LN Free Programmable PRG 600 Series Controllers

Installation Instructions

LN-PRG600-2, LN-PRG610-2

Code No. LIT-12011691
Issued July 17, 2014

Applications

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

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

Follow these recommendations for proper installation and subsequent operation of each controller:

- Inspect the controller for shipping damages. Do not install damaged controllers.
- Keep the controller at room temperature for at least 24 hours prior to installation to allow any condensation that may have accumulated during shipping to evaporate.
- Record the 12-digit Neuron® ID located on either end of the device (shown on the sticker below the barcode) for commissioning.

Note: The controller's plastic enclosure has a back plate that is separate from the front plate allowing the back plates to be shipped directly to the installation site while all the engineering is done elsewhere.

- If the controller is used in a manner not specified by Johnson Controls, the functionality and the protection provided by the controller may become impaired.

IMPORTANT: Prevent any static electric discharge to the controller. Static discharge can damage the controller and void the warranties.

North American Emissions Compliance

Canada

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

Industry Canada Statement

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

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 may cause harmful interference, in which case the users will be required to correct the interference at their own expense.

Installation

Observe these guidelines when installing an LN Free Programmable PRG 600 Series Controller:

- Transport the controller in the original container to minimize vibration and shock damage.
- Verify that all parts shipped with the controller.
- Do not drop the controller or subject it to physical shock.
- Allow for proper clearance around the controller's enclosure, wiring terminals, and service pin to provide easy access for hardware configuration and maintenance.

Johnson Controls

Dimensions

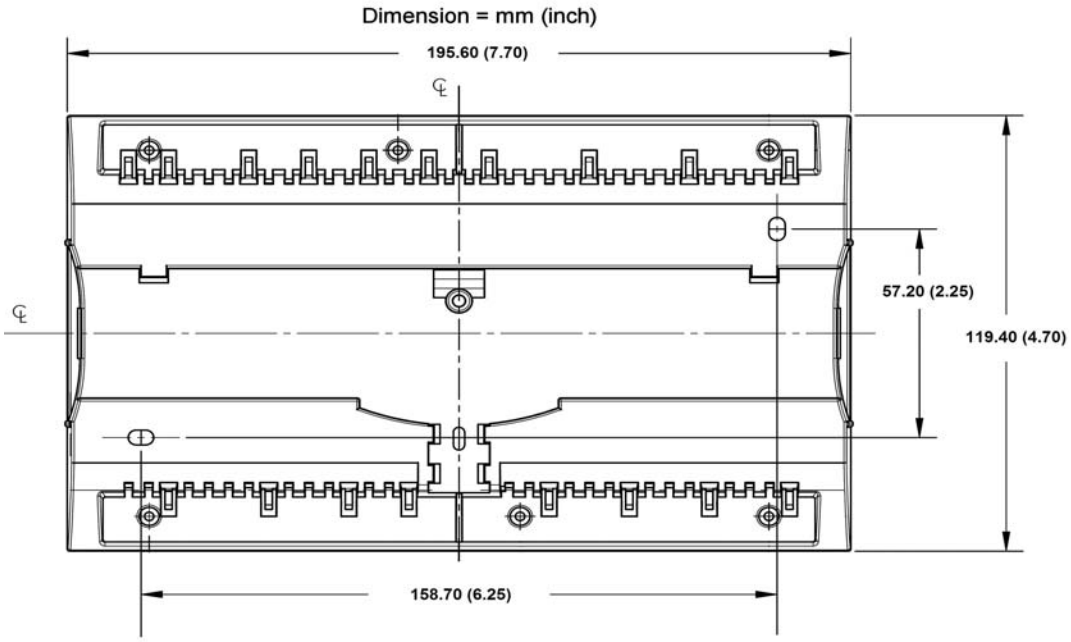

Figure 1: LN PRG600 Series Controller Dimensions, mm (in.)

Mounting

Observe these guidelines when mounting an LN Free Programmable PRG 600 Series Controller:

- Provide for sufficient space around the controller for cable and wire connections, easy cover removal, and good ventilation through the controller.
- Ensure proper ventilation of each controller and avoid areas where corroding; deteriorating; or explosive vapors, fumes, or gases may be present.
- Orient each controller with the ventilation slots and power supply/output terminal block connector towards the top to permit proper heat dissipation.
- Do not mount the controller on surfaces prone to vibration, such as duct work, or in areas where electromagnetic emissions from other devices or wiring can interfere with controller communication.

You can mount each controller on a DIN rail, in a panel, or on a wall. The controllers are equipped with two mounting holes 0.25 x 0.165 in. (6.35 x 4.191 mm).

DIN Rail

To mount the controller on a DIN rail:

1. Ensure the DIN rail is properly mounted on the wall.
2. Clip the controller onto the DIN rail.

Wall Mount

To mount the controller on a wall:

1. Press on the side clips to separate the controller's front and back plates.
2. Use the holes on the back plate to mark the wall location.
3. Drill the holes.
4. Clean the surface and mount the controller using the appropriate screws.

Wiring

CAUTION: Risk of Electric Shock.
Disconnect power supply before making electrical connections to avoid electric shock.

MISE EN GARDE : Risque de décharge électrique.
Débrancher l'alimentation avant de réaliser tout raccordement électrique afin d'éviter tout risque de décharge électrique.

Follow these wiring recommendations:

- Remove the front plate from the back plate to facilitate in the wiring process. Use a small flat screwdriver to tighten the terminal connector screws once the wires are inserted.
- Keep power cables apart from other types of wiring to avoid ambient noise transmission to other wires (for example, for power, 3-wire voltage, and current inputs and outputs).
- Use wires or flat cables ranging from 22 to 14 AWG (0.644 to 1.630 mm diameter) per pole. Power cables must remain between 18 to 14 AWG (1.024 to 1.630 mm) diameter.
- Do not connect the universal inputs, analog/digital outputs or common terminals to earth or chassis ground unless otherwise stated.
- Keep all wires away from high speed data transmission cables (for example, Ethernet cable).
- Keep input and output wires in conduits, trays, or close to the building frame whenever possible.

Power Wiring

We recommend wiring only one controller per 24 VAC transformer. When only one transformer is available, determine the maximum number of controllers that can be supplied using the following method for calculating the required power transformer capacity:

1. Add up the maximum power consumption of all controllers, including external loads, and multiply this sum by 1.3.
2. If the resulting number is higher than 100 VA, use multiple transformers.

Use an external fuse on the 24 VAC/DC side (secondary side) of the transformer to protect all controllers against power link spikes (Figure 2 and

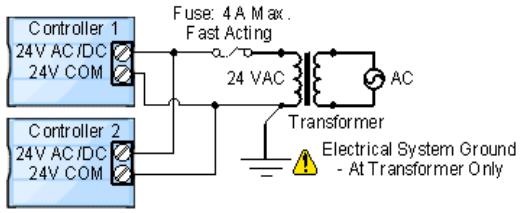

Figure 2: Power Wiring - AC

IMPORTANT: Maintain consistent polarity when you connect the controllers and devices to the transformer. Connect the COM terminal of each controller and each peripheral to the same terminal on the secondary side of the transformer. One terminal on the secondary side of the transformer must be connected to the building's ground.

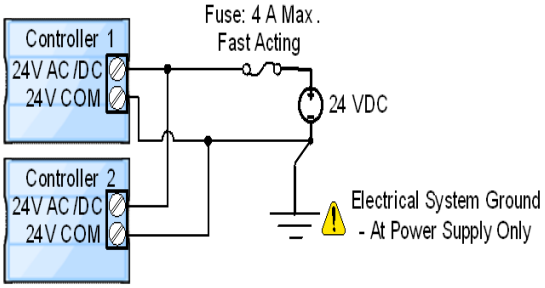

Figure 3: Power Wiring - DC

Input Wiring

Each controller has physical connections for inputs that are software configurable from within the LN Graphical Programming Interface (GPI) software. You can configure each input in the software plug-in to ensure proper input readings. The physical connections for inputs are marked as UIx.

Wiring Digital Inputs

Use this input configuration to monitor digital dry contacts, as well as pulsed contacts.

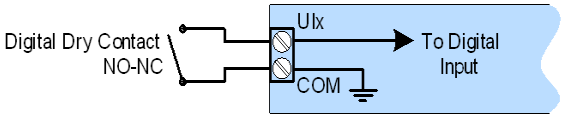

Figure 4: Digital Input - Digital Dry Contact (N.O. and N.C.)

Wiring Resistive Inputs

Use this input configuration to monitor Resistance Temperature Detectors (RTD); thermistors, such as 1,000 ohm RTDs to 10k ohm Type II and Type III thermistors; and potentiometers, such as 10k ohm and 100k ohm.

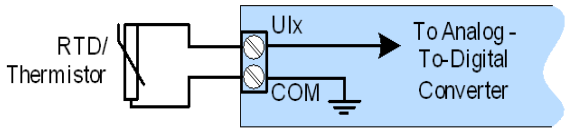

Figure 5: Resistive Input - RTD/Thermistor Input

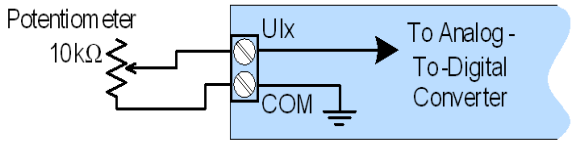

Figure 6: Resistive Input - 10k ohm Potentiometer Input

Wiring Current Inputs

Current inputs have a range of 0 to 20 mA. Set the jumper to the 0 to 20 mA position for all current inputs. This setting provides the required 249 ohm resistance for the controller's current inputs. Depending on the transducer power requirements, you may use any of the following input configurations. Use Figure 7 for the 2-wire, 0 to 20 mA transducer powered by the controller's internal 15 VDC power supply.

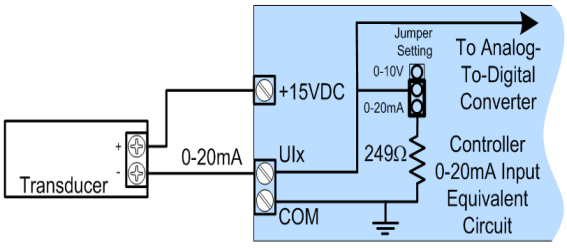

Figure 7: Current Input - 2-Wire Transducer Powered by the Controller

Use the Figure 8 configuration for a 2-wire, 0 to 20 mA transducer powered by an external 24 AC/DC power supply.

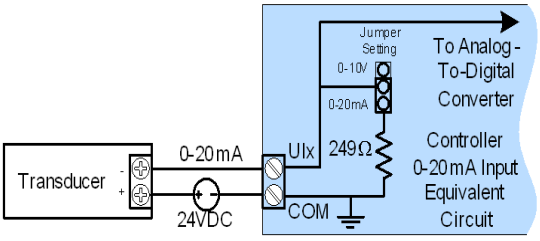

Figure 8: Current Input - 2-Wire Transducer, Externally Powered

Use the Figure 9 configuration for a 3-wire, 0 to 20 mA transducer powered by an external 24 AC/DC power supply.

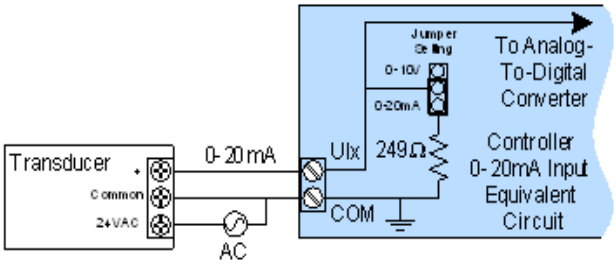

Figure 9: Current Input - 3-Wire Transducer, Externally Powered

Use the Figure 10 configuration for a transducer powered by its own power source.

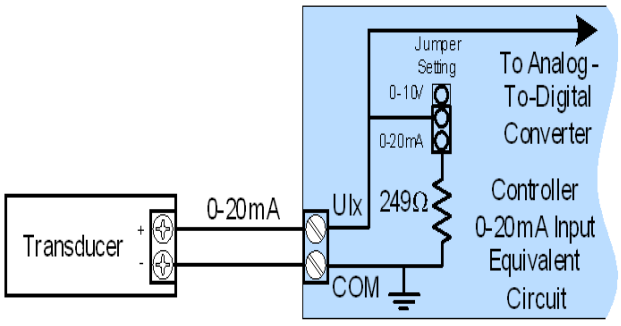

Figure 10: Current Input - 3-Wire Transducer, Externally Powered

Wiring Voltage Inputs

Voltage inputs have a range of 0 to 10 VDC or 0 to 5 VDC. Connect the voltage input according to Figure 11 if you are using a 3-wire 0 to 10 V or 0 to 5 V transducer.

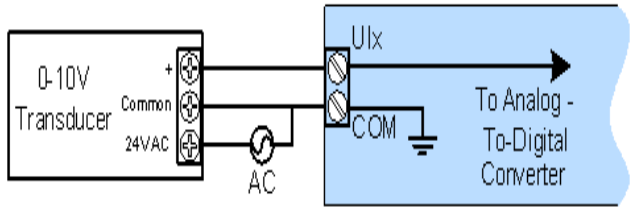

Figure 11: Voltage Input - 3-Wire Transducer

Connect the voltage input according to Figure 12 if the transducer is powered by its own power source.

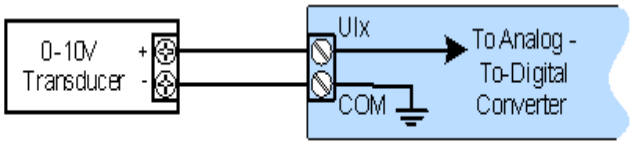

Figure 12: Voltage Input - Transducer with Own Power Source

Wiring Pulse Inputs

The input must be wired according to the requirements of the connected pulse meter (for example, fast pulse or slow pulse and internal or external supply type). Table 1 outlines the PRG 600 Series controller pulse input support.

Table 1: Pulse Input Support

Controller	Pulse Inputs	
	50 Hz: 10 ms Minimum ON/ OFF (Fast Pulse)	**1 Hz: 500 ms Minimum ON/ OFF (Slow Pulse)**
LN-PRG600-2	UI1 to UI4	UI5 to UI16
LN-PRG610-2	UI1 to UI4	UI5 to UI16

Configure the Pulse Input Types in the software to verify the pulse meter is powered correctly.

Connect the pulse input according to Figure 13 for a pulse meter that can pull down a +5 VDC supply with a 10k ohm pull-up resistor (internal supply type).

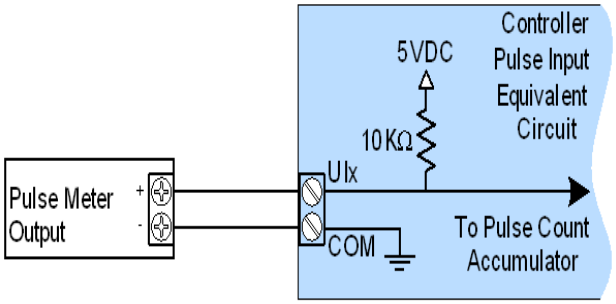

Figure 13: All Pulse Input Types - Internal Supply, 2-wire Pulse Meter

When you use a pulse meter that requires more than 5 VDC to operate, you must use a Fast Pulse Input type (Table 1). An external power supply is required to operate the pulse meter. You may use the controller's built-in power supply (Figure 14).

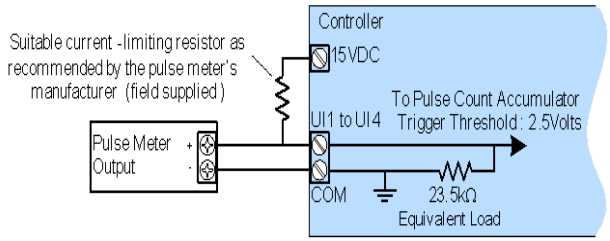

Figure 14: Fast Pulse Input Type - External Supply, 2-wire Pulse Meter, Built-in Power Used

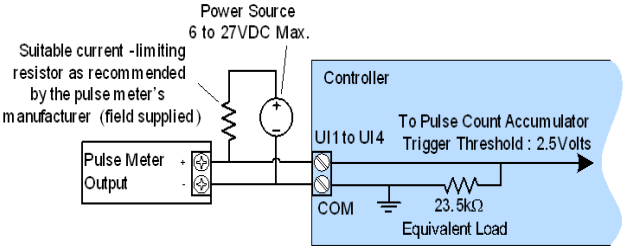

Figure 15: Fast Pulse Input Type - External Supply, 2-wire Pulse Meter

Output Wiring

Each controller has physical connections for universal outputs. These outputs are all software configurable. Table 2 shows the controller outputs.

Table 2: Controller Outputs

Controller	Universal Outputs	Jumper 0–10 VDC/0–20 mA
LN-PRG600-2	12	Yes
LN-PRG610-2	12	Yes

Note: Before you connect output equipment to the controller, refer to the installation instructions from the equipment manufacturer.

Output Wiring Recommendations

Output wiring recommendations include:

- For a wire length less than 75 feet (23 m) long, use either a shielded or unshielded 18 AWG wire.
- For a wire length up to 200 feet (61 m) long, use a shielded 18 AWG wire.
- The shield of the wire should be grounded on the controller side and the shield length should be kept as short as possible.

Wiring Universal Outputs (UOx)

You can configure universal outputs to provide either a linear signal ranging from 0 to 10 VDC or a 0 to 20 mA signal or a discrete signal of 0 or 12 VDC. You can use the discrete signal to generate a Pulse Wave Modulation (PWM) or a simple two-state signal. The outputs are protected by an auto-reset fuse.

Discrete Outputs

If a 12 VDC relay is being controlled, connect it to a universal output according to Figure 16.

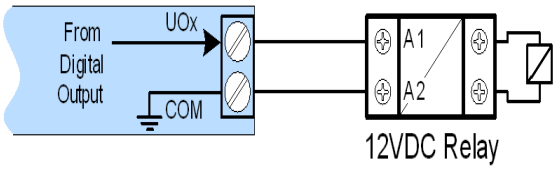

Figure 16: Discrete 0 or 12 VDC Universal Output - Relay

Current Outputs

The 0 to 20 mA signal is configurable by jumper (Figure 17).

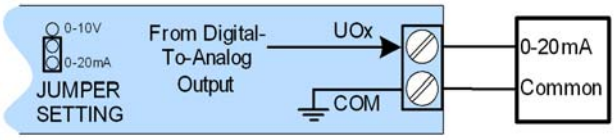

Figure 17: 0 to 20 mA Universal Output and Jumper Configuration

Voltage Outputs

Connect the 0 to 10 VDC as shown in Figure 17.

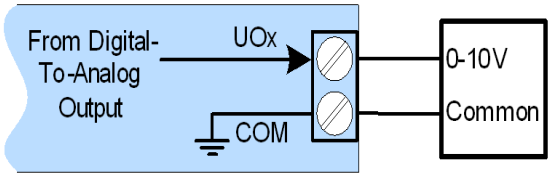

Figure 18: Voltage 0 to 10 VDC Universal Output

If you are controlling an analog actuator, connect the 0 to 10 VDC output, along with an external 24 VAC power source, to the analog actuator (Figure 19).

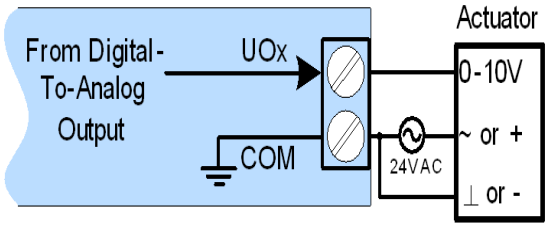

Figure 19: Voltage 0 to 10 VDC Universal Output - Analog Actuator

Communications Wiring

The recommended cable type for LONWORKS® communications is 22 AWG (0.65 mm), twisted pair, unshielded wire. The LONWORKS communication wire is polarity insensitive and when laid out in a bus, star, or free topology. For loop topology, take special care to maintain the polarity when connecting the LONWORKS network to avoid a short circuit.

Note: We recommend you use the bus topology network configuration for all LONWORKS communication wiring. This configuration allows you to troubleshoot the network easily.

Connect both wires to the LON1 or LON2 terminals of the controller. When you insert multiple wires into the terminals, ensure you properly twist the wires together prior to inserting them into the terminal connectors.

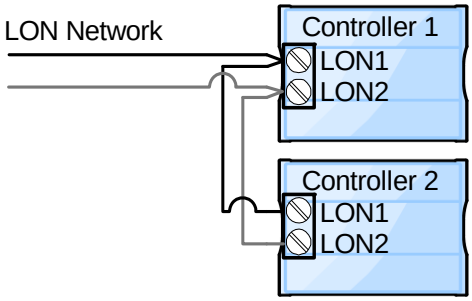

Figure 20: Communications Wiring

For more information and detailed explanations on network topology and wire length restrictions, refer to the *LonWorks LN-Series Network Communication and Interface Guide (LIT-12011253)* or Echleon Corporation's *Junction Box and Wiring Guideline for Twisted Pair LonWorks® Networks*.

IMPORTANT: Use the proper network terminators for the network topology. Failure to use the correct network terminators may result in communication errors between controllers. Do not use multiple gauges of cable on the same communication bus.

Two network terminators are required for the bus topology network configuration. Place one network terminator at each end of the bus topology channel.

One network terminator is required for the free topology network configuration. You can put the network terminator anywhere on the channel.

Wireless Installation

The LN Free Programmable PRG 600 Series controllers can receive input signals from wireless devices when connected to a wireless receiver and programmed with LN GPI software. Compatible wireless devices include temperature sensors, duct sensors, window/door contacts, and light switches.

For information on selecting mounting locations for the LN Series wireless controllers, refer to the *LN Series Wireless Solution Guide Technical Bulletin (LIT-12011628)*.

Mounting the Wireless Receiver

You have three mounting options: on a wall or ceiling with double-sided tape, on a wall or ceiling with mounting screws, or on a metal enclosure using a 1/2 inch National Pipe Thread (NPT) hub.

Regardless of the mounting method, the wireless receiver should be 16 inches (41 cm) or more away from the controller or any other network cables.

Connecting the Wireless Receiver

Connect the wireless receiver to the controller with the included telephone cable (4P4C modular connectors). Locate the telephone socket inside the device (Figure 21).

Figure 21: Telephone Socket Location

Connecting to the Controller Wireless Port

The wireless-option controllers have a wireless port where you connect the telephone cable. Locate the wireless port on the bottom of the controller.

Maintenance

CAUTION: Risk of Electric Shock.
Disconnect the power supply before making any electrical connections to avoid electric shock.

MISE EN GARDE : Risque de décharge électrique.
Débrancher l'alimentation avant de réaliser tout raccordement électrique afin d'éviter tout risque de décharge électrique.

Each controller requires minimal maintenance, but it is important to:

- clean the outside of the front plate an/or the inside of the back plate with a dry cloth.
- verify the tension of all wires and cables each time you service the controller.

Disposal

The Waste Electrical and Electronic Equipment (WEEE) Directive sets regulations for the recycling and disposal of products. The WEEE 2002/96/EG Directive applies to stand-alone products that can function on their own and are not a part of another system or piece of equipment. For this reason, Johnson Controls® products are exempt from the WEEE Directive. Nevertheless, they are marked with the WEEE symbol, indicating the devices are not disposed with municipal waste.

Dispose of products at the end of their useful life according to local regulations and the WEEE Directive.

Troubleshooting

Table 3 describes some troubleshooting scenarios.

Table 3: Troubleshooting (Part 1 of 3)

Problem	Possible Solution
Controller is powered but does not turn on.	
Fuse Is Blown	Disconnect power from the controller and check the fuse integrity. Reconnect power.
Power Supply Polarity	Verify that consistent polarity is maintained between all controllers and the transformer. Ensure that the COM terminal of each controller is connected to the same terminal on the secondary side of the transformer. See Figure 2 and Figure 3.
Controller cannot communicate on the LONWORKS network.	
Absent or Incorrect Supply Voltage	1. Check power supply voltage between 24 VAC/DC ±15% and COM pins, and ensure that it is between acceptable limits. 2. Check for tripped fuse or circuit breaker.
Overloaded Power Transformer	Verify the transformer is powerful enough to supply all controllers.
Network Not Wired Properly	Check that the wire connections are correct.
Absent or Incorrect Network Termination	Check the network terminations.

Table 3: Troubleshooting (Part 2 of 3)

Problem	Possible Solution
Controller communicates well over a short network but does not communicate on large network.	
Network Length	Check that the total wire length does not exceed the specifications of the *Junction Box and Wiring Guideline for Twisted Pair LONWORKS Networks.*
Wire Type	Check that the wire type agrees with the specification of the LONWORKS *LN-Series Network Communications and Interface Guide (LIT-1201235)* or *Junction Box and Wiring Guideline for Twisted Pair LONWORKS Networks*.
Network Wiring Problem	Check that the wire connections are correct.
Absent or Incorrect Network Termination	Check the termination(s). Incorrect or broken termination(s) make the communication integrity dependent upon a controller's position on the network.
Extra Capacitance	Ensure no extra capacitance is connected to the network other than the standard FTT circuit, and a maximum of a 3 meter stub (in bus topology).
Number of Devices on Network Segment Exceeded	The number of controllers on a channel should never exceed 64. Use a router or a repeater in accordance with LONWORKS *LN-Series Network Communications and Interface Guide (LIT-1201235)* or *Junction Box and Wiring Guideline for Twisted Pair LONWORKS Networks*.
Network Traffic	Query node statistic to check errors. Use a LONWORKS protocol analyzer to check network traffic.
Hardware input is not reading the correct value.	
Input Wiring Problem	Check that the wiring is correct according to this manual and according to the peripheral device's manufacturer.
Open Circuit or Short Circuit	Using a voltmeter, check the voltage on the input terminal. A short circuit has a 0 V value and an open circuit has a 5 V value.
Configuration Problem	Check the configuration of the input using the controller configuration plug-in or wizard. Refer to the online help for more information.
Over Voltage or Over Current at an Input	An over voltage or over current at one input can affect the reading of other inputs. Observe the allowed voltage/current range limits for all inputs.
Hardware output is not operating correctly.	
Output Wiring Problem	Check that the wiring is correct according to this manual and according to the peripheral device's manufacturer.
Configuration Problem	Using the controller configuration wizard (LN-GPI), check the configuration of the input. Refer to the controller's user guide for more information.
0 to 10 V Output, 24 VAC Powered Actuator is Not Moving	Check the polarity of the 24 VAC power supply connected to the actuator while connected to the controller. Reverse the 24 VAC wire if necessary.
Wireless devices not working correctly.	
Device not associated to controller	Using the device configuration wizard, check the configuration of the input.
Power discharge	Recharge the device with light (if solar powered) or replace the battery. Ensure sufficient light intensity (200lx for 4 hours per day)

Table 3: Troubleshooting (Part 3 of 3)

Problem	Possible Solution
Device too far from the Wireless Receiver	Reposition the device to be within the range of the Wireless Receiver. For information on typical transmission ranges, refer to the *LN Series Wireless Solution Technical Bulletin (LIT-12011628)*.
Configuration Problem	Check the configuration of the input using the device configuration plug-in or wizard.
Rx/Tx LEDs	
Rx LED not Blinking	Data is not being received from the LONWORKS data bus.
Tx LED not Blinking	Data is not being transmitted onto the LONWORKS data bus.

Service Light LED Operation

Table 4: Service LED Operation Guide

Operation	Service
Normal Operation	
Fast Blink Continuous  **(150 ms On, 150 ms Off, Continuous)**	Initialization: The device is starting up. Firmware upgrade in is progress and the controller operation is temporarily unavailable. The new firmware is being loaded into memory and the process takes a few seconds. Do not interrupt power to the device during this time.
The Status LED is Always OFF	The controller is operating normally.
LED Blink Patterns - Repeat Every 2 Seconds (Highest Priority to Lowest Priority)	
Long Blink Continuous  **(1s On, 1s Off, Continuous)**	The controller is not configured. Appropriate action: Commission the controller.
Long Long Long Blink  **(800 ms On, 300 ms Off, 800 ms On, 300 ms Off, 800 ms Off)**	The controller is offline. Appropriate action: Set the controller online.
Long Short Short Short Blink	The controller is in bypass mode. Appropriate Action: Set the controller online.
Short Short Long Blink	Poor-quality power; the device has browned-out: The voltage at the 24 VAC and 24 VCOM terminals has gone below the device's acceptable limit during powerup.
Fast Blink 12x	Wink: The wink function identifies a device.

Repair Information

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

Technical Specifications

LN-PRG6x0-2 (Part 1 of 2)

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
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:** 15VDC; maximum 320 mA (16 inputs x 20 mA each)

LN-PRG6x0-2 (Part 2 of 2)

Outputs		**Universal:** 0-10 VDC linear, digital 0 to12 VDC (on/off), PWM, floating, or 0 to 20 mA (jumper configurable); 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** 60 mA at 60°C (140°F) 100 mA at 20°C (68°F) **Output Resolution:** 10-bit digital/does analog converter
Wireless Receiver[1]		**Communication:** EnOcean® Wireless standard **Number of Wireless Inputs:** 28[2] **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.
Compliance	**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
CE	**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.

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.

Johnson Controls

Building Efficiency
507 E. Michigan Street, Milwaukee, WI 53202

Published in U.S.A. www.johnsoncontrols.com