

AIO™ Basic Touch Controller LTCH20

Installation Guide



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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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Illustrations may not be to scale, and all information and dimensions stated herein are subject to change at any time at the sole discretion of INNOVA. Benefits described herein apply only to the extent that the product is installed correctly in the correct application and used for its intended purpose.

INNOVA is constantly innovating and improving its products and reserves the right to modify product design and specifications without notice and without incurring any obligations.

REVISION HISTORY

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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 important installation information.



Indicates important user 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	X	✓	✓	✓
Vertical Stack XL	X	✓	✓	✓



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 G BEFORE I

This guide details the LTCH20 Basic Touch Controller. The gateway board must be installed and configured correctly. Failure to follow these instructions can result in equipment damage.

Read the entire instructions before installing the gateway. Pay careful attention to the warnings and cautions.

Failure to follow these instructions may result in appliance malfunction, injury, or death. Failure to follow these instructions may void any warranty and may result in injury to persons, animals, or property.

Follow all safety rules and regulations at the site, as well as any local, state, or federal regulations.

The precautions listed in this guide are intended to supplement the safety instructions in the case of a direct contact with the unit. These practices and this guide are not a substitute for a precaution taken by the user.

Failure to follow these instructions may result in property damage.

3.1 Fire/explosion



- In the event of a fire, turn off the unit and remove the source immediately. Contact your distributor.
- Servicing should be performed by a qualified technician.

3.2 Electrical



- Only trained technicians should install the controller and perform any modifications. Improper installation may result in serious injury or death.
- When working on the unit, always use proper safety precautions and wear appropriate PPE.

DANGER

- 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.
- 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.

DANGER

- 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

4.1 Location c

The LTCH20 Basic T... indoors where it is... wall that reflects th... space.

The LTCH20 contr... of the following loc...

- Where it may... such as near... frequently op...
- Near any heat...
- In direct sunli...
- In areas prone...
- Where it is not...
- In areas where... the range of 1...
- In areas where...
- Near machine... interference (



EMI can... operat...

4.2 Shipping

The LTCH20 Basic T... compatible gatew... or separately. The... vary depending on... work with and othe... [Section 2.1](#).

The LTCH20 Basic... a single package... and the back plate...



Do not... contro... guide... be con...

The contents of th... gateway ordered... section (usually 4.1... specific gateway,

4.3 Inspectin

When the shipmen... before proceeding...

1. Ensure that th... shipping docu...

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 (1/8") 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.

- (Optional) A compatible-sized junction box (J-box) and two compatible screws.
- Alcohol pad (if not provided with 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)	GW1 Gateway Installation Guide	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
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		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		12.1	12.2, 12.3
Vertical Stack XL		13.1	13.2, 13.3
With the GWX Gateway:			

AIO Unit
Wall Mounted (Gen 1)
Wall Mounted (Gen 2)
Wall Mounted (Gen 3)
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)
Ceiling Suspended (without ERV option)
Vertical Stack
Vertical Stack XL

5.2 Installing LTCH20 wall c

The procedure for
Controller and con
same for all AIO un

1. **Connect the c**
With power st
control cable
labeled RX, TX
or RX, TX, 0V, 2

Figure 1. Connect cont



Figure 2. Connect con

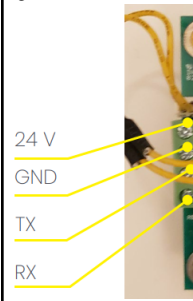


Figure 3. Connect control cable on **GWN** gateway

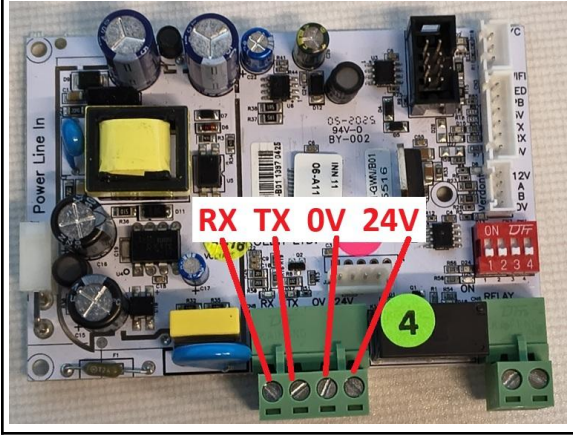
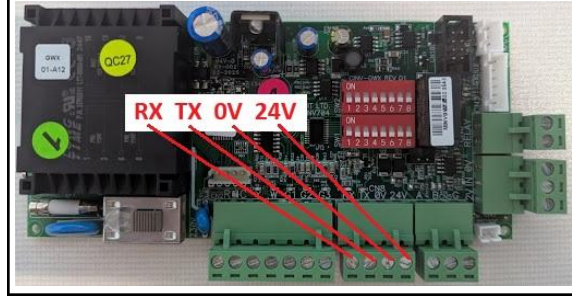


Figure 4. Connect control cable on **GWX** gateway



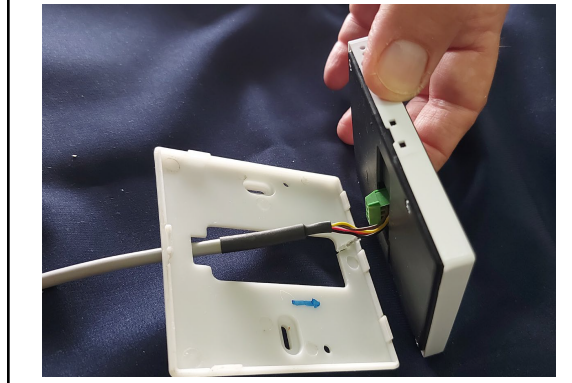
2. Connect the control cable to the controller.



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 with two screws, ensuring that 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



Although the controller receives power from the unit's supply, it does not receive power from the unit's e

After installing and connecting the controller, close the back plate in the indicated installation section, as listed in

Table 4. Installation g

AIO Unit
With the GW1 Gateway
Wall Mounted (Gen 2)
Wall Mounted (Gen 3)
With the GWB20 Gateway
Wall Mounted (Gen 1)
Wall Mounted (Gen 2)
Wall Mounted (Gen 3)
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)
Ceiling Suspended (without ERV option)
Vertical Stack
Vertical Stack XL
With the GWN Gateway
Wall Mounted (Gen 1)
Wall Mounted (Gen 2)
Wall Mounted (Gen 3)
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)
Ceiling Suspended (without ERV option)
Vertical Stack
Vertical Stack XL
With the GWX Gateway
Wall Mounted (Gen 1)
Wall Mounted (Gen 2)
Wall Mounted (Gen 3)
Ceiling Ducted (all) / Ceiling Suspended (with ERV option)
Ceiling Suspended (without ERV option)
Vertical Stack
Vertical Stack XL

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

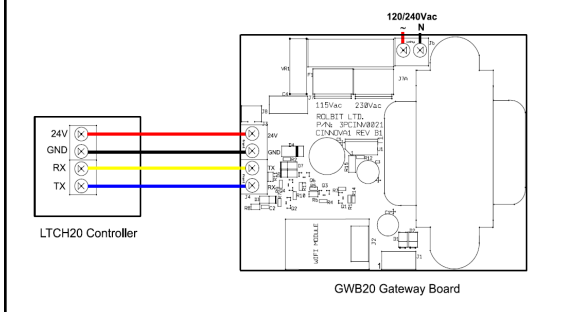


Figure 7. GWN to LTCH20 wiring diagram

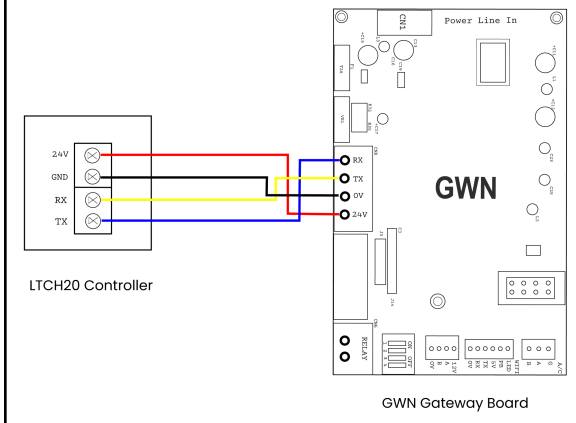
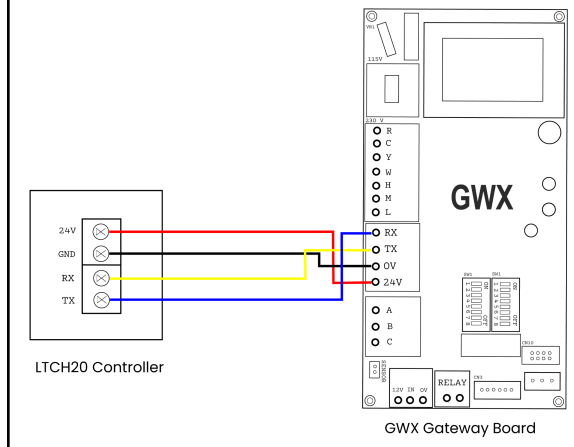


Figure 8. GWX to LTCH20 wiring diagram



7. WARRANTY CONDITIONS

Controllers and gateway boards

7.1 Exclusions

The above-noted

- Any damage caused by the user or third parties supplied to the user.
- Damage to the product caused by a corrosive atmosphere or other damaging conditions.
- Failure of the product due to natural causes, God, natural disasters, interruptions, or to incorrect operation or failure of internal components.
- Damages or product failure indirectly by force majeure, controller or gateway board, including natural disasters or improper wiring.

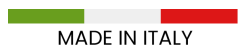
For additional information, please contact:

innova.co | (212) 201-1111



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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