-NCE2500-0 and MS-NCE2506-0 models, which are available in Europe only, do not provide a physical field controller trunk connection.

All NCE models feature 33 integral I/O points and a Sensor/Actuator (SA) Bus, which allow you to increase the NCE's I/O field point capacity and integrate NS Series Network Sensors, and VFDs into your NCE application.

Some NCE models feature an integral field controller display screen with a navigation keypad, allowing for easy modifications in the field.

Application documentation

Refer to the *Network Engines Product Bulletin (LIT-12012138)* for important product application information.

Repair information

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

Features and benefits

Use of commonly accepted IT standards at the automation and enterprise level

Allows you to install the network engine on the existing IT infrastructure within a building or enterprise and use standard IT communication services over the company intranet, WAN, or public Internet with firewall protection. Communication between the network engine and clients is encrypted with Hypertext Transfer Protocol Secure (https).

Web-based user interface

Allows you to access, monitor, and control the network engine from a supported web browser connected to the network.

Secure Linux® operating system

Provides a high level of protection from threats with the adoption of the Linux operating system, a full replacement of the recently expired Windows® CE operating system.

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

Supports connectivity to open network standards for complete flexibility in the selection of field devices. Supported protocols are model and software release dependent. They include BACnet MS/TP, BACnet/IP, N2 Bus, Modbus RTU, Modbus TCP, M-Bus (EN 13757-3), KNX IP, and other third-party protocols. Prior to *Metasys* system Release 9.0.7, only the Network

Integration Engines (NIE29s) provided the Modbus, M-Bus, and KNX integrations. At Release 9.0.7, these third-party integrations are included with all NCEs.

Multiple connection options for data access

Allow connection of a web browser through the IP network using the Ethernet port. At Release 9.0 or earlier, you can use the optional internal or external modem for a dial-up connection. Modem functions **are not** available for an NCE25 at Release 9.0.7.

Integral field controller with 33 I/O points

Provides field-level control of central plant and large air-handler applications combined with enterprise level IP network connectivity.

Expandable I/O point capacity, NS sensor connectivity, and VFD control on field controller SA Bus

Allow you to connect multiple IOMs, NS Series Network Sensors, and VFDs to the field controller SA Bus, which greatly expands the network engine's field level control capabilities.

No hardware to replace

Upgrade from Windows CE to Linux OS using a simple network download.

Point type counts

Table 1: Point type counts

Point type	Signals accepted	Count
Universal input	Analog Input, Voltage Mode, 0–10 VDC Analog Input, Current Mode, 4–20 mA Analog Input, Resistive Mode, 0–2k ohm, RTD (1k [Johnson Controls], 1k PT, A99B SI), NTC (10k Type L, 2.252k Type 2) Binary Input, Dry Contact Maintained Mode	10
Binary input	Dry Contact Maintained Mode Pulse Counter/ Accumulator Mode (High Speed), 100Hz	8
Configurable output	Analog Output, Voltage Mode, 0–10 VDC Binary Output Mode, 24 VAC Triac	4
Analog output	Analog Output, Voltage Mode, 0–10 VDC Analog Output, Current Mode 4–20 mA	4
Binary output	24 VAC Triac	7

Ordering information

Contact the nearest Johnson Controls representative to order an NCE25 or accessories. Specify the desired product code number using the following NCE ordering information tables.

Table 2: NCE25 Ordering Information (Releases 9.0 and 9.0.7 Only)

Product code number	Release	Description
MS-NCE25xx-x (Base Features on Each NCE25)	N/A	Each NCE25 Series model requires a 24 VAC power supply and includes one RS-232-C serial port, one RS-485 optically isolated SA Bus port, one USB serial port, one Ethernet port, and an MS-BAT1020-0 Data Protection Battery. Each NCE25 Series model has 33 integral I/O points and supports up to 128 additional I/O points on the SA Bus. Supports BACnet IP network.
MS-NCE2500-0 (Europe only)	9.0.7	Base features with no physical field controller trunk connection.
MS-NCE2506-0 (Europe only)	9.0.7	Base features with no physical field controller trunk connection. Includes integral display screen.
MS-NCE2510-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one N2 Bus. The number of supported devices on the third-party trunk depends on the protocol. For the N2 Bus, up to 32 devices are supported.
MS-NCE2511-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one N2 Bus. The number of supported devices on the third-party trunk depends on the protocol. For the N2 Bus, up to 32 devices are supported. Includes internal modem. ⓘ **Note:** Modem functions are no longer available after this engine is updated with *Metasys* Release 9.0.7 or later.
MS-NCE2516-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one N2 Bus. The number of supported devices on the third-party trunk depends on the protocol. For the N2 Bus, up to 32 devices are supported. Includes integral display screen.
MS-NCE2517-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one N2 Bus. The number of supported devices on the third-party trunk depends on the protocol. For the N2 Bus, up to 32 devices are supported. Includes integral display screen and internal modem. ⓘ **Note:** Modem functions are no longer available after this engine is updated with *Metasys* Release 9.0.7 or later.
MS-NCE2520-0	9.0	Supports one LonWorks trunk with up to 32 LonWorks devices.
MS-NCE2521-0	9.0	Supports one LonWorks trunk with up to 32 LonWorks devices. Includes internal modem.
MS-NCE2526-0	9.0	Supports one LonWorks trunk with up to 32 LonWorks devices. Includes integral display screen.
MS-NCE2527-0	9.0	Supports one LonWorks trunk with up to 32 LonWorks devices. Includes integral display screen and internal modem.
MS-NCE2560-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one MS/TP Bus. The number of supported devices on the third-party trunk depends on the protocol. For the MS/TP bus, up to 32 devices are supported.

Table 2: NCE25 Ordering Information (Releases 9.0 and 9.0.7 Only)

Product code number	Release	Description
MS-NCE2561-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one MS/TP Bus. The number of supported devices on the third-party trunk depends on the protocol. For the MS/TP bus, up to 32 devices are supported. Includes internal modem. ⓘ **Note:** Modem functions are no longer available after this engine is updated with *Metasys* Release 9.0.7 or later.
MS-NCE2566-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one MS/TP Bus. The number of supported devices on the third-party trunk depends on the protocol. For the MS/TP bus, up to 32 devices are supported. Includes integral display screen.
MS-NCE2567-0	9.0.7	Supports two third-party trunks (Modbus RTU or TCP, M-Bus, or KNX) and one MS/TP Bus. The number of supported devices on the third-party trunk depends on the protocol. For the MS/TP bus, up to 32 devices are supported. Includes integral display screen and internal modem. ⓘ **Note:** Modem functions are no longer available after this engine is updated with *Metasys* Release 9.0.7 or later.

Table 3: NCE25 accessories ordering information

Product Code Number	Description
MS-BAT1020-0	Replacement data protection battery for the NCE25. Rechargeable NiMH battery: 3.6 V 500 mAh, with a typical life of 5 to 7 years at 21°C (70°F)
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.
MS-DIS1710-0	Local Controller Display connects to NCE on SA Bus and provides menu display and navigation keypad for monitoring status and controlling parameters on the NCE's integral field controller. ⓘ **Note:** A DIS1710 display does not operate on NCE models that have an integral controller display.
AS-XFR100-1	Power transformer (Class 2, 24 VAC, 92 VA maximum output), with enclosure
AS-XFR010-1	Power transformer (Class 2, 24 VAC, 92 VA maximum output), no enclosure
MS-EXPORT-0	*Metasys* Export Utility, which extracts historical trend, alarm, and audit data from the system and presents the historical data in a variety of formats. ⓘ **Note:** This option is not necessary for sites that have an ADS/ADX as the Site Director because it is provided with the ADS/ADX solution.

Technical specifications

Table 4: NCE25

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	25 VA maximum for NCE25 only ⓘ **Note:** The 25 VA rating does **not** include any power supplied by the NCE to devices connected at the NCE BOs. BO devices connected to and powered by an NCE can require an additional 125 VA (maximum).
Power Source	+15 VDC power source terminals provide 100 mA total current; quantity of inputs: five, located in Universal IN terminals; for active (3-wire) input devices
Ambient Operating Conditions	0°C to 50°C (32°F to 122°F), 10 to 90% RH, 30°C (86°F) maximum dew point
Ambient Storage Conditions	-40°C to 70°C (-40°F to 158°F), 5% to 95% RH, 30°C (86°F) maximum dew point
Data Protection Battery	Supports data protection on power failure. Rechargeable NiMH battery: 3.6 VDC 500 mAh, with a typical life of 5 to 7 years at 21°C (70°F); Product Code Number: MS-BAT1020-0
Processors	**Supervisory Controller:** 192 MHz Renesas SH4 7760 RISC processor **Field Controller:** 20 MHz Renesas H8S2398 processor
Memory	**Supervisory Controller:** 128 MB flash nonvolatile memory for operating system, configuration data, and operations data storage and backup and 128 MB SDRAM for operations data dynamic memory **Field Controller:** 1 MB flash memory and 1 MB RAM
Operating System	Microsoft® Windows Embedded CE 6.0 (Release 9.0) Buildroot 2017.08.2 with Linux kernel 14.4 (Release 9.0.7)

Table 4: NCE25

Network and Serial Interfaces (Depending on the NCE model.)	• One Ethernet port; 10/100 Mbps; 8-pin RJ-45 connector • One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE25 models) • One optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 models that support an N2 Bus or MS/TP bus trunk) • One LonWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that support a LonWorks Network trunk). The LonWorks models are supported to run the *Metasys* Release 9.0 software, **but not the Release 9.0.7 update.** • One RS-232-C serial port with a standard 9-pin sub-D connector that supports standard baud rates • One USB serial port with a standard USB connector that supports an optional, user-supplied external modem. Modem functions are available with *Metasys* Release 9.0, but **are not** available after the NCE is updated with Release 9.0.7. • Option: One telephone port for the internal modem; up to 56 Kbps; 6-pin modular connector (NCE models with an optional internal modem have one RS-232-C serial port only; not supported for an engine with Release 9.0.7).
Analog Input/Analog Output Point Resolution	• Analog Input Points: 16-bit resolution • Analog Output Points: 16-bit resolution and ±200 mV accuracy on 0-10 VDC applications
Input/Output Capabilities	• 10-Universal Inputs: Defined as 0–10 VDC, 4–20 mA, 0–600k ohm, or Binary Dry Contact • 8-Binary Inputs: Defined as Dry Contact Maintained or Pulse/ Accumulator Mode • 4-Analog Outputs: Defined as 0–10 VDC or 4–20 mA • 7-Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power) • 4-Configurable Outputs: Defined as 0–10 VDC or 24 VAC Triac BO
Dimensions (Height x Width x Depth)	155 mm x 270 mm x 64 mm (6.1 in. x 10.6 in. x 2.5 in.), minimum mounting space required: 250 mm x 370 mm x 110 mm (9.8 in. x 14.6 in. x 4.3 in.)
Housing	Plastic housing Plastic material: ABS and polycarbonate Protection: IP20 (IEC60529)
Mounting	On a flat surface with screws, on three mounting clips, or a single 35 mm DIN rail
Shipping Weight	1.2 kg (2.7 lb)
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

Table 4: NCE25

CE	**Europe:** CE Mark - 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 135-2010 Listed B-BC at *Metasys* system Release 8.1

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 shall not be liable for damages resulting from misapplication or misuse of its products.

North American emissions compliance

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.

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.

Points of single contact

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