Network Integration Engine (NIEx9) for 3rd Party Integrations
Product Bulletin
MS-NIE59xx-1E, MS-NIE49xx-2E
MS-NIE39xx-2E, MS-NIE29xx-0E

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Network Integration Engines (NIEx9s) for 3rd party integrations enable Internet Protocol (IP) connectivity and Web-based access to Metasys® Building Management Systems (BMSs).

NIEx9s leverage standard building management communication technologies, including BACnet® protocol, LONWORKS® network, and N2 Bus protocol, Modbus, M-Bus (EN 1434-3) and 3rd party proprietary protocols to monitor and supervise a wide variety of Heating, Ventilating, and Air Conditioning (HVAC); lighting; security; fire; electrical and thermal measuring and access control equipment.

NIEx9s provide comprehensive equipment monitoring and control, scheduling, alarm and event management, energy management, data exchange, data trending, and data storage.

NIEx9s 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.

NIE59 models support a comprehensive set of supervisory features and functions for large facilities and technically advanced buildings and complexes.

Figure 1: NIE59 Network Integration Engine

The NIE39/NIE49 models enable cost effective NIEx9 connectivity and control in smaller facilities, and can extend NIEx9 supervisory functions in larger facilities.

The NIE29 models enable compact and combined solution including supervisory and control capacity. It can be used in smaller facilities where an "all-in-one" (supervisory, control and integration) platform is required.

Table 1: Features and Benefits

Features	Benefits
Communication Using Commonly Accepted IT Standards at the Automation and Enterprise Level	Allows you to install a system on your existing IT infrastructure within a building or enterprise and use standard IT communication services over the company intranet, Wide Area Network (WAN), or public Internet with firewall protection.
Web-Based User Interface	Allows you to access system data in the NIEx9s from any supported Web browser device connected to the network including remote users connected by dial-up telephone or an Internet Service Provider (ISP).
Support for Web Services at the Automation Network Level	Allows you to develop facility-specific advanced data interfaces and applications.
User Interface and Online System Configuration Software embedded in NIE	Allows configuration, commissioning, data archiving, monitoring, commanding, and system diagnosis from any device with Web browser software and does not require separate workstation software.
Supervision of Field Controller Networks Including BACnet MS/TP, N2 Bus, LONWORKS Network, BACnet IP Devices, Modbus RTU, Modbus IP, M-Bus (EN 1434-3) and 3rd party protocols	Supports connectivity to open network standards for complete flexibility in the selection of field devices. Supported protocols include BACnet Master-Slave/Token-Passing (MS/TP), BACnet IP, LONWORKS, N2, Modbus RTU, Modbus IP, M-Bus (EN 1434-3) and 3rd party protocols.

NIEx9 Networking

NIEx9s have multiple connection port options that allow you to build an extremely flexible network at the automation and enterprise level of your system, as well as at the field controller and data acquisition levels.

Web Browser Access

You view building systems through the NIEx9 with a supported Web browser on a desktop or laptop computer. The computer does not require any special workstation software, just a supported browser and a standard Java® plug-in. The Web browser accesses the NIEx9 directly over the IP network, or via the Internet or public telephone service.

IP Ethernet Network

NIEx9s connect directly to IP Ethernet networks running at 10 or 100 Mbps. Authorized users log on to the Site Director via a supported browser to access the entire Metasys system for the site. Data transmission on the network uses standard IT protocols, services, and formats. Networks in different buildings may be interconnected using standard WAN technologies and network service providers. The speed of transmission depends on the technology used.

Remote NIE

The NIEx9 can be accessed remotely over standard WAN infrastructures, over the Internet using an ISP line, or over the public telephone network using a modem and Point-to-Point Protocol (PPP). Specified NIEx9 models offer an optional internal modem; most models support an external modem.

Application and Data Server (ADS)/ Extended Application and Data Server (ADX)

The ADS/ADX is an optional software package running on a computing platform that provides a location for storage of the system configuration database, trend logs, alarm logs, audit trails, and graphics.

An ADS/ADX can also be configured as the Site Director to allow more concurrent users and coordinate access to all components on a site via a Web browser connected over the network, Internet, or telephone line via dial-up communication. Refer to the *Application and Data Server Product Bulletin (LIT-1201525)* for more information about ADSs and ADXs.

Field Networks and Protocols

The NIEx9 communicates data from one field network to another and from the field network level to the enterprise and automation network level; enabling your system to operate as one virtual control network.

Automation Level Communication

NIEx9s communicate internal system data using peer-to-peer messaging over the IP Ethernet network.

Each NIEx9 shares data and has access to information on the other NIEx9s connected on the network, which enables coordination and control of the entire building management system.

BACnet Protocol

The automation level communication also supports the BACnet protocol and facilitates the network integration of other systems and devices that use BACnet. The Johnson Controls® N30 Supervisory Controller can also be integrated into the NIEx9 network at the automation level using BACnet services.

The NIEx9 supports the BACnet services and objects typically used by a workstation and a field controller device, including BACnet alarm and event services.

MS/TP Field Controller (FC) Bus

The BACnet MS/TP FC Bus is a standard peer-to-peer, multiple-master protocol in which each master device takes turns originating messages to pass to any device on the bus. NIEx9s can communicate via the MS/TP FC Bus with, the Metasys Field Equipment Controller family of controllers, including FEC16 and FEC26 field equipment controllers; VMA16 variable-air-volume controllers; and IOM17, IOM27, IOM37, and IOM47 input/output control modules. NIEx9s can also communicate over the FC Bus with TEC26xx Series thermostat controllers and third-party MS/TP devices that comply with the BACnet standard protocol based on American National Standards Institute/American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ANSI/ASHRAE) Standard 135-2004.
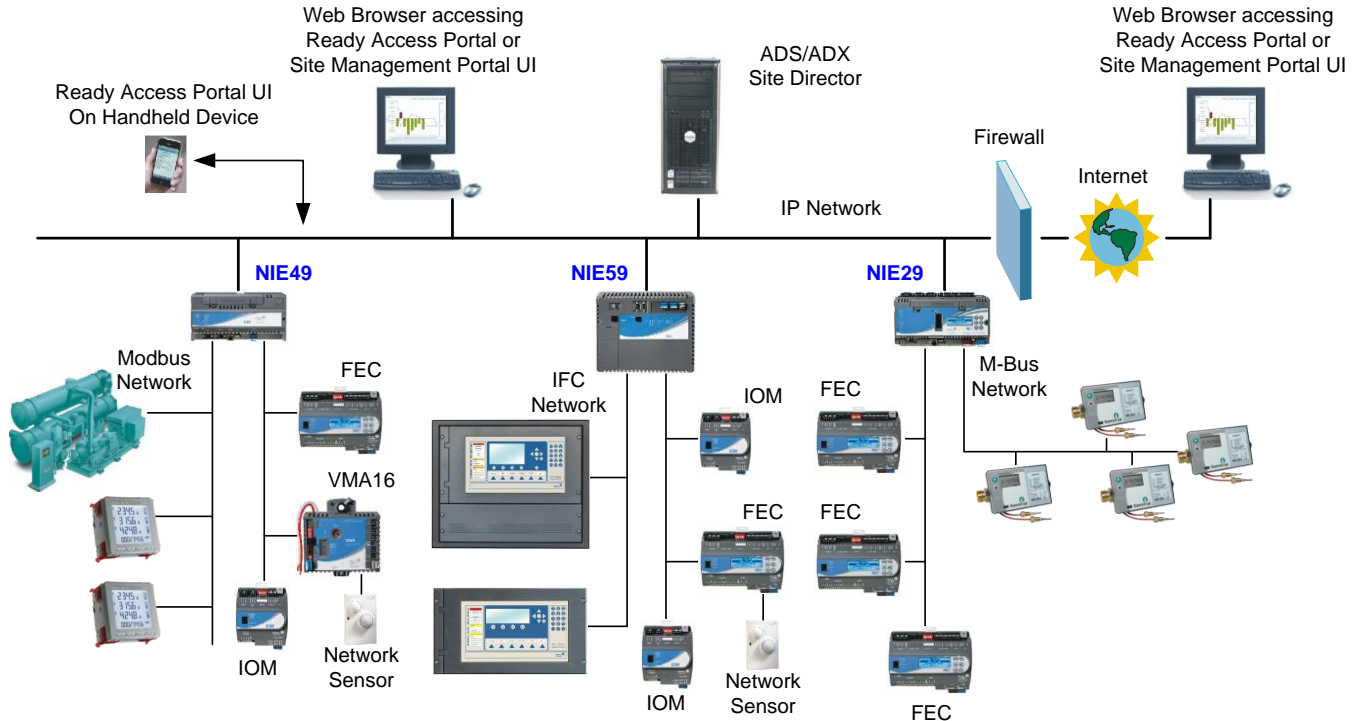
Figure 2: Metasys Network with Multiple NIEx9s

N2 Bus

The N2 Bus is an open Johnson Controls field communications trunk that links Application Specific Controllers (ASCs) and programmable controllers to a supervisory controller. ASCs include the Air Handling Unit (AHU) controller, Unitary (UNT) controller, VAV controllers, and VAV Modular Assembly devices. Programmable controllers include the DX9100. The N2 Bus supports Metasys system compatible devices from other manufacturers and the Metasys Integrator® system.

LONWORKS Bus

Specified NIEx9 models can supervise LONWORKS devices, if the network interface follows current LONMARK® guidelines, and uses the Free Topology Transceiver (FTT10). The LONWORKS network interface in specified NIEx9 models supports all current LONMARK certified devices including Johnson Controls devices, such as the LN Series Controllers, the NexSys® controller line, and the LONWORKS enabled programmable Flexible System Controller (FSC).

Modbus

Modbus is one of the most common master-slave communications protocol used in industry. It is openly published and royalty-free. It is relatively easy industrial network to deploy. It moves raw bits or words without placing many restrictions on vendors. NIEx9

supports both Modbus RTU (RS-485, RS-232) and Modbus IP connectivity.

M-Bus (EN 1434-3)

This European Standard applies to heat meters, that is to instruments intended for measuring the heat which, in a heat-exchange circuit, is absorbed or given up by a liquid called the energy-conveying liquid. The meter indicates heat in legal units. A level converter (i.e.: RS-232 / M-Bus) is necessary for this type of integration.

3rd Party Protocols

NIEx9 can supervise different networks that use other standard or proprietary protocols. The flexibility of the platform allows to integrate devices both on serial (RS-232, RS-485) and TCP/IP levels.

Software for Efficient Building Operation

NIEx9s ship with the latest version of the Metasys system software, which provides the following features:

- **Metasys Site Management Portal User Interface** provides data and graphic screens to supported Web browsers. Authorized users simply log on to the NIEx9 from the Web browser to access the Site Management Portal. This embedded user interface is ideal for smaller networks and remote locations where a dedicated computer platform to support a user interface is not required.

- **System Security** enables an NIEx9 to recognize legitimate users with valid user IDs and passwords at the Site Management Portal user interface. User access data is encrypted in the transmission and

- **Monitoring and Control** all the mechanical and electrical systems in a typical building by collecting data from the field devices and then coordinating and sending the required commands to the controlled equipment at the required priority

- **Global Search** allows you to search the Metasys system and manage lists of objects, which can be used by other features for commanding, trending, reporting, and object selection.

- **Global Command** allows you to send a single command to multiple objects, and view a log of the command results.

- **Transaction Recording** audits and logs all user actions performed through the NIE.

- **Alarm and Event Processing** enables NIEx9s to send alarm and event messages to Web browsers, pagers, e-mail servers, Network Management systems, and serial printers, as well as store and view alarm and event logs on the NIEx9 and transfer it to an ADS/ADX

- **Historical Trend Data** can be collected by NIEx9s for any monitored value at user-defined intervals, or trending can be based on Change-of-Value. You can use trend logs to analyze building system performance and locate system problems. NIEx9 trend logs can be transferred to the ADS/ADX at defined intervals or when the NIEx9 logs are full.

- **Totalization Data** allows you to monitor energy (and other consumables) use and generate cost reports to support utility cost reductions, and also provides data for service, maintenance, and early identification of building system problems.

- **Trend Studies** allows you to view multiple trend extensions in a single view to facilitate monitoring and troubleshooting your Metasys site.

- **Scheduling** allows you to define occupancy periods and start and stop times for mechanical or electrical equipment. Operating parameters can be set according to time of day, day/days of the week, holiday, or for calendar dates.

- **Network-Wide System Interlocking** enables NIEx9s to collect field controller data, make logical comparisons, and issue relevant commands to other field controllers anywhere on the network.

- **Optimal Start** automatically determines the best time to start heating and cooling systems to ensure that the facility is ready for occupants. It adjusts to seasonal variations and reduces energy use.

- **Demand Limit and Load Rolling** (DLLR) monitors energy meters for electricity, gas, steam, or water, and automatically sheds equipment loads according to user-defined levels. Demand Limit helps manage utility demand charges. Load Rolling controls equipment operating levels to reduce total energy consumption. Comfort overrides prioritize equipment shedding.

in the NIEx9 database. The system administrator manages user profiles, authorization levels, user ID, password, and specific NIEx9 data access privileges in each user account.

- **Database Configuration Management** allows you to define the Metasys system configuration and database offline for download to the NIE. All the required database configuration software resides on the NIEx9 or SCT. You do not need a copy of the database on your local client computer to make authorized changes.

Field Network Level Control (NIE29)

The NIE29 also features an integral Field Equipment Controller (FEC) that provides direct interface to and control of remote field equipment, such as large central cooling and heating plants, and large built-up air handler units.

The NIE29 has 33 onboard I/O control points and a SA Bus. The SA Bus allows you to connect Input/Output Modules (IOMs) and increase the I/O control points in your application.

You can also connect NS Series Network Sensors and supported VFDs to the SA Bus, and integrate state-of-the-art temperature control and motor speed control into your NIE29 application.

You define and configure the 33 I/O points on the NIE29 and the I/O points and devices on the NIE29 SA Bus in the Controller Configuration Tool (CCT) software.

The 33 onboard NIE29 I/O points include the following:

- **10 Universal Input** points, each point can be defined as either a Voltage Analog Input (0-10 VDC), a Current Analog Input (4-20 mA), a Resistive Analog Input, or a Dry Contact Binary Input

- **8 Binary Input** points, each point can be defined as either Dry Contact Maintained or Pulse Counter Mode (100 Hz high-speed)

- **4 Analog Output** points, each point can be defined as either a Voltage Analog Output (0-10 VDC) or a Current Analog Output (4-20 mA)

- **4 Configurable Output** points, each point can be defined as either a Voltage Analog Output (0-10 VDC) or a Binary Output (24 VAC Triac)

- **7 Binary Output** points (24 VAC Triac)

Hardware Features

NIE39, NIE49, and NIE59

Figure 3: NIE39/NIE49 Network Integration Engine

Depending on the model, a NIE39, NIE49 (Figure 3) and NIE59 (Figure 1) provide the following features for the building controls market:

- industrial Single Board Computer (SBC)
- nonvolatile solid-state Flash memory to store all programs and data
- standard Universal Serial Bus (USB) connections
- battery backup to save data from Dynamic Random Access Memory (DRAM) into Flash memory when power to the NAE is interrupted
- real-time clock with battery backup
- Light-Emitting Diodes (LEDs) to indicate power, communications, and fault, to allow easy servicing
- optional internal modem
- removable screw terminals for 24 VAC power and field network bus connections
- standard 9-pin sub-D connectors for RS-232-C serial ports
- RJ-11 telephone line connector for internal modem
- RJ-45 connector for Ethernet connection
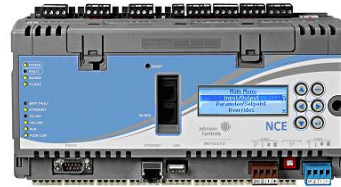
NIE29

Figure 4: NIE29 Network Integration Engine

The NIE29 (Figure 4) hardware platform features the following:

- multiple processors for supervisory and direct digital control
- nonvolatile solid-state Flash memory to store all programs and data
- standard Universal Serial Bus (USB) connection
- data protection battery to save data and power the real-time clock when primary power to the NIE29 is interrupted
- Light-Emitting Diodes (LEDs) to indicate power, communications, and device condition, to allow easy servicing
- removable, color-coded, screw terminal blocks for 24 VAC power, communications bus, and I/O point field wiring connections
- standard 9-pin sub-D connectors for RS-232-C serial port
- RJ-45 8-pin modular connector for Ethernet connection
- optional internal modem and RJ-12 6-pin telephone line connector (on specified models)
- integral display screen with navigation keypad (on specified models

NIEx9 Series Comparison

Table 2 contains a brief comparison of the features of the different NIEx9 Series engines. (Not all features are available on every model in a series.)

Table 2 : Comparison of Features for NIEx9 Models

Features	NIE59	NIE49	NIE39	NIE29
Number of N2 or BACnet MS/TP Trunks	1	1	1	1
Number of integration Trunks (i.e. Modbus)	1	1	1	1 (RS-232)
Maximum Number of N2 or MS/TP Devices per Trunk	100	100	50	32
Maximum Number of Modbus Devices per Trunk	100	100	50	32
Maximum Number of M-Bus Devices per Trunk	250	100	50	32
Maximum Number of Objects	5000	2500	2500	2500
Model with Internal Modem	No	No	No	No
RS-232-C Serial Ports	2	2	2	1
USB Serial Ports	1	1	1	1
RS-485 Ports	2	1	1	1
Ethernet Ports	1	1	1	1
LONWORKS Network Support (Number of Devices)	Available (255)	Available (127)	Available (64)	Available (64)

Conclusion

The NIEx9 affirms Johnson Controls position as a leader in the BMS industry and as an innovator of solutions for the complete management of buildings. The integration of Information Technology and Internet standards into the NIEx9 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.

The Metasys Network Integration Engine and Metasys Web-enabled network are wise investments that yield returns to the building owner and operator far into the future.

Ordering Information

Contact the nearest Johnson Controls representative to order an NIE. Specify the desired product code from Table 3 for the NIE29, Table 4 for the NIE39, Table 5 for the NIE49, Table 6 for the NIE59 and Table 7 for accessories.

Systems Integration Services

For a list of standard integrations and drivers, please check the Systems Integration Services intranet web page.

In case of custom integration request, please contact your Systems Integration Services office related to your area.

Availability

The Network Integration Engines (NIEx9s) for 3rd party integrations solution is valid only for Europe and Asia.

Table 3: NIE29 Ordering Information

Product Code Number	Description
MS-NIE29xx-x (Base Features of each NIE29)	NIE29 Network Integration Engines: 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 NIE29 Series model has 33 integral I/O points and supports up to 128 additional I/O points on the SA Bus. NOTE: Only one port can be defined for 3rd party integration. The other ports have to be defined in order to use standard protocols (N2, BACnet or LON)
MS-NIE2910-0E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one N2 Bus trunk with up to 32 N2 devices.
MS-NIE2916-0E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one N2 Bus trunk with up to 32 N2 devices. Includes integral display screen
MS-NIE2920-0E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one LONWORKS Network trunk with up to 32 LONWORKS devices.
MS-NIE2926-0E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one LONWORKS Network trunk with up to 32 LONWORKS devices. Includes integral display screen
MS-NIE2960-0E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one FC Bus trunk with up to 32 MS/TP devices.
MS-NIE2966-0E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one FC Bus trunk with up to 32 MS/TP devices. Includes integral display screen

Table 4: NIE39 Ordering Information

Product Code Number	Description
MS-NIE39xx-x (Base Features of each NIE39)	NIE39 Network Integration Engines: Requires a 24 VAC power supply. Each model includes two RS-232-C serial port, one USB serial port, one Ethernet port, and an MS-BAT1020-0 Data Protection Battery. NOTE: Only one port can be defined for 3rd party integration. The other ports have to be defined in order to use standard protocols (N2, BACnet or LON)
MS-NIE3910-2E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports up to 50 devices on the N2 or BACnet MS/TP trunk.
MS-NIE3920-2E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one LONWORKS Network trunk with up to 64 LONWORKS devices.

Table 5: NIE49 Ordering Information

Product Code Number	Description
MS-NIE49xx-x (Base features of each NIE49)	NIE49 Network Integration Engines: Requires a 24 VAC power supply. Each model includes two RS-232-C serial port, one USB serial port, one Ethernet port, and an MS-BAT1020-0 Data Protection Battery. NOTE: Only one port can be defined for 3rd party integration. The other ports have to be defined in order to use standard protocols (N2, BACnet or LON)
MS-NIE4910-2E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports up to 100 devices on the N2 or BACnet MS/TP trunk.
MS-NIE4920-2E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports one LONWORKS Network trunk with up to 128 LONWORKS devices.

Table 6: NIE59 Ordering Information

Product Code Number	Description
MS-NIE59xx-x (Base features of each NIE59)	NIE59 Network Integration 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. NOTE: Only one port can be defined for 3rd party integration. The other ports have to be defined in order to use standard protocols (N2, BACnet or LON)
MS-NIE5960-1E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports up to 100 devices on the N2 or BACnet MS/TP trunk.
MS-NIE5920-1E	Supports one 3rd party trunk (RS-232 or Ethernet TCP/IP). The number of devices depends on protocol. Supports up to 100 devices on the N2 or BACnet MS/TP trunk and one LONWORKS Network trunk with up to 255 LONWORKS devices.

Table 7: NIEx9 Accessories Ordering Information

Product Code Number	Description
MS-BAT1010-0	Replacement data protection battery for NIE59. 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 NIE29, NIE39, and NIE49. Rechargeable NiMH battery: 3.6 V 500 mAh, with a typical life of 10 years at 21°C (70°F)

Technical Specifications

NIE29

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 Note: The 25 VA rating does **not** include any power supplied by the NIEx9 to devices connected at the NIEx9 Binary Outputs (BOs). BO devices connected to and powered by an NIEx9 can require an additional 125 VA (maximum).
Ambient Operating Conditions	0 to 50°C (32 to 122°F); 10 to 90% RH, 30°C (86°F) maximum dew point
Ambient Storage Conditions	-40 to 70°C (-40 to 158°F); 5 to 95% RH, 30°C (86°F) 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 (70°F); 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 (DRAM) for operations data dynamic memory
Operating System	Microsoft® Windows® CE embedded
Network and Serial Interfaces	One Ethernet port; 10/100 MB; 8-pin RJ-45 connector One optically isolated RS-485 port SA Bus; with a pluggable and keyed 4-position terminal block (on all NIE29 models) One optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (available on NIE2910, NIE2916, NIE2960 and NIE2966 models only) One LONWORKS port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (available on NIE2920 and NIE2926 models only) One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates: 9600, 19.2k, 38.4k, or 76.8k baud; with pluggable keyed 4-position terminal block One USB serial port with standard USB connector
Housing	Plastic housing Plastic material: ABS and polycarbonate Protection: IP20 (IEC60529)
Mounting	On flat surface with screws on three mounting clips or a single 35 mm DIN rail
Dimensions (Height x Width x Depth)	155 x 270 x 64 mm (6.1 x 10.6 x 2.5 in.) Minimum mounting space required: 250 x 370 x 110 mm (9.8 x 14.6 x 4.3 in.)
Shipping Weight	1.2 kg (2.7 lb)
Compliance	**Europe:** CE Mark, EMC Directive 2004/108/EEC, in accordance with EN 61000-6-3 Generic Emission Standard for Residential and Light Industry and EN 61000-6-2 Generic Immunity Standard for Heavy Industrial Environment
	BACnet International: BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Building Controller (B-BC)

NIE39 and NIE49

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 (32 to 122°F); 10 to 90% RH, 30°C (86°F) maximum dew point
Ambient Storage Conditions	-40 to 70°C (-40 to 158°F); 5 to 95% RH, 30°C (86°F) 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 (70°F); 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 (DRAM) for operations data dynamic memory
Operating System	Microsoft® Windows® CE embedded
Network and Serial Interfaces	One Ethernet port; 10/100 Mbps; 8-pin RJ-45 connector One optically isolated RS-485 port; 9600, 19.2k, 38.4k, or 76.8k baud (depending on protocol); with a pluggable and keyed 4-position terminal block (available on NIE3901 and NIE4901 models only) One LONWORKS port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (available on NIIE3920 and NAE4920 models only) Two RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates: 9600, 19.2k, 38.4k, or 76.8k baud; with pluggable keyed 4-position terminal block (1 for Modbus RTU Bus and 1 for a diagnostic port) One USB serial port with standard USB connector that supports an optional, user-supplied external modem.
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 (Height x Width x Depth)	131 x 270 x 62 mm (5.2 x 10.6 x 2.5 in.) Minimum space for mounting: 210 x 350 x 110 mm (8.3 x 13.8 x 4.3 in.)
Shipping Weight	1.2 kg (2.7 lb)
Compliance	**Europe:** CE Mark, EMC Directive 2004/108/EC, in accordance with EN 61000-6-3 Generic Emission Standard for Residential and Light Industry and EN 61000-6-2 Generic Immunity Standard for Heavy Industrial Environment
	BACnet International: BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Building Controller (B-BC)

NIE59

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 (32 to 122°F); 10 to 90% RH, 30°C (86°F) maximum dew point
Ambient Storage Conditions	-40 to 70°C (-40 to 158°F); 5 to 95% RH, 30°C (86°F) maximum dew point
Data Protection	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 (70°F); 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 (70°F)
Processor	400 MHz Geode GX533
Memory	512 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup. 256 MB Synchronous Dynamic Random Access Memory (DRAM) for operations data dynamic memory.
Operating System	Microsoft Windows XP® embedded
Network and Serial Interfaces	One Ethernet port; 10/100 Mb; 8-pin RJ-45 connector (Metasys communications & Modbus TCP Bus) Two optically isolated RS-485 ports; 9600, 19.2K, or 38.4K baud; pluggable and keyed 4 position terminal blocks Two RS-232-C serial ports, with standard 9-pin sub-D connector, that support all standard baud rates (one available to be used as 3rd party connection or diagnostic port) One LONWORKS port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (available on NIIE5920 model only) Two USB serial ports, standard USB connectors, one operating as a diagnostic logging port.
Housing	Plastic housing with internal metal shield Plastic material: ABS + polycarbonate UL94-5VB Protection: IP20 (IEC 60529)
Mounting	On flat surface with screws on four mounting feet or on dual DIN rail
Dimensions (Height x Width x Depth)	226 x 332 x 96.5 mm (8.9 x 13.1 x 3.8 in.) including mounting feet Minimum space for mounting: 303 x 408 x 148 mm (12.0 x 16.1 x 5.8 in.)
Shipping Weight	2.9 kg (6.4 lb)
Compliance	**Europe:** CE Mark, EMC Directive 2004/108/EC, in accordance with EN 61000-6-3 Generic Emission Standard for Residential and Light Industry and EN 61000-6-2 Generic Immunity Standard for Heavy Industrial Environment
	BACnet International: BACnet Testing Laboratories™ (BTL) 135-2004 Listed BACnet Building Controller (B-BC)

The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.