Metasys®

NAE

Network Automation Engine

Network Automation Engines (NAEs) enable Internet Protocol (IP) connectivity and web-based access to Metasys Building Management Systems (BMSs).

NAEs leverage standard building management communication technologies, including BACnet® protocol, LonWorks® network, and N2 Bus protocol to monitor and supervise a wide variety of Heating, Ventilating and Air Conditioning (HVAC); lighting, security, fire and access control equipment.

NAEs provide comprehensive equipment monitoring and control, scheduling, alarm and event management, energy management, data exchange, data trending and data storage.

NAEs feature an embedded site management portal user interface, support multiple concurrent web browser sessions with password and permission access control and provide the protection of industry standard Information Technology (IT) security.

NAE55 models support a comprehensive set of supervisory features and functions for large facilities and technically advanced buildings and complexes.

The NAE35/NAE45 models enable cost-effective NAE connectivity and control in smaller facilities, and can extend NAE supervisory functions in larger facilities.

The NAE85 is a high-capacity NAE that allows integration of large BACnet IP systems and can take the place of multiple NAEs.

NAE55 Network Automation Engine

NAE45 Network Automation Engine

Features

- Communication using commonly accepted IT standards at the automation and enterprise level
- Web-based user interface
- Site director function
- Support for web services at the automation network level
- User interface and online system configuration software embedded in NAE
- Supervision of field controller networks including BACnet MS/TP, N2 Bus, LonWorks Network and BACnet IP Devices
- Multiple connection options for data access

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NAE35

Ordering Codes	Description
MS-NAE35xx-xxx (Base Features of Each NAE35)	NAE35 Network Automation Engines: Requires a 24 VAC power supply. Each model includes one RS-232-C serial port, one USB serial port, one Ethernet port, and an MS-BAT1020-0 data protection battery.
MS-NAE3510-2	Supports one N2 or BACnet MS/TP (RS-485) trunk; includes an additional RS-232-C serial port for optional external modem; supports up to 50 devices on the N2 or BACnet MS/TP trunk.
MS-NAE3511-2	Supports one N2 or BACnet MS/TP (RS-485) trunk (RS-485 port); includes an internal modem; supports up to 50 devices on the N2 or BACnet MS/TP trunk.
MS-NAE3514-2	Supports one N2 or BACnet MS/TP (RS-485) trunk; features basic access support; includes an additional RS-232-C serial port for optional external modem; supports up to 50 devices on the N2 or BACnet MS/TP trunk.
MS-NAE3515-2	Supports one N2 or BACnet MS/TP (RS-485) trunk; features basic access support; includes an internal modem; supports up to 50 devices on the N2 or BACnet MS/TP trunk.
MS-NAE3520-2	Supports one LonWorks trunk, includes an additional RS-232-C serial port for optional external modem. Supports up to 64 devices on the LonWorks port.
MS-NAE3521-2	Supports one LonWorks trunk, includes an internal modem. Supports up to 64 devices on the LonWorks port.
MS-NAE3524-2	Supports one LonWorks trunk, features Basic Access support, and includes an additional RS-232-C serial port for optional external modem. Supports up to 64 devices on the LonWorks trunks.
MS-NAE3525-2	Supports one LonWorks trunk, features Basic Access support, and includes an internal modem. Supports up to 64 devices on the LonWorks trunks.

NAE45

Ordering Codes	Description
MS-NAE45xx-xxx (Base Features of Each NAE45)	NAE45 Network Automation Engines: Requires a 24 VAC power supply. Each model includes one RS-232-C serial port, one USB serial port, one Ethernet port, and an MS-BAT1020-0 data protection battery.
MS-NAE4510-2	Supports one N2 or BACnet MS/TP (RS-485) trunk; includes an additional RS-232-C serial port for optional external modem; supports up to 100 devices on the N2 or BACnet MS/TP trunk.
MS-NAE4511-2	Supports one N2 or BACnet MS/TP (RS-485) trunk; includes an internal modem; supports up to 100 devices on the N2 or BACnet MS/TP trunk.
MS-NAE4520-2	Supports one LonWorks trunk, includes an additional RS-232-C serial port for optional external modem; supports up to 127 devices on the LonWorks port.
MS-NAE4521-2	Supports one LonWorks trunk, includes an internal modem; supports up to 127 devices on the LonWorks port.

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NAE55

Ordering Codes	Description
MS-NAE55xx-x (Base Features of Each NAE55)	NAE55 Network Automation Engines: Requires a 24 VAC power supply. Each model includes two RS-232-C serial ports, two USB serial ports, two RS-485 ports, one Ethernet port and one MS-BAT1010-0 Data Protection Battery. Supports up to 100 devices on each N2 or BACnet MS/TP trunk.
MS-NAE5510-2E	Supports two N2 or two BACnet MS/TP (RS-485) trunks (or one N2 trunk and one BACnet MS/TP trunk).
MS-NAE5511-2E	Supports two N2 or two BACnet MS/TP (RS-485) trunks (or one N2 trunk and one BACnet MS/TP trunk); includes an internal modem.
MS-NAE5520-2E	Supports a LONWORKS trunk, and two N2 trunks or two BACnet MS/TP (RS-485) trunks (or one N2 trunk and one BACnet MS/TP trunk). Supports up to 255 devices on the LONWORKS trunk.
MS-NAE5521-2E	Supports a LONWORKS trunk, and two N2 trunks or two BACnet MS/TP (RS-485) trunks (or one N2 trunk and one BACnet MS/TP trunk); includes an internal modem. Supports up to 255 devices on the LONWORKS trunk.

NAE85

Ordering Codes	Description
MS-NIE8500-0 *	NxE85 model with 1U chassis for mounting in a server rack. **Note:** The NAE85 models ship as MS-NIE8500-0 models. Use the ChangeModel utility in the NxE85 Metasys software to change an NIE85 to an NAE85.
MS-NxE85SW-0	NxE85 software for 10,000 objects (new projects only software).

Note
* Standard NxE85 models supports 10,000 objects; an upgrade is available to support an additional 15,000 objects.

Accessories

Ordering Codes	Description
MS-BAT1010-0	Replacement data protection battery for NAE55 and NIE55. Rechargeable gel cell battery: 12 V, 1.2 Ah, with a typical life of 3 to 5 years at 21°C (70°F)
MS-BAT1020-0	Replacement data protection battery for NAE35, NAE45, and NCE25. Rechargeable NiMH battery: 3.6 V 500 mAh, with a typical life of 10 years at 21°C (70°F)
MS-15KUPG-0	15,000 object upgrade for NxE85
MS-MULTENGSW-6	Network Engine Image Upgrade for all NAE/NIE/NCE Engines on a Site, Excluding NxE85
MS-EXPORT-0	Export Utility 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 that is the Site Director because Export Utility is provided with the ADS/ADX solution.
SC450RM1U (OEM Part No.)	Recommended Uninterruptable Power Supply (UPS) for NxE85 model: American Power Conversion (APC®) Smart-UPS SC 450VA, 280 W 120 VAC input/output with NEMA 5-15R output connections

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NAE35 and NAE45 - Technical Specification

Power Requirement	Dedicated nominal 24 VAC, Class 2 power supply (North America), Safety Extra- Low Voltage (SELV) power supply (Europe), at 50/60 Hz (20 VAC minimum to 30 VAC maximum)
Power Consumption	25 VA maximum
Ambient Operating Conditions	0 to 50°C; 10 to 90% RH, 30°C maximum dew point
Ambient Storage Conditions	–40 to 70°C; 5 to 95% RH, 30°C maximum dew point
Data Protection	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; Product Code Number: MS-BAT1020-0
Processor	192 MHz Renesas™ SH4 7760 RISC processor
Memory	128 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 128 MB Synchronous Dynamic Random Access Memory (SDRAM) for operations data dynamic memory
Operating System	Microsoft® Windows® CE embedded
Network and Serial Interfaces	One Ethernet port; connects at 10 or 100 Mbps; 8-pin RJ-45 connector One optically isolated RS-485 port; 9.6k, 19.2k, 38.4k, or 76.8k baud (depending on protocol); with a pluggable and keyed 4-position terminal block (FC Bus available on NAE351x and NAE451x models only) One LonWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (LonWorks port available on NAE352x-x and NAE452x models only) One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates. A second serial port, on models without an internal modem, that supports an optional, user-supplied external modem. One USB serial port with standard USB connector that supports an optional, user-supplied external modem. Option: One telephone port for internal modem; up to 56 Kbps; 6-pin modular connector (NAE models with an optional internal modem have one RS-232-C serial port only.)
Housing	
Plastic Housing Material	ABS + polycarbonate UL94-5VB
Protection	IP20 (IEC 60529)
Mounting	On flat surface with screws on three mounting clips or a single 35 mm DIN rail
Dimensions (H x W x D)	131 x 270 x 62 mm Minimum space for mounting NAE35 and NAE45: 210 x 350 x 110 mm
Shipping Weight	1.2 kg
Compliance	
United States	UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment UL Listed, FIle S4977, UUKL 864 - 9th Edition, Smoke Control Equipment (MS-NAE3510-2U and MS-NAE4510-2U models only); 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
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 2004/108/EC.
Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
BACnet International	BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Building Controller (B-BC)

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NAE55xx-2 - Technical Specification

Power Requirement	Dedicated nominal 24 VAC, Class 2 power supply (North America), Safety Extra-Low Voltage (SELV) power supply (Europe), at 50/60 Hz (20 VAC minimum to 30 VAC maximum)
Power Consumption	50 VA maximum
Ambient Operating Conditions	0 to 50°C; 10 to 90% RH, 30°C maximum dew point
Ambient Storage Conditions	–40 to 70°C; 5 to 95% RH, 30°C maximum dew point
Data Protection Battery	Supports data protection on power failure. Rechargeable gel cell battery: 12 V, 1.2 Ah with a typical life of 3 to 5 years at 21°C; Product Code Number: MS-BAT1010-0
Clock Battery	Maintains real-time clock through a power failure. Onboard cell; typical life 10 years at 21°C
Processor	1.6 GHz Intel® AtomTM processor
Memory	4 GB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup 1 GB Synchronous Dynamic Random Access Memory (SDRAM) for operations data dynamic memory for all models
Operating System	Microsoft® Windows® Embedded Standard (WES) 2009
Network and Serial Interfaces	One Ethernet port; connects at 10/100 Mbps; 8-pin RJ-45 connector Two optically isolated RS-485 ports; 9.6k, 19.2k, 38.4k, or 76.8k baud; pluggable and keyed 4 position terminal blocks Two RS-232-C serial ports, with standard 9-pin sub-D connectors, that support all standard baud rates Two USB serial ports; standard USB connectors support an optional, user-supplied external modem Options: One telephone port for internal modem; up to 56 Kbps; 6-pin modular connector One LonWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (LonWorks port available on NAE552x-x models only)
Housing	
Plastic Housing	With internal metal shield
Plastic Material	ABS + polycarbonate; Protection: IP20 (IEC 60529)
Mounting	On flat surface with screws on four mounting feet or on dual DIN rail
Dimensions (H x W x D)	226 x 332 x 96.5 mm including mounting feet Minimum space for mounting: 303 x 408 x 148 mm
Shipping Weight	2.9 kg
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
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 2004/108/EC.
Australia and New Zealand	C-Tick Mark, Australia/NZ Emissions Compliant
BACnet International	BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Building Controller (B-BC)

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NAE85 Software System Requirements for Installation/Upgrade

Product Code	**MS-NxE85SW-0**: NxE85 software for 10,000 objects (new projects only software)
Recommended Computer Platform	Intel Xeon®E5506, 2.13 GHz, 4 MB Cache 2 x 160 GB 7.2K , 8.9 cm (3.5 in.) Cabled 3 Gbps, RAID 1 configuration with add-in SAS6/iR (SATA/SAS Controller)
Hard Disk	160 GB minimum
Recommended Memory	2 GB RAM minimum
Supported Operating Systems (OS) and Software	**Windows Server® 2012 R2 Editions** Microsoft .NET Framework Version 3.5 Service Pack (SP) [1] **Windows Server 2012 Editions** Microsoft .NET Framework Version 3.5 SP **Windows Server 2008 R2 Standard and Enterprise Editions with SP1** Microsoft .NET Framework Version 3.5 SP **Windows Server 2008 R2 Web Edition with SP1** Microsoft .NET Framework Version 3.5 SP **Windows Server 2008 Standard and Enterprise Editions with SP2 (32-bit)** **Note:** Microsoft .NET Framework Version 3.5 SP 1 is required for each operating system.
Internal Optical Drive	DVD ROM, SATA
Supported Operating Systems for Metasys Client Computers	Windows 8.1 Pro and Windows 8.1 Enterprise Editions (64-bit) Windows 8 Pro and Windows 8 Enterprise Editions (64-bit) Windows 7 Professional, Enterprise, and Ultimate Editions with SP1 (32-bit or 64-bit) Apple® OS X® 10.8 Mountain Lion Apple OS X 10.9 Mavericks **Note:** Apple operating systems are supported for Metasys client computers only. **Note:** In Apple OS X, you cannot view Graphics+ graphics in the Site Management Portal UI.
Recommended Antivirus Software	Symantec Endpoint Protection Version 12
Supported Virtual Environments	Microsoft Hyper-V™, VMWare®
Network Communication	Network interface Single Ethernet network interface card 10/100/1000 Mbps (100 Mbps or better recommended)
Recommended Data Protection	Uninterruptible power supply (UPS) Smart-UPS SC 450VA, 280 W, 120 VAC input/output, NEMA 5-15R output connections, OEM Part No. SC450RM1U

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