LN Series Remote Input/Output (I/O) Modules

Product Bulletin

LN-IO301-1, LN-IO401-1, LN-IO520-1

The LN Series Remote Input/Output (I/O) Modules extend the capability of the LN Series system as well as monitor and control various Heating, Ventilating, and Air Conditioning (HVAC) applications.

The LN Remote I/O Modules are based on LONWORKS® technology for interoperability and peer-to-peer communication between controllers without any intermediary. This configuration also facilitates seamless integration into the Metasys® system.

Figure 1: LN-IO520-1 Module

Table 1: Features and Benefits

Features	Benefits
Configurable Software	Features an LNS® plug-in that provides easy configuration of inputs and outputs. You can also configure input and output properties and hardware Simple Network Variable Types (SNVTs).
Robust Hardware	Features a light-weight, fire-retardant plastic enclosure; software configurable universal inputs; Pulse Width Modulation (PWM) or digital triac outputs; a status indicator on each output; and a fuse-protected power supply.
Interoperability	Features peer-to-peer communication between controllers based on LONWORKS technology. The Remote I/O Modules are LONMARK® certified according to the Interoperability Guidelines Version 3.4.

LN Remote I/O Module Overview

You can configure the Remote I/O Module by using LNS based software, such as LN-Builder. The LN-Builder configuration interface is designed to simplify the configuration of input and output properties, for example, input types, input minimum/input maximum values, output types, and network variable types.

LNS LN-Configure Plug-in

This powerful and intuitive LNS plug-in provides customization of hardware I/O, control sequences, and communication schemes.

Easily configure all of the devices' parameters, including inputs, outputs, heating and cooling set shedding, flow calibration, frost protection, slave operation mode, points, variable airflow, and PID control loops. You can also enable and configure built-in features such as load shedding, flow calibration, frost protection, and slave operation mode.

Dimensions

Figure 2 shows the dimensions for the LN-IO301-1 module. Figure 3 shows the dimensions for the LN-IO401 and LN-IO520-1 modules.
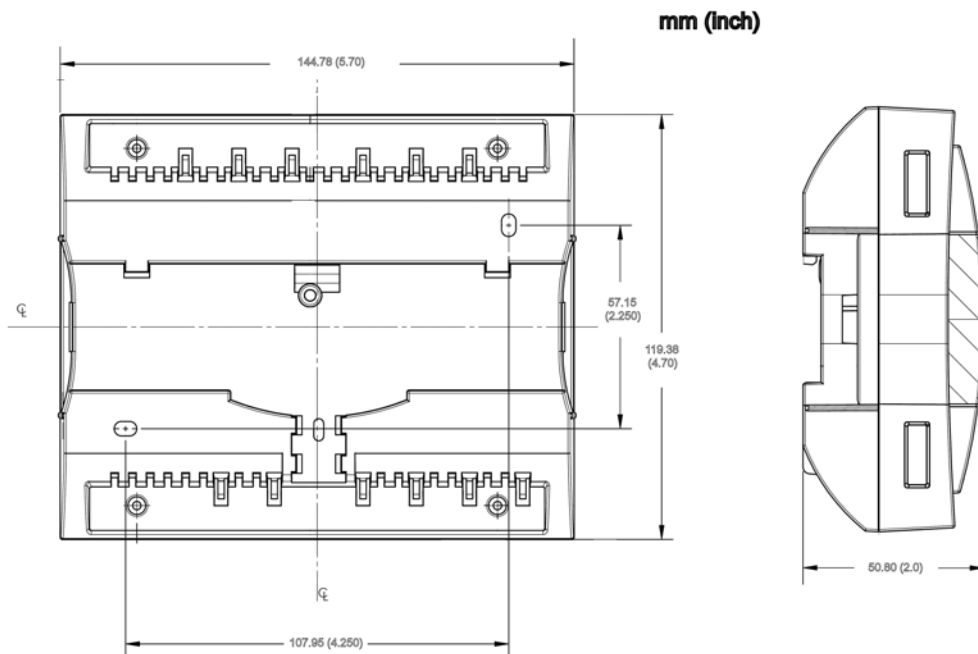

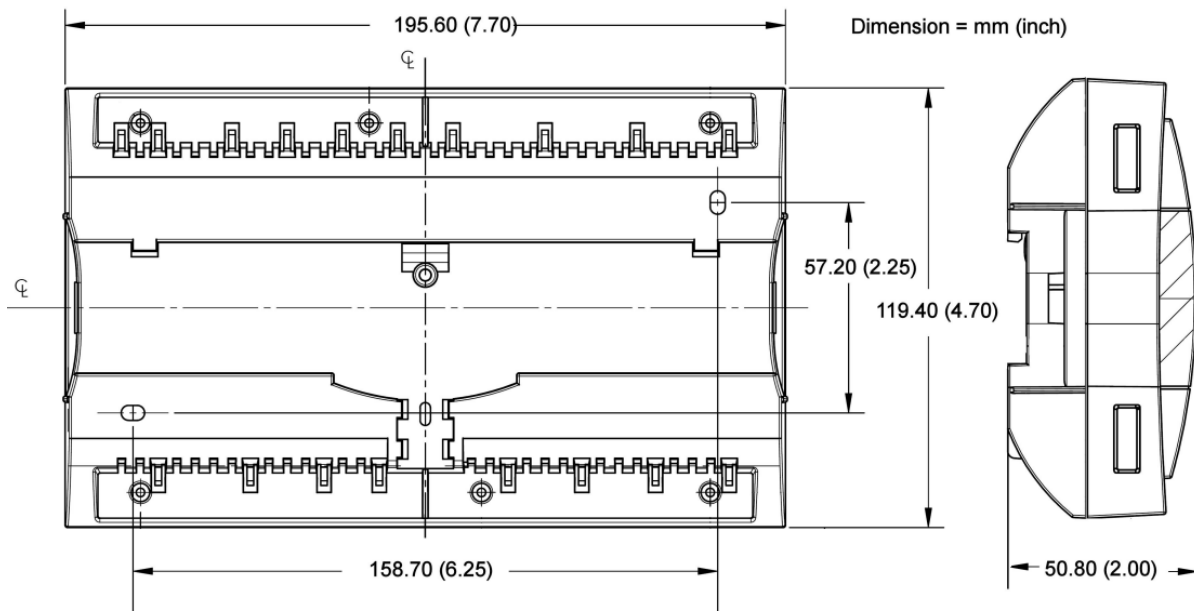**Figure 2: LN-IO301-1 Module Dimensions, mm (in.)**

Figure 3: LN-IO401-1 and IO520-1 Module Dimensions, mm (in.)

Output Configuration and Remote I/O Controller Selection Guide

The LN Remote I/O Modules comprise three different devices, each having its own output configuration, but all having identical input, power, environmental and general specifications.

Table 2:   LN-IO301-1

Inputs	8
Outputs	8 Digital Triac 1.0 A at 24 VAC External power supply PWM output: adjustable period from 2 seconds to 15 minutes
Output Resolution	12-bit digital/analog converter

Table 3:   LN-IO401-1

Inputs	12
Outputs	12 Digital Triac 1.0 A at 24 VAC External power supply PWM output: adjustable period from 2 seconds to 15 minutes
Output Resolution	12-bit digital/analog converter

Table 4:   LN-IO520-1

Inputs	16
Outputs	0
Wizard	LNS Plug-in

LONMARK Objects and Network Variables
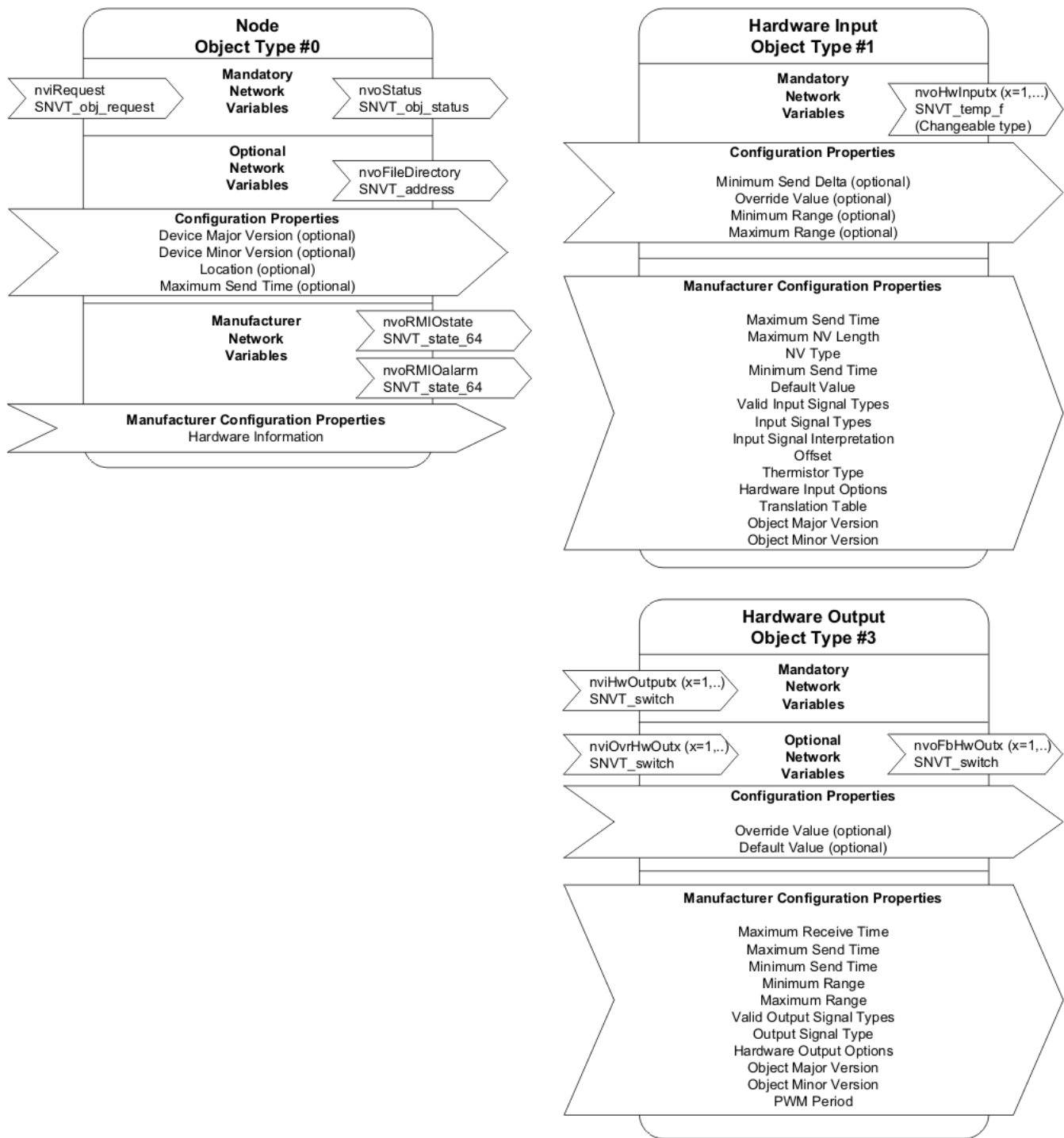
Figure 4 shows the LONMARK Objects and Network Variables.

Figure 4: GPI LONMARK Objects and Network Variables – LN Remote I/O Modules

Technical Specifications

LN Series Remote I/O Modules (Part 1 of 2)

Product Codes	LN-IO301-1, LN-IO401-1, LN-IO520-1
Power Requirement	**Voltage:** 24 VAC/DC; ±15%, 50/60 Hz, Class 2 **Protection:** 1.35 A auto-reset fuse **Power Consumption:** 6 VA **Maximum Consumption:** 15 VA
Environmental	**Operating Temperature:** 0–50°C, (32–122°F) **Storage Temperature:** -20–50°C, (-4–158°F) **Relative Humidity:** 0 to 90% noncondensing
General	**Processor:** Neuron® 3150™, 8 bits, 10 MHz **Memory:** Nonvolatile Flash 64k (APB application), Nonvolatile Flash 64k (storage) **Media Channel:** TP/FT-10; 78 Kbps **Communication:** LonTalk® protocol **Transceiver:** FTX-1 **Channel:** TP/FT-10; 78 Kbps **Status Indicator:** Green LED: power status and LON TX Orange LED: service and LON RX **Communication Jack:** LON audio jack mono 1/8 in. (3.5 mm)
Enclosure	**Material:** ABS type PA-765A **Dimensions (with screws):** LN-IO301-1: 5.7 x 4.7 x 2.0 in. (144.8 x 119.4 x 50.8 mm); LN-IO401-1/520-1: 7.7 x 4.7 x 2.0 in. (195.6 x 119.4 x 50.8 mm) **Shipping Weight:** LN-IO301-1: 0.77 lb (0.35 kg), LN-IO401/520: 0.86 lb (0.39 kg)

Inputs	Quantity: universal (software configurable)
	Input Types:
	  Digital: Dry Contact
	  Analog Voltage: 0 to 10 VDC
	  Analog current: 4 to 20 mA with 249 ohms external resistor (wired in parallel)
	  Resistor Support:
	   Thermistor: Types 2, 3 (10k ohms at 25°C; 77°F)
	   Range: -40 to 150°C, (-40 to 302°F)
	   Platinum: Pt1000 (1K ohm at 0°C; 32°F)
	   Range: -40 to 150°C, (-40 to 302°F)
	   PT100: (100 ohms at 0°C; 32°F)
	   Range: -40 to 135°C; -40 to 275°F
	   Potentiometer: Translation table configurable on several points
	 Input Resolution: 16 bit analog/digital converter

Electromagnetic Compatibility	**CE: Emission:** EN55022: 1998 class B
	      Immunity: EN61000-4-2: 1995, level 3 in air
	                      EN61000-4-2: 1995, level 2 by contact
	                      EN61000-4-3: 1996, level 2
	                      EN61000-4-4: 1995, level 2
	                      EN61000-4-6: 1996, level 2
	                      ENV 50204: 1995, level 2
	FCC: This device complies with FCC rules part 15, subpart B, class B

Compliance	**United States:** UL Listed: UL916 Energy management equipment **Material[1]:** UL94-5VA
	Canada: UL Listed: UL916 Energy management equipment **Material[1]:** UL94-5VA
C E	**Europe:** CE Mark – Johnson Controls, Inc., declares that the products are in compliance with the essential requirements and other relevant provisions of the EMC Directive 2004/108/EC.

1. All materials and manufacturing processes comply with the directive on the Waste Electrical and Electronic Equipment (WEEE).

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.

North American Emissions Compliance

United States

This equipment has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when this equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his/her own expense.

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.

The term **IC** *before the certification/registration number only signifies that the Industry Canada technical specifications were met.*

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