

LN-PRG600-2, LN-PRG610-2, LN-IOE400-0, LN-IOE410-0, LN-IOE420-0

LN Free Programmable PRG 600 Series Controller and Input/Output (I/O) Extension Modules

Description

The LN Free Programmable PRG 600 Series Controllers are microprocessor-based free programmable controllers, designed to control various building systems, such as multi-zone air handing units and central plant applications. The 600 Series controllers use the LonTalk® communication protocol.

The PRG 600 Series controllers support up to 2 Input/Output extension modules that operate on a separate sub-network, providing the PRG 600 Series controller with up to 40 universal inputs and 36 universal outputs.

The LN Series Free Programmable controllers product family is built to meet rigorous quality standards. The complete family of Metasys® system LN Series controllers is designed for use with any LonWorks® network open and interoperable system.

Refer to the *LN Free Programmable PRG 600 Series Controllers and Input/Output (I/O) Extension Modules Product Bulletin (LIT-12011656)*.



LN-PRG610 Controller and I/O Extension Module

Features

- configurable software
- robust hardware
- powerful control options
- wireless functionality

Repair Information

If the LN Series Controllers fail to operate within its specifications, replace the unit. For a replacement valve, contact the nearest Johnson Controls® representative.

Controller Models

Controller Features	LN-PRG600-2	LN-PRG610-2	LN-IOE400-0	LN-IOE410-0	LN-IOE420-0
Points	28	28	24	24	24
Universal Inputs	16 ¹	16 ¹	12	12	12
Wireless Inputs ²	28	28	14	14	14
15 VDC Power Supply	X	X	X	X	X
HOA Switch and Potentiometer		X		X	
Number of I/O extension Modules	2	2			
Universal Outputs	12	12	12	12	0

1. The first four inputs are software configurable for pulse counting up to 50 Hz and are compatible with an SO rate (optically-isolated) output.

2. Available when optional Wireless Receiver is connected to the controller.

Selection Chart

Code Number	Description
LN-PRG600-2	LONMARK® Certified Programmable Controller with 16 Universal Inputs (UI), 12 Universal Outputs (UO), and LNS Plug-in, 24 VAC, Wireless Option
LN-PRG610-2	LONMARK Certified Programmable Controller with 16 UI, 12 UO, Hands-off-Auto (HOA) Switches, and LNS Plug-in, 24 VAC, Wireless Option
LN-IOE400-0	I/O Extension Module for LN-PRG6x0-2 with 12 UI, 12 UO, 24 VAC
LN-IOE410-0	I/O Extension Module for LN-PRG6x0-2 with 12 UI, 12 UO, 24 VAC, HOA Switches
LN-IOE420-0	I/O Extension Module for LN-PRG6x0-2 with 12 UI, 24 VAC

Technical Specifications

LN Free Programmable PRG 600 Series Controllers (Part 1 of 3)

Product Code	LN-PRG600-2 and LN-PRG610-2
Power Requirement	Voltage: 24 VAC/DC; ±15%, 50/60 Hz, Class 2 Protection: 3.0A user-replaceable fuse Power Consumption: 22 VA typical plus all output loads Maximum Consumption: 65 VA
Ambient Storage Conditions	Ambient Operating Temperature: 0 to 50°C, (32 to 122°F) Ambient Storage Temperature: -20 to 50°C, (-4 to 122°F) Ambient Relative Humidity: 0 to 90% noncondensing

LN Free Programmable PRG 600 Series Controller and Input/Output (I/O) Extension Modules (Continued)

LN Free Programmable PRG 600 Series Controllers (Part 2 of 3)

General	Processor: STM32 (ARM Cortex™ M3) MCU, 32 bit Processor Speed: 72 MHz Memory: 1 MB Nonvolatile Flash (applications), 2 MB Nonvolatile Flash (storage) 96 kB RAM Media Channel: TP/FT-10; 78 Kbps Communication: LonTalk® protocol Status Indicator: Green LED - power status and LAN TX, Orange LED - service and LAN RX Communication Jack: TP/FT-10; 78 Kbps, 1/8 in (3.5 mm) LONMARK Interoperability: Version 3.4 Device Class: Static Programmable Device LONMARK Functional Profile: Input Objects: Open-Loop Sensor #1, Output Objects: Open - Loop Sensor #3, Real Time Clock: Real Time Keeper #3300, Scheduler: Scheduler #20020, Calendar: Calendar #20030, Programmable Device: Static Programmable Device #410
Enclosure	Material: FR/ABS Dimensions (with screws): 7.7 x 4.7 x 2.0 in. (195.6 x 119.4 x 50.8 mm) Shipping Weight: 1.17 lb (0.53 kg)
Inputs	Input Types: universal software configurable Voltage: 0 to 10 VDC (40k ohm input impedance) 0 to 5 VDC (high input impedance) Current: 0 to 20 mA with 249 ohm jumper configurable internal resistor, Digital: dry contact Pulse: UI1 to UI4; 50 Hz maximum; Minimum 10 ms On/10 ms Off, dry contact UI5 to UI6: 1 Hz maximum; Minimum 500 ms On/500 ms Off, dry contact Resistor Support: 0 to 350k ohms. All thermistor types that operate within this range are supported. The following temperature sensors are pre-configured: Thermistor: Type 2 and Type 3 10k ohm (10k ohm at 25°C [77°F]) Platinum: PT1000 1k ohm (1k ohm at 0°C [32°F]) Nickel: RTD Ni1000 (1k ohm at 0°C [32°F]) RTD Ni1000 (1k ohm at 21°C [69.8°F]) Input Resolution: 16-bit analog/digital converter Power Supply Output: 15 VDC; maximum 320 mA (16 inputs x 20 mA each)
Outputs	Universal: 0-10 VDC linear, digital 0 to 12 VDC (on/off), PWM, floating, or 0 to 20 mA (jumper configurable to 4 to 20 mA); software configurable. Built-in snubbing diode to protect against back EMF, for example when used with a 12 VDC relay. PWM control: adjustable period from 2 seconds to 15 minutes Floating control: minimum plus on/off: 500 ms adjustable drive time period Hands-off-Auto (HOA) Switch (when equipped): hand position potentiometer range: 0 to 12.5 VDC 60 mA maximum at 12 VDC (60°C; 140°F) Load Resistance: minimum resistance 200 ohms for 0 to 10 VDC and 0 to 12.5 VDC, maximum 500 ohm for 0 to 20 mA output Auto reset fuse 60mA at 60°C (140°F) 100mA at 20°C (68°F) Output Resolution: 10-bit digital/does analog converter
Wireless Receiver¹	Communication: EnOcean® Wireless standard Number of Wireless Inputs: 28² Supported Wireless Receivers: LN-WMOD315-0 and LN-WMOD868-0 Telephone Cord Cable: Connector: 4P4C modular jack, Length: 3 ft (1 m)
Enclosure	Material: UL94-5VA
Electromagnetic Compatibility	CE Emission: EN61000-6-3: 2007 Generic standards for residential, commercial, and light-industrial environments. CE Immunity: EN61000-6-1: 2007; Generic standards for residential, commercial, and light-industrial environments.

LN Free Programmable PRG 600 Series Controller and Input/Output (I/O) Extension Modules (Continued)

LN Free Programmable PRG 600 Series Controllers (Part 3 of 3)

	United States	UL Listed, File E107041, CCN PAZX, Under UL 916, Energy Management Equipment
		FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Canada	UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment
		Industry Canada, ICES-003
	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. Available when an optional external Wireless Receiver is connected to the controller. Some wireless inputs may use more than one wireless input from the controller.
2. Some wireless modules may use more than one wireless input from the controller.

LN Input/Output (I/O) Extension Modules (Part 1 of 2)

Product Code	LN-IOE400-0, LN-IOE410-0, LN-IOE420-0
Power Requirement	Voltage: 24 VAC/DC; $\pm 15\%$, 50/60 Hz, Class 2 Protection: 3.0A user-replaceable fuse Power Consumption: 400/410: 50 VA maximum, 22 VA typical on all loads 420: 16 VA maximum, 10 VA typical on all loads
Ambient Storage Conditions	Ambient Operating Temperature: 0 to 50°C, (32 to 122°F) Ambient Storage Temperature: -20 to 50°C, (-4 to 122°F) Ambient Relative Humidity: 0 to 90% noncondensing
Hardware	Processor: STM32 (ARM Cortex M3) MCU, 32 bit, 64 MHz Memory: 64 kB non-volatile Flash (applications and storage), 20 kB RAM Status Indicator: Green LEDs - power status and Sub-Network TX, Orange LEDs - service and Sub-Network RX
Enclosure	Material: FR/ABS Dimensions (with screws): 7.7 x 4.7 x 2.0 in. (195.6 x 119.4 x 50.8 mm) Shipping Weight: 1.17 lb (0.53 kg)
Electromagnetic Compatibility	CE Emission: EN61000-6-3: 2007 Generic standards for residential, commercial, and light-industrial environments. CE Immunity: EN61000-6-1: 2007; Generic standards for residential, commercial, and light-industrial environments.
Enclosure	Material: UL94-5VA
Inputs	Input Types: universal; software configurable Voltage: 0 to 10 VDC (40k ohms input impedance), 0 to 5 VDC (high input impedance) Current: 0 to 20 mA with 249 ohms jumper configurable internal resistor Digital: dry contact Pulse: 1 Hz maximum 500 ms On/500 ms Off, dry contact Resistor Support: 0 to 350k ohms. All thermistor types that operate in this range are supported. The following temperature sensors are pre-configured: Thermistor: Type II and Type III 10k ohm (10k ohm at 25°C [77°F]) Platinum: PT1000 1k ohm (1k ohms at 0°C [32°F]) Nickel: RTD Ni1000 (1k ohm at 0°C [32°F]) RTD Ni1000 (1k ohms at 21°C [69.8°F]) Input Resolution: 16-bit analog/digital converter Power Supply Output: 15 VDC; maximum 240 mA (12 inputs x 20 mA each)

LN Input/Output (I/O) Extension Modules (Part 2 of 2)

Outputs (LN-IOE400-0 and LN-IOE410-0 Modules Only)		Universal: 0 to 10 VDC linear, digital 0 to 12 VDC (on/off), PWM, floating, or 0 to 20 mA (jumper configurable); software configurable PWM control or 0 to 20 mA (jumper configurable): 4 to 20 mA software configurable. Built-in snubbing diode to protect against back EMF, for example when used with a 12 VDC relay. PWM control: adjustable period from 2 seconds to 15 minutes Floating control: - minimum plus on/off: 500 ms - adjustable drive time period Hands-Off-Auto (HOA) switch (when equipped): hand position potentiometer range 0 to 12.5 VDC 60 mA maximum at 12 VDC (60°C; 140°F) Load Resistance: minimum resistance 200 ohms for 0 to 10 VDC and 0 to 12 VDC outputs, maximum 500k Ohms for 0 to 20 mA output Auto reset fuse: 60 mA at 60°C (140°F) 100 mA at 20°C (68°F) Output Resolution: 10-bit digital/analog converter
	United States	UL Listed, File E107041, CCN PAZX, Under UL 916, Energy Management Equipment FCC Compliant to CFR 47, Part 15, Subpart B, Class A
	Canada	UL Listed, File E107041, CCN PAZX7, Under CAN/CSA C22.2 No. 205, Signal Equipment Industry Canada, ICES-003
	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.