AIO® Remote Temperature Sensor (RTS)

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 unit, it does not replace required installer training. Before commencing installation, the project manager must contact the INNOVA VIP Department at (212) 204-2700 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	2026-07-15	Leah Kuber	New document
B	2026-08-17	Leah Kuber	Correct power-on procedure in sec. 5.4 to align with updates to TFTH20 guide.

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1. ABOUT THIS GUIDE

This guide outlines the required procedures for safely installing a Remote Temperature Sensor (RTS) in an AIO® heat pump that is connected to a TFTH20 Advanced Touch Controller via the GWB20 gateway control board. Following these instructions reduces the risk of equipment damage, improper installation, and potential safety hazards.

The Remote Temperature Sensor (RTS) enables the heat pump unit to read the temperature measured by the TFTH20 controller on the room wall, instead of the return air temperature sensor inside the unit, to provide more accurate temperature control at the thermostat's location.

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

1.1 Specific language

Some language and symbols in this guide have specific meanings.

Reference to the products
All references to "the RTS module" refer to the Remote Temperature Sensor device that is being installed.

All references to "the unit" or "the AIO® unit" refer to the specific AIO® heat pump unit where the RTS module is being installed.

All references to "the gateway" or "the gateway board" refer to the GWB20 gateway control board that is installed inside the unit.

All references to "the controller" or "the wall controller" refer to the TFTH20 Advanced Touch Controller that is connected to the unit via the gateway.

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. REMOTE TEMPERATURE SENSOR (RTS) OVERVIEW

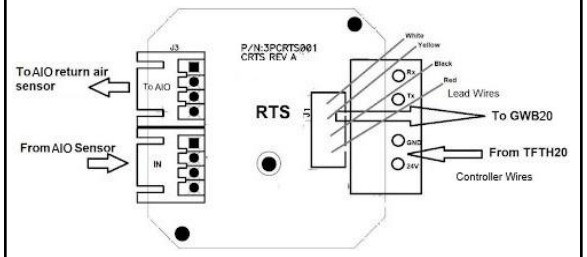
The Remote Temperature Sensor is intended for installation inside an AIO® heat pump unit connected to a TFTH20 Advanced Touch Controller (wall controller) via the GWB20 gateway control board.

Typically, the AIO® unit controls the room temperature by comparing the temperature setpoint to the actual ambient temperature measured by the unit's return air sensor. Although the TFTH20 controller also has a thermostat with a temperature sensor, the unit typically does not read the thermostat's temperature but instead relies on its own sensor.

However, in some situations, the temperature reading from the unit's sensor does not accurately reflect the room temperature, such as when a Vertical Stack unit is installed in a closet or a Ceiling Ducted unit is installed in the ceiling.

In these situations, it is advisable to install a Remote Temperature Sensor (RTS). This small module is connected between the controller and the gateway, and is also connected between the return air sensor and the main control board of the unit. In this way, the RTS module enables the unit to read the temperature from the wall controller instead of directly from the unit's return air sensor.

Figure 1. RTS module connections



Although the AIO® heat pump units can work with a variety of gateway control boards and wall controllers, this RTS module was designed to work specifically with the GWB20 gateway board and the TFTH20 Advanced Touch Controller.

The Room Temperature Sensor (RTS), TFTH20 Advanced Touch Controller, and GWB20 gateway control board 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 the safe installation of a Remote Temperature Sensor (RTS) in an AIO® heat pump. By following these instructions, the risk of equipment damage and personal injury can be significantly reduced.

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

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

All safety regulations in force at the installation site, as well as common-sense precautions, must be followed.

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 the RTS module. 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 done 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 as specifically instructed in the procedures below 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 Button cell/coin battery hazards

⚠ WARNING



- **INGESTION HAZARD:** The TFTH20 controller contains a button cell or coin battery.
- **DEATH** or serious injury can occur if ingested.
- A swallowed button cell or coin battery can cause **internal chemical burns** in as little as **2 hours**.
- **KEEP NEW AND USED BATTERIES OUT OF REACH OF CHILDREN.**
- Seek immediate medical attention if a battery is suspected to be swallowed or inserted inside any part of the body.

⚠ WARNING

- The TFTH20 controller contains a CR1220 3V dry lithium coin cell battery.

⚠ WARNING

- Remove and immediately recycle or dispose of used batteries according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
- Even used batteries may cause severe injury or death.
- Call a local poison control center for treatment information. In the USA, call the **National Battery Ingestion Hotline: 1-800-498-8666.**
- Non-rechargeable batteries are not to be recharged.
- Do not force discharge, recharge, disassemble, heat above 140 °F (60 °C), or incinerate. Doing so may result in injury due to venting, leakage, or explosion, resulting in chemical burns.

⚠WARNING

- Follow all instructions for proper battery handling and replacement.
- Ensure the battery is installed correctly according to polarity (+/-).
- Remove and immediately recycle or dispose of batteries from equipment not used for an extended period of time, according to local regulations.
- Always completely secure the battery compartment. If the battery compartment does not close securely, stop using the product, remove the battery, and keep it away from children.

3.5 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 the installation process.
- 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.

3.6 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.

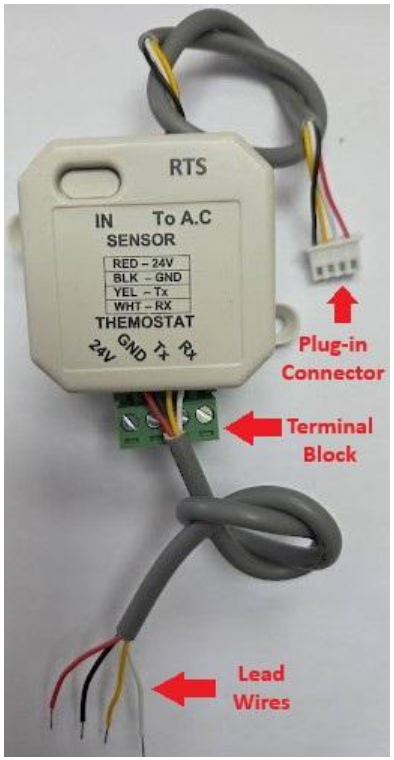
The safety precautions in this guide are intended to supplement recognized best practices. In the event of a conflict, the more stringent safety measure always takes precedence.

4. PREPARING FOR INSTALLATION

4.1 Shipping configuration

The Remote Temperature Sensor (RTS) consists of a single module with two gray cables attached. The cable at the end of the module with the green terminal block has four unterminated lead wires. The cable at the other end has four wires with a white plug-in connector.

Figure 2. RTS module illustration



4.2 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 module and wiring 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.

4.3 Required tools and supplies

- Mini (⅛") flathead screwdriver.
- Alcohol pad.
- Double-sided adhesive foam tape.

5. INSTALLING THE REMOTE TEMPERATURE SENSOR IN AN AIO® UNIT

To install the Remote Temperature Sensor (RTS) module in an AIO® unit, perform the following steps:

1. Open the AIO® unit.
2. Attach the RTS module to the unit.
3. Connect the RTS module wiring to the gateway and to the wall controller.
4. Connect the RTS module wiring to the unit.
5. Set the temperature sensor configuration in the TFTH20 controller.
6. Verify successful installation.
7. Close the AIO® unit.



It is assumed that the AIO® heat pump unit in which the RTS module is to be installed already has a GWB20 gateway board installed and that the gateway is connected to a TFTH20 wall controller.



- For more information about installing a GWB20 gateway in an AIO® unit, refer to the GWB20 Gateway for AIO® Heat Pumps Installation Guide.
- For more information about installing a TFTH20 wall controller and connecting it to an AIO® unit, refer to the AIO® Advanced Touch Controller (TFTH20) Installation Guide.

5.1 Opening the AIO® unit

⚠CAUTION

Before opening the unit, make sure the power supply is disconnected and that at least five minutes have passed since it was last operated.

Open the AIO® unit as instructed in the GWB20 Gateway for AIO® Heat Pumps Installation Guide, in the applicable section listed in Table 1, to expose the panel where the gateway board is installed.

Table 1. GWB20 Installation guide section for opening the unit

AIO® unit type	GWB20 Installation Guide section
Wall Mounted (Gen 1 only)	6.1
Ceiling Ducted	7.1
Ceiling Suspended (with ERV option)	7.1
Ceiling Suspended (without ERV option)	8.1
Vertical Stack	9.1
Vertical Stack XL	10.1

5.2 Attaching the RTS module to the unit

1. **Prepare the mounting location.**
   a. Find a space near the gateway board where the RTS module will fit.
   b. Clean the mounting location with an alcohol pad to ensure proper adhesion.
2. **Mount the RTS module next to the gateway.**
   a. Cut the double-sided adhesive foam tape to fit the RTS module and attach it to the back of the module.
   b. Using the foam tape, mount the RTS module to the unit near the gateway, and press firmly to ensure the module is securely attached.

⚠CAUTION

Make sure there is no direct contact between the RTS module and the metal panel.

5.3 Connecting the RTS module wiring

There are four connections that must be made with the RTS module:

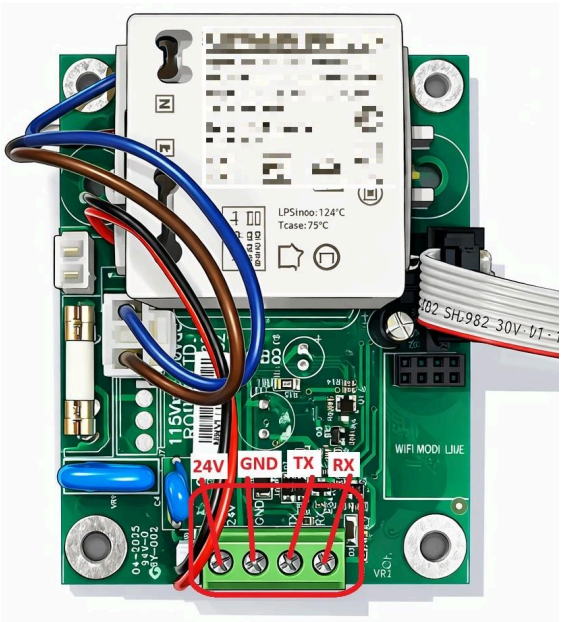
- The lead wires on the RTS module must be connected to the gateway.
- The terminal block on the RTS module must be connected to the control cable coming from the controller.
- The IN port on the RTS module must be connected to the unit's return air sensor.
- The white, 4-wire connector from the RTS module must be connected to the unit's main control board.

The details of these connections are described in the sections below.

5.3.1 Connecting the RTS module to the gateway and the controller

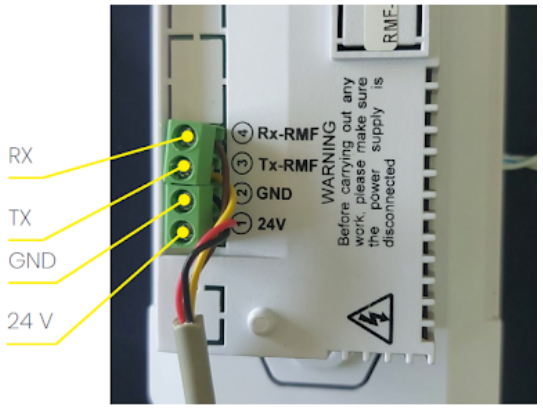
The GWB20 gateway has a four-terminal block for connecting to a wall controller. The terminals are labeled 24V, GND, TX, and RX, respectively.

Figure 3. GWB20 thermostat connection terminals



The TFTH20 wall controller has a similar terminal block with the same labels.

Figure 4. TFTH20 gateway connection terminals



When a unit is connected to a TFTH20 controller via the GWB20 gateway, the two terminal blocks are connected via a four-wire control cable, allowing the 24V, GND, TX, and RX terminals on the gateway to connect to the 24V, GND, RX, and TX terminals on the controller. Note that the RX and TX connections are reversed.

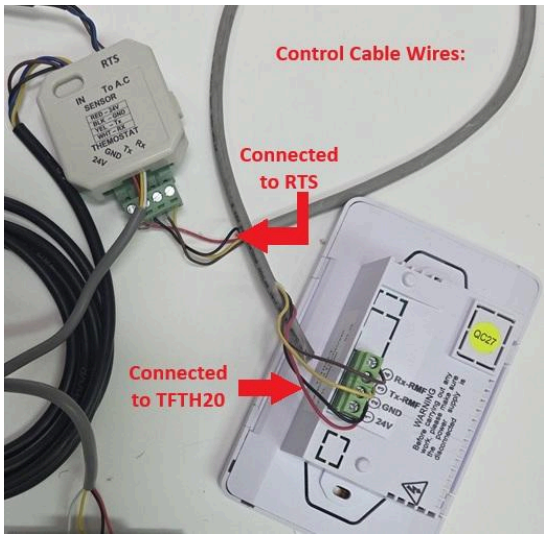
When an RTS module is installed, it must be connected between the gateway and the controller, so the wiring runs from the controller to the RTS module and then to the gateway.

To connect the RTS module between the controller and the gateway:

1. **Disconnect the gateway from the controller.**
   Disconnect the four wires of the control cable from the four gateway terminals labeled RX, TX, GND, and 24V.

   The other end of these wires remains connected to the controller.
2. **Connect the controller to the RTS module.**
   Connect those four wires to the green terminal block on the RTS module. Make sure to connect each wire to the terminal with the same label it had on the gateway.

Figure 5. RTS module connected to controller (illustration only)



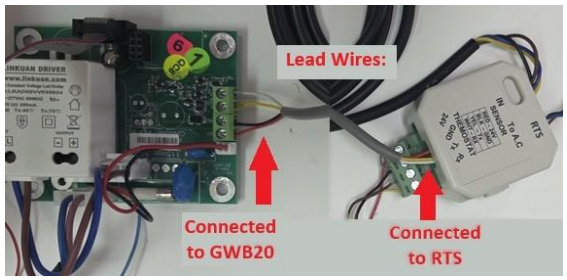
In the initial installation, the wire connected to the RX terminal on the controller is connected to the TX terminal on the gateway, and the TX terminal on the controller is connected to the RX terminal on the gateway. This reversal must be maintained when connecting the controller to the RTS module.

3. **Connect the RTS module to the gateway.**
   Locate the four unterminated lead wires that protrude from the RTS module near the terminal block. Connect these wires to the gateway terminal block as indicated in Table 2.

Table 2. RTS module wiring connection to gateway

Lead wire color	To gateway terminal
Red	24V
Black	GND
Yellow	TX
White	RX

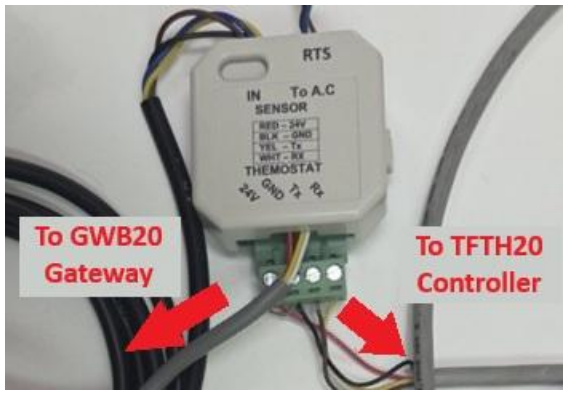
Figure 6. RTS module connected to gateway (illustration only)



Since the TX and RX wires are already reversed between the controller and the RTS module, they do not need to be reversed again when connecting between the RTS module and the GWB gateway.

When these connections are complete, the RTS module will appear as shown below.

Figure 7. RTS module connected to gateway and controller (illustration only)



5.3.2 Connecting the RTS module to the unit

In the factory configuration of the AIO® unit, the wiring from the return air sensor is plugged into the 'CN21' port on the unit's main control board. This enables the unit to read the sensor's measured ambient air temperature and use that value to determine how much to heat or cool the room.

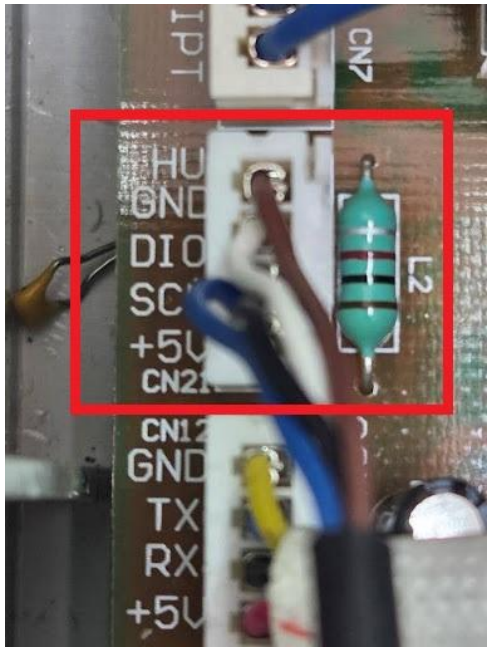
When an RTS module is installed, it connects between the return air sensor connector and the unit's control board, allowing it to override the communication with the return air sensor and direct the unit to read the temperature from the wall controller instead.

In this way, the return air sensor is not permanently disabled or damaged, but merely disabled from communicating directly with the unit. If the RTS module were no longer needed at any time, the connection to the unit could be easily restored.

To connect the RTS module between the controller and the gateway:

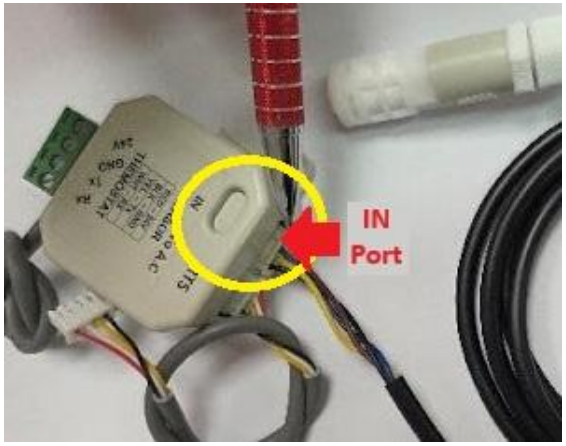
1. **Disconnect the return air sensor from the unit's control board.**
   Disconnect the return air sensor connector that is plugged into 'CN21' on the unit's main control board (near component 'L2'), as shown.

Figure 8. Return air sensor connected to CN21



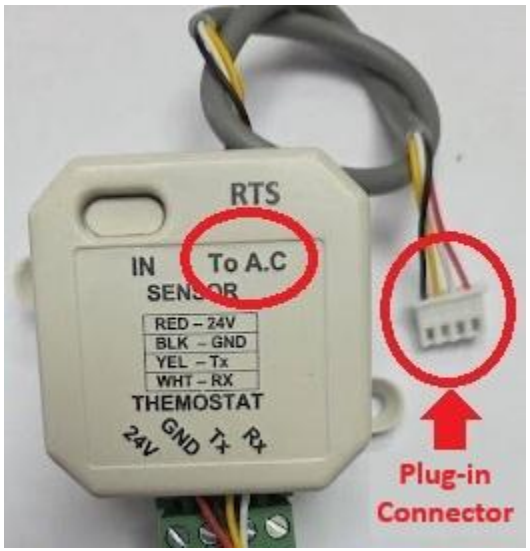
2. **Connect the return air sensor to the RTS module.**
   Connect the return air sensor connector removed from the unit to the IN port on the RTS module.

Figure 9. RTS module IN port



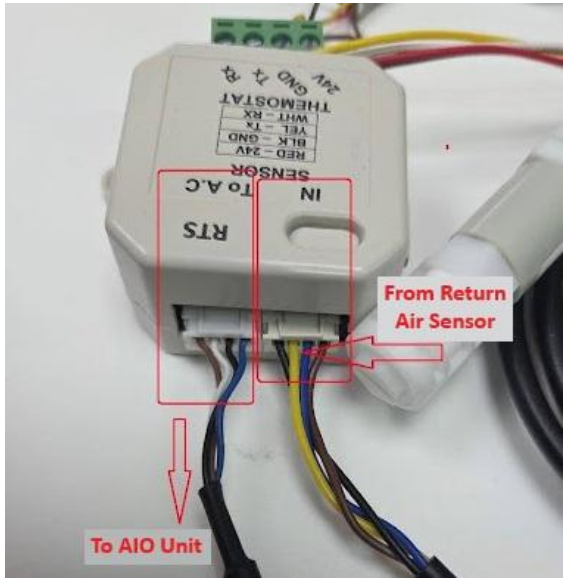
3. **Connect the RTS module to the unit's control board.**
   Locate the white plug-in connector with four wires, which connect at the other end to the RTS module at the port labeled "To A.C". Plug this connector into the 'CN21' port on the unit's main control board (where the return air sensor connector was previously removed).

Figure 10. RTS module 4-wire connector



When these connections are complete, the RTS module will appear as shown below.

Figure 11. RTS module connected to unit and return air sensor



5.4 Configuring the controller

After the connections are complete, the temperature sensor configuration must be set to read from the RTS module, using the TFTH20 controller settings menus.

To set the temperature sensor configuration in the controller settings:

1. **Turn on the controller.**
   a. Reconnect the power supply to the AIO® unit.
   The controller turns on, and the Home screen is displayed.

Although the TFTH20 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.

Figure 12. TFTH20 controller Home screen



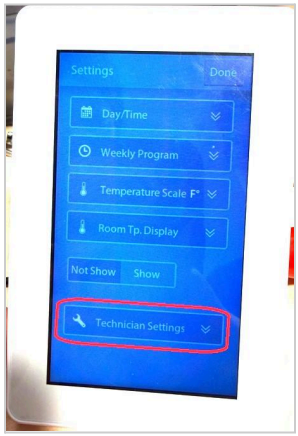
2. **Access the Technician Settings screen.**
   a. On the Home screen, press the 'Settings' key ( ).

Figure 13. TFTH20 controller Home screen and Settings key



The Settings screen is displayed.

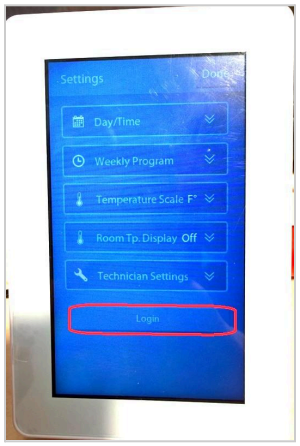
Figure 14. TFTH20 controller Settings screen



b. On the Settings screen, select **Technician Settings**.

The **Login** button appears.

Figure 15. Technician Settings Login button



c. Click **Login**.

The Technician Login screen displays the prompt "Please enter your code" and a numeric keypad.

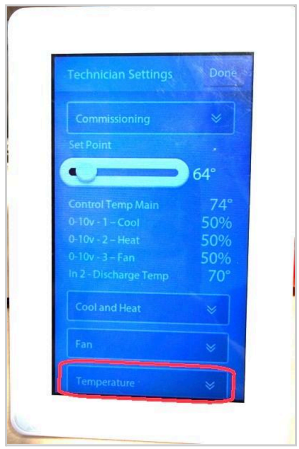
Figure 16. Technician Login screen



d. Use the numeric keypad to type **9876**, then click **Done**.

The Technician Settings screen is displayed.

Figure 17. Technician Settings screen



3. Set the temperature sensor configuration.

a. On the Technician Settings screen, click Temperature (scroll down if needed).

The Temperature section expands. Below the Temperature heading, two options are displayed for the air temperature sensor configuration.

Figure 18. Temperature sensor configuration options



b. Select **VS/CD only** (if it is not already selected).

This setting means the unit will read the air temperature from the TFTH20 sensor (via the RTS module), as required for the Vertical Stack (VS) and Ceiling Ducted (CD) units, rather than from the unit's return air sensor.

c. Click **Done** to close the Technician Settings screen.

Figure 19. TFTH20 controller Settings menu



d. Click **Done** to close the Settings screen and return to the Home screen.

5.5 Verifying the installation

Before closing the AIO® unit, test its operation to verify that the RTS module was installed successfully.

1. **Verify the unit responds to commands from the controller.**
   Verify that the unit's temperature can be set and its operating modes can be changed as expected via the TFTH20 controller.
2. **Troubleshoot if needed.**
   If the test is not successful, perform the applicable suggested action(s) listed in Table 3 to try to fix the problem.

Table 3. Troubleshooting the RTS module installation

Problem	Possible Cause	Suggested Fix
LED off	No 24V power	Check the 24V and GND wire connections. See Section 5.3.1.
Unit does not respond to the controller	TX/RX are not reversed	Verify that the RX and TX wires are reversed between the controller and the RTS module. See Section 5.3.1.
Incorrect temperature	TFTH20 is not configured correctly	Access the TFTH20 Technician Settings menu and set the air temperature source to **VS/CD only**. See Section 5.4.
Sensor error	Return air sensor is not connected correctly	Check the return air sensor connections. See Section 5.3.2.

3. **Repeat the test.**
   After performing the suggested action(s), repeat the test. If the test still fails, contact an INNOVA-trained service technician.

5.6 Closing the AIO® unit

After the gateway and controller are installed and connected and the installation has been verified successfully, close the unit as instructed in the GWB20 Gateway for AIO® Heat Pumps Installation Guide, in the applicable chapter listed below.

Table 4. GWB20 Installation guide section for closing the unit

AIO® unit type	GWB20 Installation Guide section
Wall Mounted (Gen 1)	6.4
Ceiling Ducted	7.4
Ceiling Suspended (with ERV option)	7.4
Ceiling Suspended (without ERV option)	8.4
Vertical Stack	9.4
Vertical Stack XL	10.4

6. WARRANTY TERMS AND CONDITIONS

Controllers, gateways, and their accessories carry a two-year warranty.

6.1 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, gateway, or accessory device where there is a corrosive atmosphere containing any damaging chemical, such as chlorine or fluorine.
- Failure of the controller, gateway, or accessory device 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, gateway, or accessory device as a result of any cause, including natural disasters, accidents, misuse, improper wiring, or installation.

For warranty service or claims, contact INNOVA Support at vip@innova.co or (212) 204-2700.

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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AIO® Remote Temperature Sensor (RTS)
Installation Guide