AIO® Basic Touch Controller LTCH20

Installation Guide



innova

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DISCLAIMER

IMPORTANT - TRAINING IS REQUIRED PRIOR TO PERFORMING ANY INSTALLATION.

While this guide outlines the general installation requirements for the controller, it does not replace required installer training. Before commencing installation, the project manager must contact the INNOVA VIP Department at 216-710-1000 to coordinate training for the installer.

Failure to ensure that installation is performed by INNOVA-trained personnel may result in improper operation or equipment damage, and may void the warranty.

Training may be conducted in person or remotely (online).

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REVISION HISTORY

Rev	Date	Revised By	Changes
A	2026-08-17	Leah Kuber	Complete rewrite to align with current template; add references to installing the controller for all relevant AIO® units and gateways; update power consumption spec to correct format.
B	2026-09-15	Leah Kuber	Clarify that the LTCH20 can only be used with Gen 3 of the Vertical Stack unit.

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CONTENTS

1. ABOUT THIS GUIDE..... 4

1.1 Specific language..... 4

1.2 Safety notices, icons, and symbols..... 4

2. BASIC TOUCH CONTROLLER LTCH20 OVERVIEW.....5

2.1 AIO® unit and gateway compatibility..... 5

2.2 LTCH20 Basic Touch Controller specifications.. 5

3. SAFETY GUIDELINES - READ BEFORE INSTALLING.....5

3.1 Fire/explosion hazards..... 5

3.2 Electrical hazards..... 6

3.3 Moving parts hazards..... 6

3.4 General safety guidelines..... 6

3.5 Installer responsibilities..... 6

4. PREPARING FOR INSTALLATION.....7

4.1 Location considerations..... 7

4.2 Shipping configuration..... 7

4.3 Inspecting the package..... 7

4.4 Required tools and supplies..... 7

5. INSTALLING THE LTCH20 CONTROLLER WITH AN AIO® UNIT.....8

5.1 Opening the AIO® unit and installing the gateway..... 8

5.2 Installing and connecting the LTCH20 wall controller..... 8

5.3 Closing the AIO® unit..... 9

6. WIRING DIAGRAMS.....10

7. WARRANTY TERMS AND CONDITIONS.....10

7.1 Exclusions and limitations..... 10

1. ABOUT THIS GUIDE

This guide outlines the required procedures for safely installing the LTCH20 Basic Touch Controller and enabling it to communicate with an AIO® heat pump unit via a gateway board. Following these instructions reduces the risk of equipment damage, improper installation, and potential safety hazards.

The gateway used may be GW1, GWB20, GWN, or GWX, depending on the type of AIO® heat pump unit, and is installed into the AIO® unit. The LTCH20 Basic Touch Controller is installed on the wall of a room. The compatibility between the different gateways and heat pump units is detailed in Section 2.1.

Important: Read the entire installation guide before beginning any installation tasks. Pay close attention to all safety warnings and notices.

Note: This guide is shipped with the gateway and is the property of the customer. Make sure this guide is left in the customer's possession.

1.1 Specific language

Some language and symbols in this guide have specific meanings.

Reference to the product
Any reference to "the unit" or "the AIO® unit" is meant to refer to the specific AIO® heat pump unit that will be controlled by this LTCH20 controller.

Unit orientation
All directions in this guide (left, right, top, and bottom) are given from the perspective of facing the unit.

Role definitions
This guide is primarily intended for installers. The roles of end users and service technicians are also defined here for reference.

- **User:** A non-expert who can safely operate the unit and perform basic diagnostics and maintenance.
- **Installer:** A trained and certified HVAC installation technician responsible for the correct installation of the unit as indicated in the installation guide and in accordance with all local and national codes.
- **Service technician:** A trained and qualified HVAC professional who performs service or maintenance in compliance with OSHA safety requirements, recognized industry best practices, and all applicable federal, state, and local codes and standards.
- **Trained HVAC technicians:** A group term for both installation and service technicians.

1.2 Safety notices, icons, and symbols

Warnings, Cautions, and Annotations are included throughout this guide. Read each carefully and follow the stated instructions.

Safety notices
Each safety notice represents the level and immediacy of risk. Each warning panel displays a background color and a signal word and includes an icon to specify the topic.

DANGER

A red notice with the **DANGER** title indicates an imminently hazardous situation that could result in death or serious injury if not avoided.

WARNING

The orange notice with the **WARNING** title indicates a potential hazard that, if not avoided, could result in death or serious injury.

CAUTION

The yellow notice with the **CAUTION** title indicates a hazardous situation that, if not avoided, could result in minor to moderate injury or property damage.

Warning icons
The warning icons indicate the type of risk and are used in conjunction with the safety notice panels.

	The flame icon indicates information related to a hot surface or explosion hazard.
	The lightning-bolt icon indicates a warning related to electrical hazards.
	The hand icon indicates information related to a hazard involving moving parts and sharp surfaces.
	The exclamation-mark icon indicates general hazards (environmental, lifting, and other categories).

Annotation icons
Annotations are provided throughout this guide. It is important to read each one carefully and follow the stated instructions.



Indicates instructions or information that is important to note to ensure optimal installation or operation of the unit.

Indicates supplemental information, tips, or useful background information.

2. BASIC TOUCH CONTROLLER LTCH20 OVERVIEW

The LTCH20 wall-mounted Basic Touch Controller is simple and easy to use, with icons and text for each button. Its sleek, low-profile design blends easily into any decor. It features a simple on/off timer. The LED display dims after 15 seconds, making it ideal for any room, including a bedroom. For more information, see the AIO® Basic Touch Controller (LTCH20) User Guide.

2.1 AIO® unit and gateway compatibility

Although the LTCH20 Basic Touch Controller is installed on the wall, a compatible gateway board must be installed in the AIO® unit to enable the LTCH20 to communicate with the unit.

The LTCH20 gateway can be used with all AIO® heat pump units, with the compatible gateways as listed in Table 1.

Table 1. AIO® unit/gateway compatibility

AIO® Heat Pump Unit	Gateways Used with LTCH20:			
	GW1	GWB20	GWN	GWX
Wall Mounted (Gen 1)	X	✔	✔	X
Wall Mounted (Gen 2)	✔	X	✔	✔
Wall Mounted (Gen 3)	✔	X	✔	✔
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)	X	✔	✔	✔
Ceiling Suspended (without ERV option)	X	✔	✔	✔
Vertical Stack (Gen 3 only)	X	✔*	✔	✔
Vertical Stack XL	X	✔	✔	✔

*The Vertical Stack (Gen 2) unit comes with a GWB20 gateway pre-installed, so the LTCH20 controller may be connected to a GWB20 gateway in a Vertical Stack Gen 2 or Gen 3 unit.

All references to the AIO® Wall Mounted unit refer to both the Wall Mounted Standard and the Wall Mounted Pro units.

2.2 LTCH20 Basic Touch Controller specifications

The following are the specifications of the LTCH20 Basic Touch Controller:

- **Material:** Matte plastic frame, glass touch screen.
- **Connection Type**
  - Solid wire for less than 30' (9 m) run
  - Stranded shielded four-conductor 18 AWG wire for more than 30' (9 m) run
- **Mounting:** Surface-mounted
- **Power consumption:** 1 watt.
- **Dimensions:** 3.35" x 3.41" x 0.31" (85.1 mm x 86.6 mm x 7.9 mm).
- **Weight:** 0.5 lb (0.2 kg).

The LTCH20 Basic Touch Controller and the GW1, GWN20, GWN, and GWX gateways are optional components for the AIO® unit. They must only be used for this purpose.

3. SAFETY GUIDELINES - READ BEFORE INSTALLING

This guide details the proper steps for safely installing the LTCH20 Basic Touch Controller and a compatible gateway board required for the controller to communicate with the unit. Following these instructions can significantly reduce the risk of equipment damage and personal injury.

Read the entire installation guide before installing the gateway. Pay careful attention to all safety notices and warnings.

Failure to follow the indicated rules may cause appliance malfunctions and relieve the manufacturer of any warranty and of any liability for damage to persons, animals, or property.

Follow all safety regulations in force at the installation site, as well as common-sense precautions.

The precautions listed in this installation guide are intended to supplement accepted safe practices. In case of a direct conflict between accepted safety practices and this guide, the more stringent precaution takes precedence.

Failure to follow the instructions in this guide can result in property damage, serious injury, or death.

3.1 Fire/explosion hazards

⚠ WARNING

- In the event of abnormal conditions (such as a strange or burning smell, noise, or smoke), turn off the unit and disconnect it from its power source immediately. Report the issue immediately to your INNOVA representative or distributor.
- Servicing shall be performed only as recommended by the manufacturer.

3.2 Electrical hazards

⚠ DANGER

- Only trained HVAC technicians may install this controller and gateway. Improper modifications by an unqualified person can result in serious injury or death.
- When working on the equipment, observe all precautions in the guide and on labels attached to the equipment.
- Before installation, maintenance, or servicing, disconnect power to the entire system. Verify that power to the entire system is down, including any remote disconnects, peripherals, third-party devices, and devices operating on the unit's network.
- Follow all OSHA-compliant Lockout/Tagout (LOTO) procedures.

⚠ WARNING

- All electrical connections, wiring, and grounding must be performed by a qualified electrician and must comply with the National Electrical Code (NEC/NFPA-70) and all local codes that hold jurisdiction. Improper wiring or loose connections may cause overheating, fire, or electric shock.
- Use only the supplied installation-specific components. Using different components could lead to water leakage, electric shock, or fire.
- Do not open access panels to the interior of the unit without first disconnecting the power and/or turning off the breaker.

⚠ WARNING

- The unit contains capacitors that may retain an electrical charge after the power is disconnected. Thus, before beginning any installation or servicing, to avoid electrical shock or serious injury, be sure to:
  - Discharge all motor start-run capacitors.
  - Verify (using a voltmeter) that no power is running into the unit.
  - Wait at least five minutes for the AIO® unit to cool down and for the capacitors inside the unit to discharge.

⚠ CAUTION

- In the event of a blackout or thunderstorm, turn the unit off and disconnect it from the power source immediately.

3.3 Moving parts hazards

⚠ DANGER

- Do not operate the equipment with panels, guards, or covers removed, except when specifically instructed by the procedures below in order to test the installation.
- Ensure power is disconnected and components have come to a complete stop before accessing the interior. Internal fans, motors, and other moving components may start automatically when power is supplied.

⚠ WARNING

- Keep hands, hair, tools, and loose clothing away from fans and moving components. Contact with moving parts can cause serious injury.
- Do not remove, bypass, or disable protective covers, guards, or safety interlocks.

3.4 General safety guidelines

⚠ WARNING

- Do not modify or tamper with the gateway or controller. Unauthorized alterations may compromise safety, create hazardous conditions, and void the warranty.
- Wear appropriate personal protective equipment (PPE), such as gloves and safety glasses, during installation.
- Only a qualified HVAC professional may install this unit. The installer must be licensed, insured, or bonded, as required by local regulations.



Installation by anyone other than an INNOVA-trained and qualified HVAC professional voids the warranty on the unit.

3.5 Installer responsibilities

- Install the unit safely and in accordance with all applicable local and national codes and regulations.
- Ensure that you fully understand the product and the installation procedures before beginning installation. Installation activities involve greater risk than normal system operation.
- Provide the customer with the information necessary to operate the system safely after installation.

The safety precautions in this guide are intended to supplement recognized best practices. In the event of a conflict, the more stringent safety measure always takes precedence.

4. PREPARING FOR INSTALLATION

4.1 Location considerations

The LTCH20 Basic Touch Controller must be mounted indoors where it is not exposed to the elements, on a wall that reflects the average temperature in the space.

The LTCH20 controller should **NOT** be mounted in any of the following locations.

- Where it may be exposed to wind, rain, or mist, such as near doors or windows that are frequently opened.
- Near any heat source or heating vent.
- In direct sunlight.
- In areas prone to being dusty or dirty.
- Where it is not easily accessible.
- In areas where the temperature may be outside the range of 15°F (-9.4°C) - 120°F (48.9°C).
- In areas where the humidity can exceed 95%.
- Near machinery that produces electromagnetic interference (EMI).



EMI can disrupt the controller's normal operation.

4.2 Shipping configuration

The LTCH20 Basic Touch Controller and the compatible gateway board may be shipped together or separately. The type of gateway board ordered will vary depending on the type of unit it is intended to work with and other related considerations. Refer to in Section 2.1.

The **LTCH20 Basic Touch Controller** package ships as a single package containing the controller display and the back plate as two separate components.

Do not assemble the two parts of the controller until instructed to do so in this guide. The controller is not intended to be connected more than once.

The contents of the **gateway** package depend on the gateway ordered. Refer to the "Shipping configuration" section (usually 4.1) of the installation guide for the specific gateway, as listed below in Section 5.1, Table 2.

4.3 Inspecting the package

When the shipment is received, inspect it thoroughly before proceeding to installation:

1. Ensure that the contents match the order and shipping documents.
2. Inspect the entire gateway board and any accessories for any damage that may have occurred during shipping.
3. If the package or contents appear damaged:
    a. Photograph all damage and all sides of the component to support a damage claim.
    b. Clearly document the damage on the freight bill.
    c. Notify your INNOVA representative or distributor.

Report all damage within two weeks of delivery to be eligible for a claim.

4.4 Required tools and supplies

- #2 Phillips-head screwdriver
- Mini (⅛") flathead screwdriver
- Four-conductor control cable with solid copper conductors, of sufficient length to run between the unit and the controller:
    - For cable lengths of less than 30 ft (9 m), an unshielded twisted-pair cable may be used in low-noise environments.
    - For cable lengths of 30 ft (9 m) or more, an overall 18 AWG shielded twisted-pair cable is required.

The total wire run may not exceed 40 feet.

- Alcohol pad (if not provided with the gateway)
- (Optional) A compatible-sized junction box (J-box) and two compatible screws.

If using a junction box, it should be attached to the wall before beginning to install the controller. Make sure the J-box is installed in accordance with all relevant codes, and at a distance that allows the controller to be wired to the gateway.

5. INSTALLING THE LTCH20 CONTROLLER WITH AN AIO® UNIT

To install the LTCH20 Basic Touch Controller to work with an AIO® unit, perform the following steps:

1. Open the AIO® unit: See Section 5.1, Step 1.
2. Install the gateway in the unit (if not installed already): See Section 5.1, Step 2.
3. Install the LTCH20 controller and connect it to the gateway: See Section 5.2.
4. Close the AIO® unit: See Section 5.3.

5.1 Opening the AIO® unit and installing the gateway

Table 2 below provides references to the appropriate gateway installation procedure for each AIO® unit when using each gateway.

1. Open the unit according to the procedure in the appropriate installation guide, in the "Open" section listed in Table 2.
2. If the gateway is not already installed in the unit, install it according to the procedure in the same installation guide, in the "Install" section(s) listed in Table 2.

Table 2. Installation guides for opening units and installing gateways

AIO® Unit	Installation Guide	"Open" Section	"Install" Sections
With the GW1 Gateway:			
Wall Mounted (Gen 2)	GW1 Gateway Installation Guide	5.1	5.2, 5.3
Wall Mounted (Gen 3)		6.1	6.2, 6.3
With the GWB20 Gateway:			
Wall Mounted (Gen 1)	GWB20 Gateway for AIO® Heat Pumps Installation Guide	6.1	6.2, 6.3
Wall Mounted (Gen 2)	Not used together	N/A	N/A
Wall Mounted (Gen 3)	Not used together	N/A	N/A

AIO® Unit	Installation Guide	"Open" Section	"Install" Sections
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)	GWB20 Gateway for AIO® Heat Pumps Installation Guide	7.1	7.2, 7.3
Ceiling Suspended (without ERV option)		8.1	8.2, 8.3
Vertical Stack (Gen 2/3)		9.1	9.2, 9.3
Vertical Stack XL		10.1	10.2, 10.3
With the GWN Gateway:			
Wall Mounted (Gen 1)	GWN Gateway for AIO® Heat Pumps Installation Guide	7.1	7.2, 7.3
Wall Mounted (Gen 2)		8.1	8.2, 8.3
Wall Mounted (Gen 3)		9.1	9.2, 9.3
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)		10.1	10.2, 10.3
Ceiling Suspended (without ERV option)		11.1	11.2, 11.3
Vertical Stack (Gen 3)		12.1	12.2, 12.3
Vertical Stack XL		13.1	13.2, 13.3
With the GWX Gateway:			
Wall Mounted (Gen 1)	Not used together	N/A	N/A
Wall Mounted (Gen 2)	GWX Gateway for AIO® Heat Pumps Installation Guide	7.1	7.2, 7.3
Wall Mounted (Gen 3)		8.1	8.2, 8.3
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)		9.1	9.2, 9.3
Ceiling Suspended (without ERV option)		10.1	10.2, 10.3
Vertical Stack (Gen 3)		11.1	11.2, 11.3
Vertical Stack XL		12.1	12.2, 12.3

5.2 Installing and connecting the LTCH20 wall controller

The procedure for installing the LTCH20 Basic Touch Controller and connecting it to the gateway is the same for all AIO® units and gateways.

1. **Connect the control cable to the gateway.**
   With power still disconnected, connect the four control cable wires to the four gateway terminals labeled RX, TX, GND, 24V (on the GW1 and GWB20) or RX, TX, 0V, 24V (on the GWN and GWX).

*Figure 1. Connect control cable on **GW1** gateway*

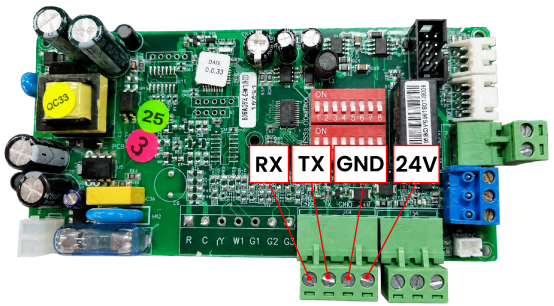


*Figure 2. Connect control cable on **GWB20** gateway*

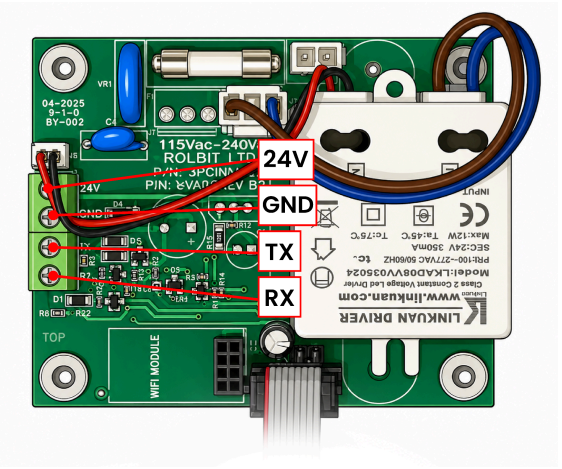


*Figure 3. Connect control cable on **GWN** gateway*

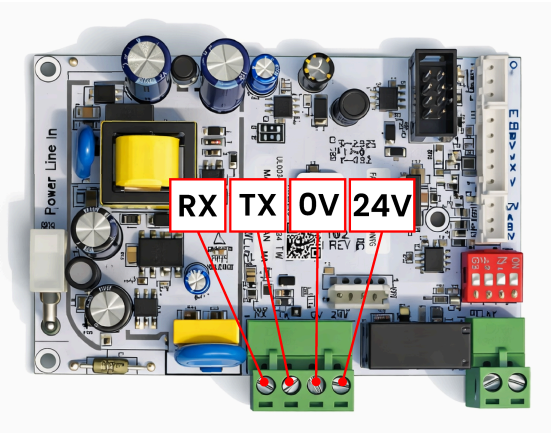
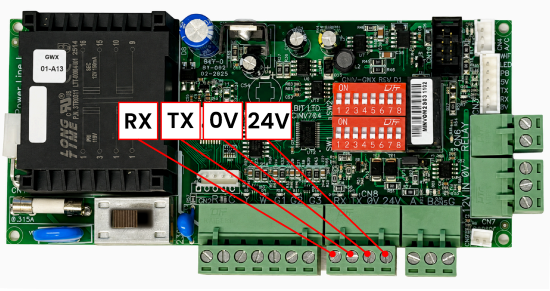


*Figure 4. Connect control cable on **GWX** gateway*

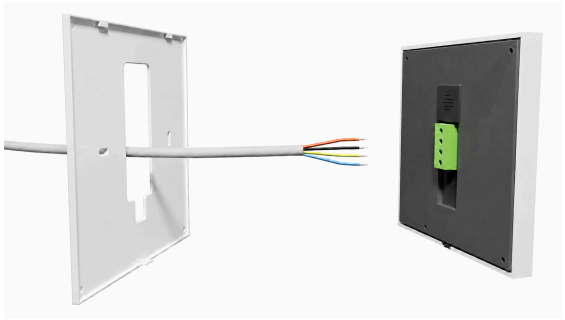


2. Connect the control cable to the controller.

If using a junction box, make sure it is attached to the wall before installing the controller.

a. Route the control cable through the wall to where the controller will be installed, then bring it through the large opening in the back plate of the controller, from the outside surface to the inside.

Figure 5. Connect the control cable to the LTCH20 controller



b. Secure the back plate to the wall or J-box with two screws, ensuring the back plate is straight and the small latch is at the bottom.

c. Connect the free end of the control cable wires to the terminals on the back of the LTCH20 controller housing according to Table 3.

Table 3. Control cable wiring from gateway to controller

Gateway Terminal	Controller Terminal
24V	24V
GND or 0V	GND
RX	TX
TX	RX

d. Position the controller display over the back plate, lining up the two parts of the latch, and carefully snap it into place.

5.3 Closing the AIO® unit

Although the LTCH20 Basic Touch Controller turns the AIO® unit on and off, it receives its power from the unit. If the unit is not connected to the power supply, the controller cannot be turned on. If, after closing the unit, the controller does not seem to have power, check the unit's electrical supply.

After installing and connecting the gateway and controller, close the unit according to the procedure in the indicated installation guide in the "Close" section, as listed in Table 4.

Table 4. Installation guides for closing units

AIO® Unit	Installation Guide	"Close" Section
With the GW1 Gateway:		
Wall Mounted (Gen 2)	GW1 Gateway Installation Guide	5.4
Wall Mounted (Gen 3)		6.4
With the GWB20 Gateway:		
Wall Mounted (Gen 1)	GWB20 Gateway for AIO® Heat Pumps Installation Guide	6.4
Wall Mounted (Gen 2)	Not used together	N/A
Wall Mounted (Gen 3)	Not used together	N/A
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)	GWB20 Gateway for AIO® Heat Pumps Installation Guide	7.4
Ceiling Suspended (without ERV option)		8.4
Vertical Stack (Gen 2/3)		9.4
Vertical Stack XL		10.4
With the GWN Gateway:		
Wall Mounted (Gen 1)	GWN Gateway for AIO® Heat Pumps Installation Guide	7.4
Wall Mounted (Gen 2)		8.4
Wall Mounted (Gen 3)		9.4
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)		10.4
Ceiling Suspended (without ERV option)		11.4
Vertical Stack (Gen 3)		12.4
Vertical Stack XL		13.4
With the GWX Gateway:		
Wall Mounted (Gen 1)	Not used together	N/A
Wall Mounted (Gen 2)	GWX Gateway for AIO® Heat Pumps Installation Guide	7.4
Wall Mounted (Gen 3)		8.4
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)		9.4
Ceiling Suspended (without ERV option)		10.4

AIO® Unit	Installation Guide	"Close" Section
Vertical Stack (Gen 3)		11.4
Vertical Stack XL		12.4

6. WIRING DIAGRAMS

The following wiring diagrams show the connections between the LTCH20 Basic Touch Controller and the gateway boards.

Figure 6. GWB20 to LTCH20 wiring diagram

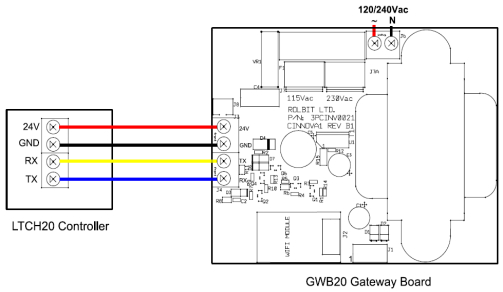


Figure 7. GWN to LTCH20 wiring diagram

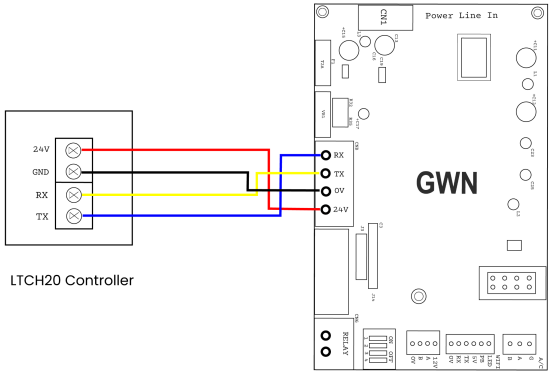
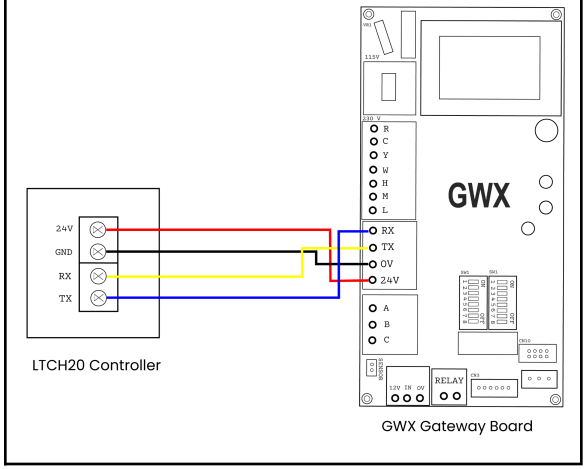


Figure 8. GWX to LTCH20 wiring diagram



7. WARRANTY TERMS AND CONDITIONS

Controllers and gateways carry a two-year warranty.

7.1 Exclusions and limitations

The above-noted warranty shall not cover:

- Any damage resulting from improper voltage supplied to the AIO® unit.
- Damage to a controller or gateway where there is a corrosive atmosphere containing any damaging chemical, such as chlorine or fluorine.
- Failure of the controller or gateway due to acts of God, natural disasters, power failures, interruptions, brownouts or power spikes, or due to incorrect or inadequate electrical service, or failure of internet services or home networks.
- Damages or personal injury caused directly or indirectly by failure or malfunction of the controller or gateway as a result of any cause, including natural disasters, accidents, misuse, improper wiring, or installation.

For additional information and any product inquiries, contact:

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With over 20 years of experience in the climate comfort sector, we have a clear goal: growth through innovation. Our team is laser-focused on the conception, development, and production of innovative heating, ventilation, and air conditioning solutions. This mission has developed through bringing together technical skills, creativity, technology, design, Italian passion, and a global vision to achieve the best energy efficiency and performance.

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MADE IN ITALY

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