LN Series Programmable Compact Variable Air Volume (VAV) Controller

Product Bulletin

LN-VAVCFS-1

Code No. LIT-12011499
Software Release 4.1
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The LN Series Programmable Compact Variable Air Volume (VAV) controller uses the latest technology to provide you with more flexibility and reliability of control. The integrated brushless constant torque actuator has a longer life expectancy than standard brushed motors. The 16-bit analog/digital converter provides high accuracy input and flow pressure sensor readings giving you precise VAV balancing capabilities. The LN Series Programmable Compact VAV controller uses LonTalk® communication protocol and is LONMARK® certified using the Sensor profile for input objects and the Actuator profile for output objects.

Figure 1: LN Series Programmable Compact VAV Controller

Table 1: Features and Benefits

Features	Benefits
Configurable Software	Features more than 60 network variables with Network Variable Inputs (NVIs) and Network Variable Outputs (NVOs) with changeable types and lengths. You can program the controller as either a textual or graphical configuration.
Robust Hardware	Provides an accurate onboard airflow sensor for pressure independent single duct VAV applications. The controller has two Universal Inputs (UIs), two digital, floating, or Pulse Width Modulation (PWM) triac outputs, a built-in occupancy output contact for the room sensor Light-Emitting Diode (LED), and a service pin.
Powerful Control Options	Allows you to easily configure all features, including, input types, output types, heating and cooling stages, variable airflow, and Proportional plus Integral plus Derivative (PID) loops. The controller supports four input types: space temperature; setpoint adjustment; duct temperature; and occupancy-bypass, or window contacts.

LN Series Programmable Compact VAV Controller Overview

The LN Series Programmable Compact VAV controller features expanded Input/Output (I/O) capability with two universal (analog-digital) inputs and two digital triac outputs, allowing you to simultaneously control multiple instances of virtually any type of Heating, Ventilating, and Air Conditioning (HVAC) equipment including baseboards, duct heating/cooling, fans, multi-stage heaters, analog and floating valve actuators, and lights.

You can program the LN Series Programmable Compact VAV Controller with either the LN Graphical Programming Interface (LN GPI) or with the LN-Programming Plug-in. Both programming tools are available as plug-ins used with any LONWORKS® software, such as LN-Builder 3.2.

Repair Information

If the LN Series Compact VAV controller fails to operate within its specifications, replace the unit. For a replacement, contact the nearest Johnson Controls® representative.

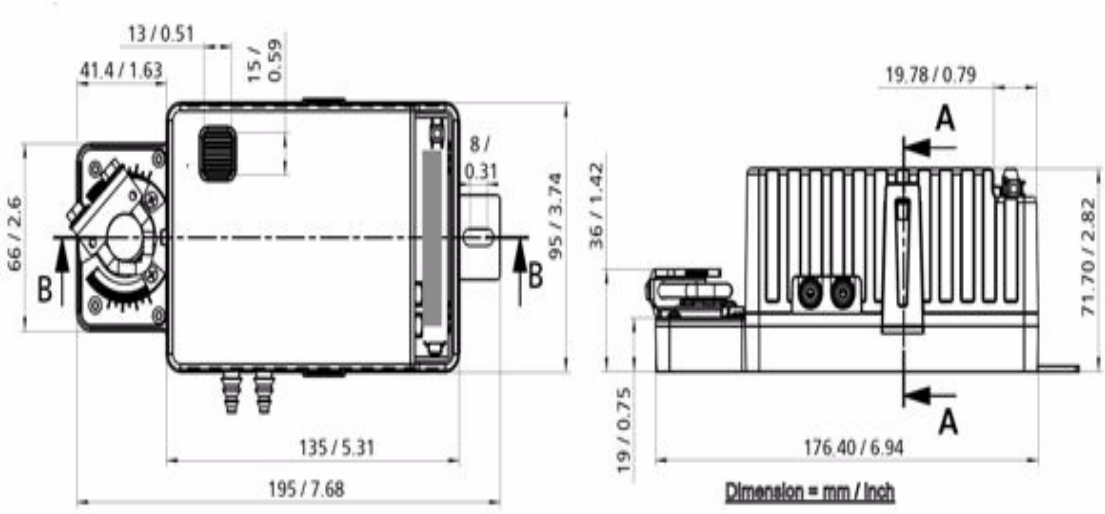

Figure 2: LN Compact VAV Dimensions, mm/in.

LONMARK Objects and Network Variables

LN GPI

Figure 3 shows the LONMARK Objects and Network Variables when you use LN GPI to program your LN Series Programmable Compact VAV controller.

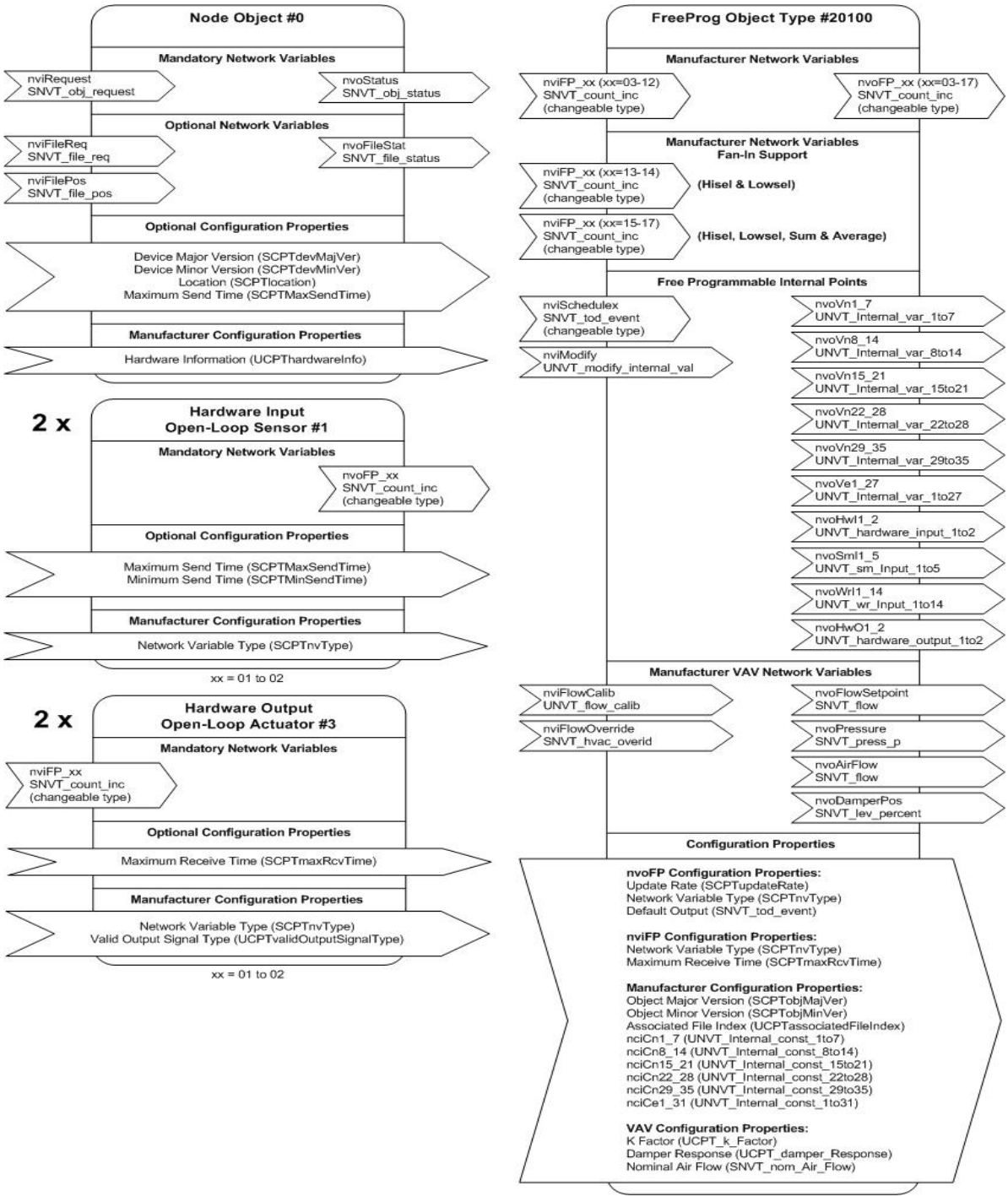

Figure 3: LN GPI LONMARK Objects and Network Variables--LN-VAVCFS-1 Controller

LN-Programming Plug-in

Figure 4 shows the LONMARK Objects and Network Variables when you use LN GPI to program your LN Series Programmable Compact VAV controller.

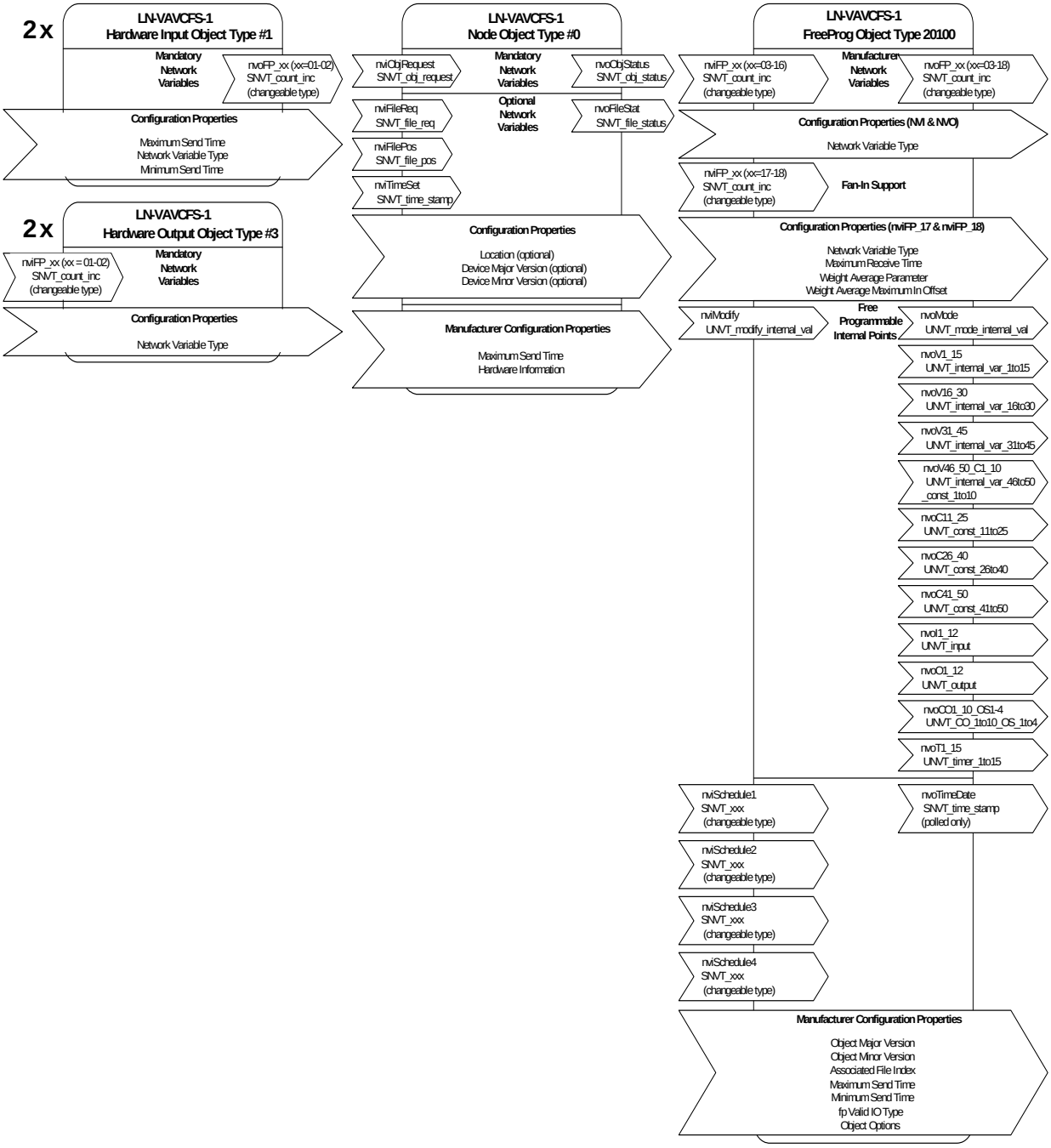

Figure 4: LN-Programming Plug-in LONMARK Objects and Network Variables-- LN-VAVCFS-1 Controller

Technical Specifications

LN-VAVCFS

Product Codes	LN-VAVCFS-1
Power Requirements	Voltage: 24 VAC/DC;15%, ± 50/60 Hz, Class 2 Protection: 2 A removable fuse for triac when using the internal power supply Typical Consumption: 15 VA (Triac outputs - 1 valve @ 4 VA) and 1 output with 20 mA load at 12 VDC Maximum Consumption: 60 VA
Ambient Storage Conditions	Ambient Operating Temperature: 0 to 70°C, (32 to 158°F) Ambient Storage Temperature: -20 to 70°C, (-4 to 158°F) Ambient Relative Humidity: 0 to 90% noncondensing
General	Processor: Neuron® 3150®, 8 bits, 10 MHz Memory: Nonvolatile Flash 64k (APB application), Nonvolatile Flash 128k (storage) Media Channel: TP/FT-10; 78 Kbps Communication: LonTalk protocol
Enclosure (Housing)	Material: LEXAN® 500R (GE) Dimensions (with screws): 3.70 x 7.7 x 2.8 in. (95 x 195 x 72 mm) Shipping Weight: 1.76 lb (0.80 kg)
Inputs	Quantity: 2 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: Type 2, Type 3 10k ohms Range: -40 to 150°C, (-40 to 302°F) Platinum: PT1000 1k ohm, Range: -40 to 150°C, (-40 to 302°F) PT100: 100 ohms, Range: -40 to 135°C, (-40 to 275°F) Nickel: Ni1000 (1 K ohm), Range: -40 to 150°C, (-40 to 302°F) Potentiometer: Translation table configurable on several points Input Resolution: 16-bit analog/digital converter
Compliance	CE Emission: EN61000-6-3: 2001; Generic standards for residential, commercial, and light-industrial environments CE Immunity: EN61000-6-1: 2001; Generic standards for residential, commercial, and light-industrial environments United States: UL Listed UL916 Energy management equipment, material: UL94-5VA
Hardware Outputs	Quantity: 3 Hardware 2 Digital: Triac 24 VAC, digital (on/off), PWM or floating 0.75 A @ 70°C (158°F) 1 A @ 40°C (104°F) PWM control - adjustable period from 2 seconds to 15 minutes Floating control - requires two consecutive outputs (with LN GPI only) Min. pulse on/off: 500 m seconds Adjustable drive time period External or internal power supply (jumper selectable) 1 Digital: 0-10 VDC dedicated output for occupancy sensor LED. Max: 20 mA Output Resolution: 10 bits digital/analog converter
Damper Actuator	Torque: 35 in·lb, 4 N·m Angle of Rotation: 95º adjustable Fits Shaft Diameter: 5/16 to 3/4 in. (8.5 to 18.2 mm) Power Supply: from controller

United States Emissions Compliance

Compliance Statement (Part 15.19)

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and

2. This device must accept any interference received, including interference that may cause undesired operation.

Warning (Part 15.21)

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Canadian Emissions Compliance

Industry Canada Statement

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

Le terme « IC » précédant le numéro d'accréditation/inscription signifie simplement que le produit est conforme aux spécifications techniques d'Industry Canada.

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.

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