# **Network Control Engine Catalog Page**

MS-NCE25xx-x

# Code No. LIT-1900455 Software Release 7.0 Issued December 5, 2014

Refer to the QuickLIT Web site for the most up-to-date version of this document.

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.

Network Control Engines (NCEs) provide supervisory control of a specified field bus trunk with up to 32 field controllers. Depending on the model, an NCE supports either a BACnet® Master-Slave/Token-Passing (MS/TP) trunk, an N2 Bus trunk, or a LonWorks® network trunk. Available in Europe only are the MS-NCE2000-0 and MS-NCE2506-0 models, which 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 also integrate NS Series Network Sensors and variable-frequency drives (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. In addition, some NCE models feature an internal modem that supports standard dial-up capabilities when traditional IT networks are not available.

Refer to the *Network Control Engine Product Bulletin (LIT-12011283)* for important product application information.

## Features

- Use of Commonly Accepted IT Standards at the Automation and Enterprise Level
- Web-Based User Interface
- Supervision of Either an N2 Bus, LonWorks Network, or BACnet MS/TP Bus Field Controller Trunk
- Multiple Connection Options for Data Access
- Integral Field Controller with 33 I/O Points
- Expandable I/O Point Capacity, NS Sensor Connectivity, and VFD Control on Field Controller SA Bus

## Figure 1: NCE25 Network Control Engine



Table 1:	NCE	Point	Туре	Counts
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Point Type	Signals Accepted	Count
Universal Input	Analog Input Voltage Mode, 0-10 VDC	10
	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	
Binary Input	Dry Contact Maintained Mode	8
	Pulse Counter/ Accumulator Mode (High Speed), 100Hz	
Analog Output	Analog Output, Voltage Mode, 0-10 VDC	4
	Analog Output, Current Mode 4-20 mA	
Binary Output	24 VAC Triac	7
Configurable Output	Analog Output, Voltage Mode, 0-10 VDC	4
	Binary Output Mode, 24 VAC Triac	

# **Ordering Information**

Contact the nearest Johnson Controls® representative to order an NCE or accessories. Specify the desired product code number using *Table 2* and *Table 3*.



## Table 2: NCE Model Ordering Information

Product Code Number <sup>1</sup>	Description
MS-NCE25xx-x (Base Features on Each NCE25)	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.
MS-NCE2500-0 <sup>2</sup>	Base features with no physical field controller trunk connection.
MS-NCE2506-0 <sup>2</sup>	Base features with no physical field controller trunk connection. Includes integral display screen.
MS-NCE2510-0	Supports one N2 Bus trunk with up to 32 N2 devices.
MS-NCE2511-0	Supports one N2 Bus trunk with up to 32 N2 devices. Includes internal modem.
MS-NCE2516-0	Supports one N2 Bus trunk with up to 32 N2 devices. Includes integral display screen.
MS-NCE2517-0	Supports one N2 Bus trunk with up to 32 N2 devices. Includes integral display screen and internal modem.
MS-NCE2520-0	Supports one LonWorks network trunk with up to 32 LonWorks devices.
MS-NCE2521-0	Supports one LONWORKS network trunk with up to 32 LONWORKS devices. Includes internal modem.
MS-NCE2526-0	Supports one LonWorks network trunk with up to 32 LonWorks devices. Includes integral display screen.
MS-NCE2527-0	Supports one LonWorks network trunk with up to 32 LonWorks devices. Includes integral display screen and internal modem.
MS-NCE2560-0	Supports one Master-Slave/Token-Passing (MS/TP) Bus trunk with up to 32 MS/TP devices.
MS-NCE2560-0U	Supports one MS/TP Bus trunk with up to 32 MS/TP devices.
	Note: This model is UL listed, File S4977, UUKL 864 - 9th Edition Smoke Control Equipment.
MS-NCE2561-0	Supports one MS/TP Bus trunk with up to 32 MS/TP devices. Includes internal modem.
MS-NCE2566-0	Supports one MS/TP Bus trunk with up to 32 MS/TP devices. Includes integral display screen.
MS-NCE2567-0	Supports one MS/TP Bus trunk with up to 32 MS/TP devices. Includes integral display screen and internal modem.

Some models are also available in a Buy American version (add a G after the code number). For repair parts, add -700 after the code number.
NCE25 model available in Europe only.

# Table 3: NCE Accessories Ordering Information

Product Code Number	Description
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 5 to 7 years at 21°C (70°F)
MS-BTCVT-1	Wireless Commissioning Converter, with Bluetooth® technology, for configuring and commissioning the NCE field controller and the devices on the NCE SA Bus
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. <b>Note:</b> 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-RAP-0	Ready Access Portal Server, which provides a user interface that is a natural, complementary extension of the Metasys Site Management Portal UI. 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.
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

Table 4: NCE25		
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 for NCE25 only <b>Note:</b> The 25 VA rating does <b>not</b> include any power supplied by the NCE to devices connected at the NCE binary outputs (BOs). binary output (BO) devices connected to and powered by an NCE 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 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	

#### Table 4: NCE25

data storage and backup and 128 MB synchronous dynamic random access memory (SDRAM) for operation dynamic memory       Field Controller: 192 KB flash memory and 1 MB RAM       Operating System     Microsoft Windows® CE embedded 6.0       Network and Serial Interfaces     One Ethernet port: 10/100 Mbps; 8-pin RJ-45 connector       One optically isolated RS-485 XA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE22 mo support an N2 Bus or MS/TP bus trunk)     One optically isolated RS-485 XM that a pluggable, keyed 3-position terminal block (only on NCE25 models that a LowNoeks port; FTT10 T8 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowNoeks port; FTT10 T8 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowNoeks port; FTT10 T8 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowNoeks port; FTT10 T8 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowNoeks port; FTT10 T8 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowNoeks trunk)       One RS-232-C serial port with standard USB connector     Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Analog Output Point:     Analog Input/Standard USB connector     Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Unput Points:     16-bit resolution and ±200 mV accuracy on 0-10 VDC applications       Input/Output Capabilities     10-Universal Inputs: Defined as 0-10 VDC or 4-20mA       -Elinary Outputs: Defined as 0-	Table 4: NCE25		
Memory     Supervisory Controller: 128 MB Flash nonvolatile memory for operating system, configuration data, and op data storage and backup and 128 MB synchronous dynamic random access memory (SDRAM) for operating dynamic memory       Field Controller: 192 KB flash memory and 1 MB RAM       Operating System     Microsoft Windows® CE embedded 6.0       Network and Serial Interfaces     One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE25 for model information.)       Ore pricely isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mostport an N2 Bus or MS/IP bus trunk)       One cubcally isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mostport an N2 Bus or MS/IP bus trunk)       One Excess Network trunk)     One Excess Network trunk)       One Excess Network trunk)     One Excess Network trunk)       One RS-232-C serial port with standard 0-pin sub-D connector that supports standard baud rates       One USB serial port with standard USB connector       Option: 0ne 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Ontput Capabilities     10-Universal Imputs: Defined as 0-10 VDC, 4-20mA, 0-600k chm, or Binary Dry Contact       Binary Inputs: Defined as 0-10 VDC or 4-20mA     4-Analog Outputs: Defined as 0-10 VDC or 4-20mA       Dimensions     15 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	Processors	Supervisory Controller: 192 MHz Renesas® SH4 7760 RISC processor	
data storage and backup and 128 MB synchronous dynamic random access memory (SDRAM) for operation dynamic memory       Field Controller: 192 KB flash memory and 1 MB RAM       Operating System     Microsoft Windows® CE embedded 6.0       Network and Serial Interfaces     One Ethernet port: 10/100 Mbps: 8-pin RJ-45 connector       Orne officially isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE21 for model information.)     One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (only on NCE25 mo support an N2 Bus or MS/TP bus trunk)       One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates     One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates       One USB serial port with standard USB connector     Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Analog Output Point     Analog Unput Points: 16-bit resolution and ±200 mV accuracy on 0-10 VDC applications       Input/Output Capabilities     10-bit resolution and ±200 mV accuracy on 0-10 VDC applications       Input/Output Capabilities     15-bit resolution and ±200 mV accuracy on 0-10 VDC applications       Input/Output Capabilities     15-bit resolution and ±200 mV accuracy on 0-10 VDC applications       Input/Output Capabilities     15-bit resolution and ±200 mV accuracy on 0-10 VDC applications       Input/Output Capabilities		Field Controller: 20 MHz Renesas H8S2398 processor	
Operating System     Microsoft Windows® CE embedded 6.0       Network and Serial Interfaces     One Ethernet port; 10/100 Mbps; 8-pin RJ-45 connector       (Depending on NCE model. See Table 2 for model information.)     One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE25 one optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (only on NCE25 mo support an X2 Bus or MS/TP bus trunk)       One optically isolated RS-485 SA Bus port; With a pluggable and keyed 4-position terminal block (only on NCE25 mo support an X2 Bus or MS/TP bus trunk)       One LowWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowWorks Network trunk)       One RS-232-C serial port with standard USB connector Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Analog Output Point Resolution     Analog Input Points: 16-bit resolution Analog Output Points: 16-bit resolution Analog Output Points: 16-bit resolution Analog Output: Defined as 0-10 VDC, 4-20mA, 0-600k ohm, or Binary Dry Contact 8-Binary Inputs: Defined as 0-10 VDC or 4-20mA 7-Binary Outputs: Defined as 0-10 VDC or 4-20mA 7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac BO       Dimensions     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 (Height x Width x Depth)       Housing     Plastic housing Plastic housing     Plastic housing Plastic naterial: ABS and polycarbonate Protection: IP20 (IEC660529)       Mounting     On flat surface with s	Memory	Supervisory Controller: 128 MB Flash nonvolatile memory for operating system, configuration data, and operations data storage and backup and 128 MB synchronous dynamic random access memory (SDRAM) for operations data dynamic memory	
Network and Serial Interfaces     One Ethermet port; 10/100 Mbps; 8-pin RJ-45 connector       (Depending on NCE model, See Table 2 for model information.)     One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE25 one optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mo support an N2 Bus or MS/TP bus trunk)       One optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mo support an N2 Bus or MS/TP bus trunk)       One LWSWexs port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowWexs Network trunk)       One USB serial port with standard USB connector       Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Analog Output Points: 16-bit resolution Analog Outputs: Defined as 0-10 VDC, 4-20mA, 0-600k ohm, or Binary Dry Contact       6-Binary Inputs: Defined as 0-10 VDC or 4-20mA       7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac BO       Dimensions     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 (Height x Width x Depth)       Housting     Plastic housing       Plastic housing     Plastic material: ABS and polycarbonate Protection: IP20 (IEC60529)       Mounting     On flat surface with screws on thr		Field Controller: 192 KB flash memory and 1 MB RAM	
(Depending on NCE model. See Table 2 for model information.)   One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (onl all NCE25 one optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mosupport an N2 Bus or MS/TP bus trunk)     One optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mosupport an N2 Bus or MS/TP bus trunk)     One convorse port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowVorks betwork trunk)     One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates One USB serial port with standard USB connector     Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps     Analog Input/Analog Output Point Resolution     Analog Input/Output Capabilities     Input/Output Capabilities     Input/Output: Defined as 0-10 VDC, 4-20mA, 0-600k ohm, or Binary Dry Contact 8-Binary Inputs: Defined as 0-10 VDC or 24 VAC Triac BO     Dimensions   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 (Height x Width x Depth)     Housing   Plastic mousing 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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Manage	Operating System	Microsoft Windows® CE embedded 6.0	
for model information.)   One optically isolated RS-485 port; with a pluggable and keyed 4-position terminal block (only on NCE25 mosupport an N2 Bus or MS/TP bus trunk)     One torWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowWorks Network trunk)     One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates     One USB serial port with standard USB connector     Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps     Analog Input/Analog Output Point     Resolution     Analog Unput Points: 16-bit resolution     Analog Output Capabilities     10-Universal Inputs: Defined as 0-10 VDC, 4-20mA, 0-600k ohm, or Binary Dry Contact     8-Binary Inputs: Defined as 0-10 VDC or 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac BO     Dimensions   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     (Height x Width x Depth)   Plastic housing     Plastic material: ABS and polycarbonate     Protection: IP20 (IEC60529)     Mounting   On flat surface with screws on three mounting clips or	Network and Serial Interfaces	One Ethernet port; 10/100 Mbps; 8-pin RJ-45 connector	
One optically isolated RS-485 port, with a pluggable and keyed 4-position terminal block (only on NCE25 models that a LowWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowWorks Network trunk)       One LowWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that a LowWorks Network trunk)       One USB serial port with standard 9-pin sub-D connector that supports standard baud rates One USB serial port with standard USB connector       Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Analog Output Point Resolution       Analog Unput Points: 16-bit resolution       Analog Output Point:       Analog Output S: Defined as 0-10 VDC or 4-20mA       7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac BO       Dimensions       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		One optically isolated RS-485 SA Bus port; with a pluggable and keyed 4-position terminal block (on all NCE25 model	
a LowWorks Network trunk)   One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates     One USB serial port with standard USB connector   Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps     Analog Input/Analog Output Point   Analog Input Points: 16-bit resolution     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, 4-20mA, 0-600k ohm, or Binary Dry Contact     8-Binary Inputs: Defined as 0-10 VDC or 24-20mA   7-Binary Outputs: Defined as 0-10 VDC or 24-20mA     7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac (selectable internal or external source power)   4-Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO     Dimensions   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 (Height x Width x Depth)     Housing   Plastic housing     Plastic naterial: ABS and polycarbonate     Protection: IP20 (IEC60529)     Mounting   0n flat surface with screws on three mounting clips or a single 35 mm DIN rail     Shipping Weight   1.2 kg (2.7 lb)     Compliance   Canada: UL Listed, File E107041, CCN PAZX, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada CICEF-03     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the esse	for model information.)	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 USB serial port with standard USB connector       Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps       Analog Input/Analog Output Point:       Resolution     Analog Input Points: 16-bit resolution       Analog Output Capabilities     10-Universal Inputs: Defined as 0-10 VDC, 4-20mA, 0-600k ohm, or Binary Dry Contact       8-Binary Inputs: Defined as 0-10 VDC or 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 4-20mA       7-Binary Outputs: Defined as 0-10 VDC or 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac BO       Dimensions     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 (Height x Width x Depth)       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       Shipping Weight     1.2 kg (2.7 lb)       Compliance     United States; UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia CFR47, Part 15, Subpart B, Class A       Canada: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment Industry Canada CICES-003		One LonWorks port; FTT10 78 Kbps; pluggable, keyed 3-position terminal block (only on NCE25 models that support a LonWorks Network trunk)	
Option: One 6-pin modular jack for connecting to internal modern; up to 56 Kbps       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, 4-20mA, 0-600k ohm, or Binary Dry Contact       8-Binary Inputs: Defined as 0-10 VDC or 4-20mA     6-Binary Inputs: Defined as 0-10 VDC or 4-20mA       7-Binary Outputs: Defined as 0-10 VDC or 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 4-20mA       7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac BO     200 mm (0.1 x 10.6 x 2.5 in.) Minimum mounting space required: 250 x 370 x 110 mm (9.8 x 14.6 theight x Width x Depth)       Housing     Plastic housing     Plastic housing       Nounting     On flat surface with screws on three mounting clips or a single 35 mm DIN rail       Shipping Weight     1.2 kg (2.7 lb)     Compliance       Compliance     United States: UL Listed, File E107041, CCN PAZX, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada O CFR47, Part 15, Subpart B, Class A       Compliance     United States: UL Listed, File E107041, CCN PAZX, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada O CFR47, Part 15, Subpart B, Class A		One RS-232-C serial port with standard 9-pin sub-D connector that supports standard baud rates	
Analog Input/Analog Output Point   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, 4-20mA, 0-600k ohm, or Binary Dry Contact     8-Binary Inputs:   Defined as 0-10 VDC or 4-20mA     7-Binary Outputs:   Defined as 0-10 VDC or 4-20mA     7-Binary Outputs:   Defined as 0-10 VDC or 24 VAC Triac (selectable internal or external source power)     4-Configurable   Outputs:     Defined as 2-10 VDC or 24 VAC Triac BO     Dimensions   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     (Height x Width x Depth)   Plastic housing     Plastic housing   Plastic housing     Plastic naterial: ABS and polycarbonate   Protection: IP20 (IEC60529)     Mounting   On 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 Complia     CFR47, Part 15, Subpart B, Class A   Canada: UL Listed, File E107041, CCN PAZX, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance wi		One USB serial port with standard USB connector	
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, 4-20mA, 0-600k ohm, or Binary Dry Contact     8-Binary Inputs: Defined as 0-10 VDC or 4-20mA   -Analog Outputs: Defined as 0-10 VDC or 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 4-20mA   -Analog Outputs: Defined as 0-10 VDC or 24 VAC Triac (selectable internal or external source power)     4-Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO		Option: One 6-pin modular jack for connecting to internal modem; up to 56 Kbps	
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, 4-20mA, 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 4-20mA     7-Binary Outputs: Defined as 0-10 VDC or 4-20mA   7-Binary Outputs: Defined as 0-10 VDC or 24 VAC Triac (selectable internal or external source power)     4-Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO   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     (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     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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia     Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada CICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requ and other relevant provisions of the EMC Directive 2004/108/EC.		Analog Input Points: 16-bit resolution	
8-Binary Inputs: Defined as Dry Contact Maintained or Pulse/Accumulator Mode     4-Analog Outputs: Defined as 0-10 VDC or 4-20mA     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   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 (Height x Width x Depth)     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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia CFR47, Part 15, Subpart B, Class A     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential required and other relevant provisions of the EMC Directive 2004/108/EC.	Resolution	Analog Output Points: 16-bit resolution and ±200 mV accuracy on 0-10 VDC applications	
4-Analog Outputs: Defined as 0-10 VDC or 4-20mA     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   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     (Height x Width x Depth)   Plastic housing     Plastic nousing   Plastic nousing     Plastic nousing   Plastic material: ABS and polycarbonate     Protection: IP20 (IEC60529)   On 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 Compliance     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential required other relevant provisions of the EMC Directive 2004/108/EC.	Input/Output Capabilities	10-Universal Inputs: Defined as 0-10 VDC, 4-20mA, 0-600k ohm, or Binary Dry Contact	
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   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 (Height x Width x Depth)     Housing   Plastic housing     Plastic naterial: ABS and polycarbonate     Protection: IP20 (IEC60529)     Mounting   On 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 Complia (ES-003)     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential required and other relevant provisions of the EMC Directive 2004/108/EC.		8-Binary Inputs: Defined as Dry Contact Maintained or Pulse/Accumulator Mode	
4-Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO     Dimensions   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 (Height x Width x Depth)     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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Compliance     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential required other relevant provisions of the EMC Directive 2004/108/EC.		4-Analog Outputs: Defined as 0-10 VDC or 4-20mA	
Dimensions   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 (Height x Width x Depth))     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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia CFR47, Part 15, Subpart B, Class A     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential required other relevant provisions of the EMC Directive 2004/108/EC.		7-Binary Outputs: Defined as 24 VAC Triac (selectable internal or external source power)	
(Height x Width x Depth)   Plastic housing     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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia CFR47, Part 15, Subpart B, Class A     Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requ and other relevant provisions of the EMC Directive 2004/108/EC.		4-Configurable Outputs: Defined as 0-10 VDC or 24 VAC Triac BO	
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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia     CFR47, Part 15, Subpart B, Class A   Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada CICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requand other relevant provisions of the EMC Directive 2004/108/EC.	Dimensions	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	
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     Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia     CRR47, Part 15, Subpart B, Class A   Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requand other relevant provisions of the EMC Directive 2004/108/EC.	(Height x Width x Depth)		
Protection: IP20 (IEC60529)     Mounting   On 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 Complia CFR47, Part 15, Subpart B, Class A     Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential required and other relevant provisions of the EMC Directive 2004/108/EC.	Housing	Plastic housing	
Mounting     On 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 Compliance       Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003       Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requipment provisions of the EMC Directive 2004/108/EC.		Plastic material: ABS and polycarbonate	
Shipping Weight   1.2 kg (2.7 lb)     Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Complia CFR47, Part 15, Subpart B, Class A     Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requ and other relevant provisions of the EMC Directive 2004/108/EC.		Protection: IP20 (IEC60529)	
Compliance   United States: UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Compliance     Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003     Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requirement provisions of the EMC Directive 2004/108/EC.	Mounting	On flat surface with screws on three mounting clips or a single 35 mm DIN rail	
CFR47, Part 15, Subpart B, Class A Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada C ICES-003 Europe: CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requ and other relevant provisions of the EMC Directive 2004/108/EC.	Shipping Weight	1.2 kg (2.7 lb)	
ICES-003 <b>Europe:</b> CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requ and other relevant provisions of the EMC Directive 2004/108/EC.		<b>United States:</b> UL Listed, File E107041, CCN PAZX, UL 916, Energy Management Equipment FCC Compliant to CFR47, Part 15, Subpart B, Class A	
and other relevant provisions of the EMC Directive 2004/108/EC.		Canada: UL Listed, File E107041, CCN PAZX7, CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada Complia ICES-003	
Australia and New Zealand: C-Tick Mark Australia/NZ Emissions Compliant		<b>Europe:</b> CE Mark - Johnson Controls, Inc., declares that this product is in compliance with the essential requirement and other relevant provisions of the EMC Directive 2004/108/EC.	
	CE	Australia and New Zealand: C-Tick Mark, Australia/NZ Emissions Compliant	

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

#### United States Federal Communications Commission (FCC) Compliance Statement

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.

## **Canadian Compliance Statement**

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.



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Published in U.S.A. Network Control Engine Catalog Page www.johnsoncontrols.com