



INSTALLATION MANUAL

Ceiling Mounted Evaporative Humidifier Condair **TE Series**



Humidification and Evaporative Cooling

Thank you for choosing Condair

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Appendix: Wiring Diagram Α

1 Introduction

Thank you for purchasing the Condair Ceiling Mounted Evaporative Humidifier.

TheCondairCeilingMountedEvaporativeHumidifierincorporatesthelatesttechnicaladvancesandmeetsrecognized safety standards.

Improper use of the humidifier may result in danger to the user or third parties, and/or damage to property.

To ensure safe, proper, and efficient operation of the humidifier, please observe and comply with all information and safety instructions contained in this manual, as well as all relevant documentation of components of the installed humidification system.

If you have additional questions, please contact your Condair representative. They will be glad to assist you.

1.1 General

Limitations of the Manual

The subject of this manual is the Condair Ceiling Mounted Evaporative Humidifier in its different versions. The various options and accessories that are described in this manual pertain to the proper installation/operation of the equipment.

This manual is restricted to the installation of the Condair Ceiling Mounted Evaporative Humidifier. This manual is intended for competent personnel suitably qualified for their respective tasks. The specifications are supplemented by various separate items of documentation (such as the parts list). Where necessary, appropriate cross-references are made to these publications in the specification.

Symbols Used in this Manual



The word "CAUTION" in conjunction with the general caution symbol is used to provide safety instructions that, if neglected, may cause damage and/or malfunction of the unit or damage to property.



WARNING!

The word "WARNING" in conjunction with the general warning symbol is used to provide safety instructions that, if neglected, may cause injury to personnel. Other specific warning symbols may also be used in place of the general symbol.



The word "DANGER" in conjunction with the general danger symbol is used to provide safety instructions that, if neglected, may cause severe injury to personnel or even death. Other specific danger symbols may also be used in place of the general symbol.

Storage of Manual

Keep this manual in a place where it is safe and readily accessible. If the equipment is moved to another location, please ensure that it remains with the equipment.

If the manual is lost or misplaced, please contact Condair for a replacement.

2 For Your Safety

General

Every person who is tasked with the installation of the

Condair Ceiling Mounted Evaporative Humidifier must read and understand this manual before performing any work. Knowing and understanding the contents of the installation manual and the operation and maintenance manual is a basic requirement for protecting personnel against any kind of danger, preventing faulty operation, and operating the unit safely and correctly.

All labels, signs and marking applied to the Condair Ceiling Mounted Evaporative Humidifier must be observed and kept in a readable state.

Personnel Qualifications

All procedures described in this manual must only be performed by personnel who are adequately qualified, well trained and are authorized by the customer.

For safety and warranty reasons, any activity beyond the scope of this manual must only be performed by qualified personnel authorized by Condair.

All personnel working with the Condair Ceiling Mounted Evaporative Humidifier must be familiar with, and comply with the appropriate regulations on workplace safety and prevention of accidents.

Intended Use

The Condair Ceiling Mounted Evaporative Humidifier is intended exclusively for air humidification within specified operating conditions (refer to the Operation and Maintenance Manual for details). Any other type of application, without the express written consent of Condair, is considered to be not conforming to its intended purpose, and may lead to dangerous operation and will void the warranty.

In order to operate the equipment in the intended manner all information contained in this manual, in particular the safety instructions, must be observed closely.

Safety Precautions that Must Be Observed

WARNING!

Risk of electric shock, fire, and/or other problems!

The Condair Ceiling Mounted Evaporative Humidifier is should be connected to a dedicated electrical circuit.

Be aware that using an electrical circuit with insufficient capacity or performing incorrect installation and wiring of the unit may lead to electrical shock, fire, and/or other problems.

When carrying out electrical work, ensure a qualified electrician performs the installation and wiring in accordance to all applicable local electrical codes and regulations.

WARNING! Risk of electric shock!

Failure to install a leakage current circuit breaker may lead to electric shock.

Install a dedicated leakage current circuit breaker for the humidifier.

WARNING! Risk of electric shock!

Fuses with incorrect capacity may lead to failure, damage, or fire.

Only use fuses with the specified capacity rating.



WARNING! Risk of overheating and fire!

Use only the specified type(s) of cable for the electrical wiring and ensure cables are secured to the terminals.

Excessive force may disconnect or loosen electrical connections in the humidifier. Insufficiently secured cables may lead to overheating and fire.



CAUTION! Risk of overhead injury!

The humidifier is mounted to the ceiling. If it is not properly mounted, the humidifier may fall or tip over and may cause injury, damage, or even death.

Ensure that the humidifier is secured properly. Request assistance to raise the humidifier into position.

CAUTION!

Risk to hygiene and health!

Improper and infrequent maintenance of the unit presents the risk of spreading pathogens (such as bacteria, viruses, and parasites) originating from contaminated water, air, and equipment. Failure to reduce the risks increases the likelihood of causing injuries (requiring medical care), infection, and death.

Use, regularly clean, and replace any installed air and water inlet filters. Regularly flush and disinfect the humidifier, components. Use water specified in this manual (or refer to local water regulation and code).

CAUTION!

Risk to hygiene and health!

This evaporative humidifier may not be usable in the following types of locations. Please contact Condair when using the humidifier in such a location.

- Any location where corrosive gas is expected to be present in the surrounding air
- Kitchens, food plants and other locations where salt content, oil mists and/or other such content may be present in the air
- · Machine shops/factories and other locations where metallic dust may be present in the air
- Hospitals and other locations requiring special air conditioning systems

CAUTION!

Risk to hygiene and health!

Insufficient water quality may lead to contamination of indoor air.

Use potable water that conforms with water quality standards specified in your local codes and regulations.

Dripping and wet surfaces!

The humidifier may drip and cause damage to equipment below. Wet surfaces may cause persons to slip and may cause injury.

Avoid placing anything underneath the humidifier that cannot be moved when necessary, or that will be adversely affected by getting wet.

Ensure that the humidifier is mounted high enough, or adjust humidification.

Preventing Unsafe Operation

All personnel working with the Condair Ceiling Mounted Evaporative Humidifier must immediately report to the customer any alterations to the unit that may affect safety, and **secure the humidifier against accidental power-up**.

If it is suspected that the unit cannot be operated safely for any of the reasons listed below, shut it down immediately.

Modifications to the Unit Prohibited

Modifications are not permitted on the Condair Ceiling Mounted Evaporative Humidifier without the express written consent of Condair.

3 Receiving and Storage

3.1 Inspection

After receiving the shipment, inspect the goods as follows:

- Inspect the shipping boxes for damage.
- Report any shipping box damages to the shipping company without delay.
- Check the goods against the packing slip to ensure that all items have been delivered.
- Report any shortages to your Condair representative within 48 hours of receipt of the goods. Condair does not assume responsibilities for any shortages beyond this period.
- Unpack the parts/components and check for any damage.
- If parts/components are damaged, notify the shipping company immediately.
- Verify the model type on the rating label to ensure that it is suitable for your installation.

3.2 Storage and Transportation

Storage

Store the Condair Ceiling Mounted Evaporative Humidifier in its original packaging inside a protected area that meets the following requirements until it is installed, or if it needs to be stored for an extended period of time:

- Room temperature: 41 to 104 °F (5 to 40 °C)
- Room humidity: 10 to 75% RH

Transportation

For optimum protection always transport the unit and components in their original packaging, and use appropriate lifting/transporting devices.

Packaging

Keep the original packaging of the unit/components for later use.

If the packaging needs to be disposed off, observe local regulations on waste disposal. Recycle packaging where possible.

3.3 Included Parts and Components

Please check the contents of the humidifier after unpacking.

- Includes 2x BSPT to NPT Adapters (not shown) •
- Installation Manual (not shown)
 - Operation and Maintenance Manual (includes spare parts) (not shown)



1x Condair Ceiling Mounted Evaporative Humidifier



1x Humidifier cover



1x Drain fitting



1x PVC drain hose (with clamps)



1x Water supply fitting



2x Insulation for ring joints

Ð Þ

1x Water supply tube (copper with insulation)



1x Remote controller

4 Product Overview

The Condair Ceiling Mounted Evaporative Humidifier is a ceiling-embedded cassette humidifier that directly humidifies the room. Each unit is installed on the ceiling with a decorative cover that can be opened and closed easily for maintenance. Each unit operates independently and provides reliable performance that is not affected by the system settings of the air conditioner (temperature, air flow, etc.).



Figure 1: Mounted Condair Ceiling Mounted Evaporative Humidifier

4.1 Model(s)

Condair TE-05

5 Installation

Important! This humidifier may not be usable in the following types of locations. Please contact Condair when using the humidifier in such a location.

- · Any location where corrosive gas is expected to be present in the surrounding air
- Kitchens, food plants and other locations where salt content, oil mists and/or other such content may be present in the air
- · Machine shops/factories and other locations where metallic dust may be present in the air
- Hospitals and other locations requiring special air conditioning systems

Strictly observe and perform all installation tasks including the mounting of the unit and connection of the water and power supplies as described in this manual. Always stop equipment operation and disconnect equipment from its power source before carrying out maintenance or inspection work.

Use of supply water with insufficient water quality may lead to contamination of indoor air.

Observe and comply with all local and national codes dealing with water and electrical installations.

Condair does not accept any liability for installation of humidification equipment by unqualified personnel, or the use of equipment/parts that are not authorized by Condair.

Personnel Qualifications

All installation work must be performed only by licensed personnel authorized by the customer. It is the customer's responsibility to verify qualifications of the personnel.

5.1 Installation Overview

The Condair Ceiling Mounted Evaporative Humidifier uses a fan to force dry air through a wetted humidification module to produce humidified air. The humidifier is mounted into the ceiling, and is connected to water supply and drain lines that are accessed with an inspection hatch. The humidifier is controlled using a remote controller (supplied) that contains an internal humidistat.

Note: The supplied remote controller contains a built-in humidistat (default 40% RH), and address setting has been pre-configured to operate with a single humidifier.

Note: For multiple humidifier control, please refer to the operation and maintenance manual.

Refer to the operating conditions and requirements below before installing the humidifier.

Refer to the chapter 6 on page 30 for the product specifications, including weights and dimensions.

5.1.1 Operating Conditions and Requirements

Ensure the following conditions are met for optimal performance.

Power source: 120 VAC 60Hz			
Ambient air:	41-104 °F (5-40 °C), non-condensing. Humidity less than 80% RH.		
Air intake temperature:	41-104 °F (5-40 °C), and within 50 °F (10 °C) of air temperature surrounding the humidifier in the ceiling.		

Table 1: Operating conditions

5.1.2 Water Supply Requirements

To ensure sufficient supply water quality, use potable water that conforms with water quality standards specified in your local codes/regulations.

Note: Contaminants, such as dirt and scale, will accumulate on the humidification module during use and will gradually reduce performance. Please refer to the Maintenance section of the Operation and Maintenance manual.

Table 2: Recommended Water Supply (calculation based on non-scaling mode, at 25°C (77°F))

Quality	Tap water/Drinking water quality. Max. 150 CFU/ml, no pathogens al- lowed.			
Dynamic Pressure (at max. flow)		30 - 50 PSI (2.0-3.5 bar)		
Min. Flow Requirement (at min. dynamic pressure)	3.2 gal/hr (12 L/hr)			
Water Temperature*	50-77 °F (10-25 °C)			
	pH of Supply Water			
	pH 6,5 - 7,0	pH 7,1 - 7,5	pH 7,6 - 8,0	
Max. Hardness*	45°dH	25°dH	14°dH	
Max. US Hardness*	47 gpg	26 gpg	14,5 gpg	
Max. Conductivity (supply at pH)*	1980 µS/cm	1100 µS/cm	615 µS/cm	
Max. TDS (total dissolved solids at pH)*	1240 mg/l	690 mg/l	385 mg/l	
SiO ₂ *	Max. 1 mg/l			
* Based on DIP Switch setting to "Always ON", non-scaling mode.				

Important! DO NOT USE purified (RO/DI) water. The main unit's drain pump uses an electrode-pin type level sensor to detect water level.

5.2 Location and Clearance

Consider the following suggestions while choosing a location for the humidifier. Refer to Figure 2.

- Ensure there is sufficient clearance around the humidifier.
- The humidifier requires a 120 VAC 60Hz electrical outlet.
- · The humidifier must be installed horizontally.
- The humidifier must be fixed using a double-nut.
- An inspection hatch must be installed in the ceiling (piping side of the humidifier). Refer to chapter 5.2.1 on page 13.



B: 11.8-19.7 in (300-500 mm) D: 7.9 in (200 mm)

E: 7.9 in (200 mm) F: 59.1 in (1500 mm)

Figure 2: Dimensions and minimum clearance (A-F) around the main unit

5.2.1 Inspection Hatch Location and Requirements

Install an inspection hatch to adjust the water supply and drain piping for the unit.

- Install the inspection hatch within 11.8-19.7 in (300-500 mm) of the unit.
- The width of the inspection hatch opening should be at least 17.7 in (450 mm).
- The inspection hatch must be on the piping side of the unit.

5.3 Mounting the Humidifier

Consider the following points before mounting the humidifier:

- · Confirm the positions of the air inlet and outlet.
- Ensure the mounting surface can support the humidifier weight during operation. Refer to Table 4 on page 30.
- The installation of the humidifier will require M10 hanging bolt anchors, hanging bolts, and nuts.
- An inspection hatch must be installed in the ceiling (where the piping is installed).
- Ensure there are no bends or warps in the humidifier, as that will create gaps between the unit and the cover.
- Ensure that the supports are able to withstand heavy vibrations (such as during an earthquake).
- Use a lifting device during installation because of the size and weight of the humidifier.
- Ensure adequate scaffolding is in place, and use safety harnesses to ensure the product does not fall during installation.



Figure 3: Hanging measurements

To mount the humidifier:

- 1. Install a 25.2x25.2 in (640x640 mm) opening in the ceiling. Refer to Figure 3 on page 14.
- 2. Mark the locations for the four M10 hanging bolts. Ensure the M10 hanging bolts are long enough to extend from the mounting surface to the brackets on the side of the humidifier. Refer to *Figure 2* on page 13.
- 3. Install the four M10 hanging bolt anchors and hanging bolts onto the mounting surface.
- 4. Raise and support the humidifier such that the hanging bolts go through the brackets on the humidifier. Use double-nut fixing (using two nuts) or a jam nut at the joint to prevent loosening. Use a level to ensure a level installation.
 - Double-nut fixing (general installation method refer to local codes):
 - i. Pass each bolt through the brackets.
 - ii. Raise and support the humidifier.
 - iii. Hand-tighten the first nut over each bolt.
 - iv. While supported, hand-tighten the second nut over each bolt.
 - v. Level the humidifier, then tighten all bolt nuts fully. Avoid stripping the second nut.

Do NOT install the cover until the water, electrical connections are installed, and ceiling panels are affixed.

5.4 Installing the Humidifier Cover

Important! Install the humidifier cover only after installing the main unit, installing the water/drain connections, electrical wiring, and after affixing the ceiling panels.

The humidifier cover consists of sponge packing, a frame and a grille. The cover must be installed after the ceiling panels are attached. The frame and sponge packing helps seal the gaps between the humidifier and the ceiling panels, while the grill directs air to and from the humidifier. The frame is attached to the humidifier with screws, and the grill is attached to the frame with straps (safety catch belts).

5.4.1 Installing the Frame



Figure 4: Installing the cover (frame)

To install the frame:

- 1. Loosely insert four M4x50 screws into the four corners of the humidifier unit. Turn the screws several times as you will hook the cover onto them before tightening.
- 2. Starting from the fan-side of the humidifier, attach the cover by hooking it onto the screws.
- 3. Slide the frame towards the fan-side to "lock" it in place. Follow the below steps while further tightening the screws.
 - a. From the inside of the humidifier, lightly push the sponge packing outwards, but DO NOT allow it to protrude from the inside of the main unit.
 - b. While pushing the sponge out, gradually tighten the screws.
 - c. Prevent gaps between the humidifier and ceiling panels by tightening the screws evenly.
 - d. Repeat this process for all screws until fully tightened. Do not over-tighten, as this will damage the frame and may create gaps, or cause the cover to fall.
- 4. There are two screws along the partition plate inside the humidifier unit. These screws affix the catch belts (or straps) that are used to secure the frame from falling. Remove the screws and pass the A-type belts through their respective holes, then re-attach the screws. Ensure the belts are attached to both sides of the humidifier.

5.4.2 Installing the Grille

Install mounting screws for the straps (safety catch belts) that keep the grille from falling from the cover. Refer to *Figure 5 on page 16*. These belts are located on two sides of the humidifier. Ensure that the belt/straps on both sides of the unit are secured.



Figure 5: Installing the grille

To install the grill to the frame:

- 1. Attach the grille to the frame, inserting it so that the grille panel's pivot axes connect with the frame properly. Push in and attach the grille at a tilted angle (as pictured).
- 2. Attach the frame's safety catch belts B to the grilles belt hooks (left and right sides). Ensure both sides are hooked.
- 3. Close the grille into the frame until you hear the sound of it locking into place.

5.5 Installing the Water Supply and Drain Connections

5.5.1 Water Supply Piping

5.5.1.1 Water supply piping considerations

- Carry out water supply installation with a qualified technician. Follow local codes and regulations.
- Ensure the water supply conforms with the water quality described in Table 2 on page 12.
- Do not use RO/DI water.
- Install a service valve and flushing valve on the humidifier supply water piping for maintenance procedures, and is laid out such that on-site workers may flush as needed.
- Install a flushing valve along the line to prevent stagnant water and corrosion during periods of unuse. Flushing should be done regularly to prevent these problems. Follow local codes and regulations.
 - Avoid cross connections when attaching a flushing valve in an intermediary location along the line (pipe continuing on both sides).
 - (Optional) Install a flushing valve (or plug) at the end of the pipe so that the user can flush the pipe when necessary.
- Prevent condensation in the ceiling by keeping the piping sufficiently warm.
- Use ring joints when connecting the copper water supply pipe. Ensure a reliable connection that will not result in leaks.
- Wrap ring joints with insulation.
- If using a sealing agent, follow local codes and regulations, as well as the instructions on the sealing agent manufacturer.
- Use a water supply connection fitting (R1/2) when connecting additional piping.
- Flush the pipe with water before installing the piping to the system. This helps prevent any dirt or any other contaminants from reaching the humidifier.
- Before attaching the water supply piping, flush the pipes in the humidifier with clean water and ensure that it is clear, colourless, and odourless.

5.5.1.2 Installing the water supply pipe



Figure 6: Water supply piping overview (general configuration)

To install the copper water supply pipe:

- 1. Insert the copper pipe straight into the connector fitting. Avoid creating sharp bends in the pipe.
- 2. Use two wrenches to tighten the nut (for the end connected to the water supply connector fitting).
- 3. Tighten the ring nut to 88.51 lb-in (10 N-m).

5.5.2 Drain Piping

5.5.2.1 Drain piping considerations

- Make sure to use the drain hose, drain fitting and clamps included with the product when installing drain piping.
- Do not use any solvent or adhesive agent that may cause the drain outlet to deteriorate.
- Attach the drain hose in a location that will ensure there are no external loads applied to the pipe.
- Avoid twisting and excessive bending that will cause leakage.
- Install insulation over the drain piping to prevent condensation.
- Avoid installing traps and avoid having the pipe pass over raised objects.
- When laying pipe horizontally, use reducing sockets and other fittings to convert to a pipe diameter of 3/4 in (19 mm) or larger, and ensure a downward gradient of 1:100 or greater and a pipeend outlet open to the outside air.
- If it is not possible to achieve a sufficient downward drainage gradient, utilize a raised-section drainage configuration.
- Install supports brackets along the drain line to prevent sagging. Condair recommends 39.37-59.06 in (1000-1500 mm) between supports.
- Do NOT install vents in the drain line



Figure 7: Avoid the above practices for the drain line



----- items not supplied

Figure 8: Drain line layout (general) - horizontal piping

Raised-Section Drain Pipe Configuration

- When using a raised-section drain piping configuration you may choose to use :
 - A vinyl chloride pipe, nominal diameter: 0.51 in (13 mm), or
 - A hose, internal diameter: 0.59 in (15 mm).

Ensure raised section is vertical. Incorrect installation may cause leakage.

- The raised piping section should not exceed 31.50 in (800 mm) in height, with a maximum 47.24 in (1200 mm) from the ceiling surface. Failure to adhere to these distance restrictions may cause drainage water back-flow when the drain pump is stopped, resulting in problems such as triggering of the high water level alarm, water leakage, etc
- Piping should extend vertically upward starting at a point no more than 11.81 in (300 mm) away from the main unit horizontally. Failure to adhere to these distance restrictions may cause drainage water back-flow when the drain pump is stopped, resulting in problems such as triggering of the high water level alarm, water leakage, etc.
- Before the vertical run of the drain line, install the drain hose horizontally or at a slight upward gradient (about 1:100) to prevent air pockets from forming, and ensure that the hose does not have any kinks, breakages, etc. If air pockets form, they will be indicated by a sputtering sound or other unusual sound.
- For horizontally-laid piping following the raised section, use reducing sockets and other fittings to convert to pipe diameter of 3/4 in (19 mm) or larger, and ensure a downward gradient of 1:100 or greater and a pipe-end outlet open to the outside air.



Figure 9: Raised-section drain piping

5.5.2.2 Installing the drain pipe/hose (general)



Figure 10: Drain piping installation (general)

To install the drain hose (general):

- 1. Fully insert the drain hose over the drain fitting in the humidifier.
- 2. Insert the drain hose over the drain outlet on the humidifier.
- 3. Use clamps to secure the pipe at their connection points.

Torque the clamps to 13.28 lb-in (1.5 N-m). Do not over tighten as this may cause damage to the clamps or pipe, and may cause leaks.

5.6 Installing Remote Controller (with humidistat)

Important! Indoor use only. Install the remote controller in a location away from steam, splashing water, or oil.



Prevent dust, water, or other debris from coming into contact with the remote controller board in the controller.

The remote controller board is attached to the upper casing of the remote controller. Be careful when opening the controller case during installation.

The humidifier is **solely controlled through the remote controller**. The remote controller contains a built-in humidistat and is capable of controlling multiple, linked units at the same time. A humidifier with a different humidity setpoint (i.e. in another room) may require its own remote controller and will function independently from the other Condair Ceiling Mounted Evaporative Humidifiers in the building.

The installation of the remote controller will require you to wire the remote controller (will require you to open the casing) and mount it to a wall or suitable surface. You will also need to wire the remote controller to the main humidifier, if installing a group of humidifiers. (refer to "*Wiring the Remote Controller to the Humidifier*" on page 22). After you complete the wiring (of the controller and power) complete "*Address Setting*" on page 28 and test the humidifier.

Note: Single units are pre-configured at the factory.

All wiring is to be completed by the customer (and their qualified technician).

5.6.1 Mounting the Remote Controller



Figure 11: Opening the remote controller

To mount the remote controller:

- 1. Find an appropriate mounting location. Ensure there is sufficient space (at least 2 in (50 mm)) next to the remote controller to access the side button on the controller and to allow the built-in humidistat to obtain accurate readings.
- 2. Use a screwdriver to gently pry open the remote controller casing. There are two recessed locations along the crease between the front and back of the controller casing. You will separate the front and back casing.

The remote controller board is attached to the front casing. Avoid damaging the board.

- 3. Use mounting screws to secure the back casing to the wall (or equivalent surface).
- 4. Wire the remote controller board before closing the remote controller case.

5.7 Wiring Controls Signals to the Humidifier



Figure 12: Wiring the controls to the humidifier

5.7.1 Wiring the Remote Controller to the Humidifier

Recommended wires: M3 round bare crimp terminal, AWG 18 to 20 (0.5-0.75 mm²)



Figure 13: Wiring the remote controller

To wire the remote controller to the humidifier:

- 1. Cut or file a hole at the top or bottom of the casing. The material in the area to be cut is thinner than the rest of the casing. Smooth out rough edges to avoid damaging the wires. Avoid damaging the controller board. Avoid cracking or splitting the casing while doing this.
- 2. Prepare the electrical wires with wire cutters.
- 3. Connect the wires to the C1 and C2 terminals on the controller board. Do not cross the wires. Terminals C1 and C2 have no specific polarities.
- 4. Route the wires through the wiring space next to the board, and out of the opening created in first step.
- 5. Connect the C1 and C2 terminal wires from controller board to the C1 and C2 terminals on the humidifier. Route the wires through the grommets on the side of the humidifier.
 - Use insulated round terminals (for M4 screws) to connect the wires to the terminal block. Use two connection terminals max for each wire pair.
- 6. Reattach the front casing to the back casing. Avoid pinching the wires.

5.7.2 Wiring an External Control Signal Input (Remote Starting and Stopping)

Remote starting and stopping via external control signal input (external command control) is also possible. However, even with this type of operation, remote controller installation is still required.

When controlling multiple units using a single remote controller, enable control of all unit operations by connecting to terminals 4 and 5 (4, 5, 6) on humidifier main unit (of the first group) only. For collective control of device groups, refer to the wiring diagram in the appendix.

External command signal inputs include steady-state input signals and instantaneous input signals. If necessary, change DIP switch DS3 pin 1 on the humidifier main unit's control unit.



Figure 14: DIP switch location (cover removed)

Before operating the DIP switch, ensure the humidifier power source's leakage current circuit breaker is turned to the OFF position, and power supply has been completely stopped. Changing any DIP switch pin while power is still being supplied to the unit may result in settings not being properly implemented.

Note: When using external command control, manual starting and stopping is carried out via the remote controller or external command signal input, which are processed as second-Input priority.

To enable external control signal input (remote starting and stopping):

- 1. Connect control wires from the external controller to terminals 4, 5, and 6 on the main humidifier terminal block. Refer to *Figure 12 on page 22*.
- 2. Set DIP switch 3 pin 1 ON or OFF for your configuration. Refer to Table 3 on page 24.

Table 3: DIP switch settings for remote starting and stopping with external control signal

Humidifier Wiring	DIP Switch Setting	Notes:
Steady-state input signal (default setting)	DS3 pin 1 OFF	Working voltage 12 VDC 10 mA. Input an ON contact signal when operating and an OFF signal when stopping.
Instantaneous input signal	DS3 pin 1 ON	Working voltage 12 VDC 10 mA. Input a contact signal with duration at least 0.1 seconds.

5.7.3 Wiring for Interlocking Operation with External Equipment

Ensure that the humidifier has been set up for use with the remote controller with built-in humidistat. Refer to section 5.7.1 on page 22.

This section only covers the wiring for interlocking operation. Complete the set-up for interlocking operation with external equipment in the operation and maintenance manual.

For operation outputs from the external equipment, connect lines to the humidifier main units L1 and L2 terminal block connectors (no-voltage contact input).

- If using operation outputs from external equipment and no-voltage contact is desired, ensure that
 a contact with a minimum applicable load of 10 mA or less is used. The contact detection voltage
 is applied, so do NOT apply voltage from any other power source.
- When interlocking is enabled, if the external equipment is OFF, the unit operation with the remote controller and the external control signal input are invalidated.

To connect wires for interlocking operation (using the remote controller):

- 1. Connect lines to the humidifier main units L1 and L2 terminal block connectors. Refer to Figure 15.
 - Input an ON contact signal when operating.
 - Input an OFF contact signal when stopping operation.



Working voltage 12 VDC 10 mA (no voltage contact input)

Figure 15: Wiring for interlocking operation (external equipment)

5.7.4 Wiring an Alarm Signal Output (External)

Alarm signals are output when a unit's safety protection function activates. When using a single remote controller to control multiple units, alarm signals will be output individually from each humidifier. Connect the alarm output wires to terminal 1 and terminal 3 on the humidifier. Refer to the wiring diagram in Appendix *A on page 33*.

Alarm signal output (no-voltage contact output):

Resistive load	125 VAC 3 A	30 VDC 3 A
Inductive load	125 VAC 1 A	30 VDC 1 A

5.7.5 Wiring Operation Signal Outputs (External)

When using a single remote controller to control multiple humidifier main units, operation signals will be output individually from each humidifier unit via terminals 1 and 2. Refer to the wiring diagram in Appendix *A on page 33*.

By default, the operation signal is output via the remote controller's power indicator lamp (when the operation button is toggled to ON).

Operation signal output (no-voltage contact output):

Resistive load	125 VAC 3 A	30 VDC 3 A
Inductive load	125 VAC 1 A	30 VDC 1 A

5.8 Installing the Electrical Connection

The Condair Ceiling Mounted Evaporative Humidifier is powered by plugging the power cord into a 120 VAC (60Hz) outlet.

Important! Complete "Address Setting" on page 28 and test the humidifier after installation or the humidifier will fail to operate.

When carrying out electrical installation work, have a qualified electrician perform installation and wiring in accordance with the local codes and regulations. Be aware that using an electrical circuit with insufficient capacity or performing installation/ wiring incorrectly may lead to electrical shock, fire and/or other problems.

Make sure that cables are secured firmly to connection terminals in a manner that prevents application of any external force.

Incorrect installation may lead to electrical shock, fire and/or other problems.

Connecting a single wire pair to three or more terminals may lead to connection failure, causing overheating and/or fire.

Use terminal block insulated round terminals compatible with the intended wire diameter. Use of incompatible terminals may lead to wire disconnects, connection problems and other issues that can cause electrical shock, fire and/or other problems.

Before operating the DIP switch for the humidifier main unit or humidistat unit, make sure the humidifier power source's leakage current circuit breaker is turned to the OFF position and power supply has been completely stopped. Operating the DIP switch while power is still being supplied may result in electrical shock.

Correct terminal block screw tightening torque is 4.43 lb-in (0.5 N-m). Using an electric screwdriver or similar tool to tighten screws may damage the terminal block.

Remove power from all humidifiers before performing electrical work (low and high voltage wiring).

Considerations for the electrical installation:

- For the humidifier's power source, make sure to install a dedicated leakage current circuit breaker for the humidifier. Failure to install a leakage current circuit breaker may lead to electrical shock.
- Only use fuses with the specified, correct capacity rating. Use of any fuse, wiring (copper or otherwise), or other such component with incorrect capacity may lead to equipment failure, equipment damage, fire and/or other problems.
- Complete ground connection by carrying out type D grounding work. Do not connect the ground wire to any gas piping, water piping, lightning conductor or telephone ground wire. Incorrect grounding may lead to electrical shock.
- Limit the total signal (remote contoller) wiring length to a maximum of 328 ft. (100 m) per group.
- Wire power supply lines (high voltage) and signal lines (low voltage) separately. Placing these differing line types within the same conduit may lead to malfunction.
- Refer to the wiring diagram(s) in the appendix.

5.9 Installing Multiple Humidifiers

External input signal

Figure 16: Typical setup of a two groups of humidifiers.

Considerations when installing mulliple units:

- For the humidifier's power source, make sure to install a dedicated leakage current circuit breaker for the humidifier. Failure to install a leakage current circuit breaker may lead to electrical shock.
- Each unit must connect to its own power source.
- You may connect a maximum of 10 units together for use with a single remote controller (i.e. the maximum group size is 10 humidifiers).
- A single remote controller can only be used to control one unit per group (i.e. one at a time).
- Do NOT exceed the terminal block rated capacity.
- Shutting off tertiary units while the main humidifier is operating will not shut off the main unit.
- Address setting must be completed while all units are ON.
- A single external control input (Instantaneous input contacts or steady-state contacts) can be used for each group, and if used, must be connected to the main humidifier of each group.
- Limit the total signal (remote controller) wiring length to a maximum of 328 ft. (100 m) per group.
- Limit the total external signal wiring length. The length is dependent on the number of groups and the gauge of the wire. Refer to the table below.

		Total wire length	3280 ft (1000 m)	4921 ft (1500 m)	6562 ft (2000 m)
External control) Miro	AWG 18/19 (0.75 mm ²)	140 groups	90 groups	70 groups
input mic	wire	AWG 16/17 (1.25 mm ²)	200 groups	160 groups	115 groups

To connect multiple units (in a group):

- 1. For the first additional unit, connect two new wires from the C1 and C2 terminals of the main unit (connected to the remote controller) to the C1 and C2 terminals of the secondary unit.
- 2. For additional units, connect wires from the C1 and C2 terminals of the previous unit to the C1 and C2 terminals of the added humidifier.
- 3. Once all units are connected, turn them all ON and set their addresses.

To connect multiple groups (with an external control input signal):

- 1. Connect the external control input device to the main humidifier of the first group. Connect wires to terminals 4, 5, and 6 (if applicable) on the humidifier. Refer to *Figure 12 on page 22*.
- 2. Connect additional wires from terminals 4, 5, and 6 (if applicable) of the main unit of the first group to the main unit of the second group. Refer to section 5.7.2 on page 23.
- 3. For additional groups, connect wires from the main unit of the previous group to the main unit of the next group (i.e. main unit from group 2 to group 3, group 3 to group 4, and so on).

5.10 Initial Settings and Testing

After completing the wiring for the remote controller and main humidifier unit(s), complete address setting prior to initial use of the humidifier. Failure to set the address for the remote controller will prevent operation of the humidifier(s).

5.10.1 Address Setting

Address setting is required when connecting the humidifier main unit(s) and remote controller.

The remote controller's automatic address setting function detects the number of connected humidifier units (to the remote controller) and completes initial settings.

Note: Address setting on the remote controller has been pre-configured to operate with a single humidifier. If multiple units are used, follow the steps below.

To perform address setting:

- Supply power to all humidifier units. All lights on the remote controller will blink for ~5 seconds. After 5 seconds, the all lights will shut off EXCEPT the alarm light. The alarm light will shut off after address setting completes.
- 2. On the remote controller, press and hold the FAN button and the STOP button for at least 3 seconds. Address setting will begin. This process may take up to 2-3 minutes.

During address setting:

- The high light and low light will blink at 2 Hz (2 times per second) for one minute. After one minute, the lights will turn off.
- The operation/humidification light will blink at half-second intervals for a total equal to the number of units connected (ex. unit will blink 3 times if there are 2 units connected to the main humidifier). This process repeats three times. After completion, the operation/humidification light will turn off.

After address setting, all lights will turn off, including the alarm light.

3. Press the power button to turn on the humidifier(s). The **POWER** and **HUMID.** light will turn on, and the fans in the humidifier will activate (after a 10 minute delay). The default setpoint is 40% RH.



Figure 17: Remote Controller

After address setting, you may check the number of units connected to a single remote controller. This will allow you to determine if there is a disconnected humidifier.

To do this, first ensure that all lights on the controller are off. Then press and hold the **STOP** button and the **FIND** button for 3 seconds.

The **HUMIDIFICATION** light will blink the same number of times there are units connected to the controller. This process will repeat 3 times before the lights turn off.

For further instructions on the remote controller, such as finding a fault in a humidifier or changing the setpoint, please refer to the operation and mainteance manual.

5.10.2 Testing the Humidifier

Ensure that the following are satisfied before carrying out the test.

- □ The humidifier main unit is level (check using a level tool) and firmly fixed in place.
- □ Supply water piping ring joints are securely attached and annealed copper tube contains no kinks, breakages or similar.
- □ Hose bands are securely attached to the drain hose, the drain piping is installed with a downward gradient of 1:100 or greater, and no obstruction obscures the flow path.
- □ If using a raised-section drainage piping configuration, a vinyl chloride pipe (nominal diameter: 13 mm) or a hose (internal diameter: 0.59 in (15 mm)) is used, and the raised piping section does not exceed 31.5 in (800 mm) in height (max. 47.2 in (1200 mm) from the ceiling surface).
- □ All electrical wiring is correctly installed and secured.
- □ The control unit DIP switch is set in the correct positions (see pp. 33 and 37)
- □ There is no gap or misalignment between the cover and humidifier.
- □ The ceiling inspection hatch is installed in the correct position (in a manner that does not hinder maintenance operations for piping and other components).
- □ Sufficient flushing has been carried out for the supply water piping.

Before you start the test:

- 1. Turn the humidifier power source ON.
- 2. Open the water supply service valve
- Enable test run mode: Open the remote controller casing and toggle the upper casing unit's DIP switch DS201 pin 2 to ON. Ensure all pins aside from pin 2 are set to OFF.
 Note: When the device is in test run mode, the humidistat inside the remote controller will be disabled, but starting and stopping of humidifier unit operation using the remote controller will be possible.
- 4. After enabling test run mode, replace the remote controller casing.
- 5. Confirm that the alarm light on the remote controller is not currently blinking.*

Note: If address setting has not been completed, the alarm indicator lamp will blink. In this case, carry out address setting.

Running the test:

- 1. Press the remote controller's operation button, then confirm that the power light, HUMID. light, and high fan indicator light illuminates, and that approximately 10 minutes later the humidifier main unit's fan begins to operate.
- 2. Allow operation to continue for 30 minutes. Confirm that no leakage occurs in the main unit or piping, that the remote controller **ALARM** light is illuminated, and that no alarm signal output occurs. (These checks are carried out to confirm normal operation of the drainage pump.)
- 3. Press the **HIGH/LOW** button to switch to low fan speed, and confirm that actual fan speed has been reduced in strength.
- 4. Press the remote controller's power button to end humidifier unit operation, and confirm that only the **Drying Mode** light is illuminated (drying operation will end automatically after approximately 2 hours).
- 5. Once the test has been completed:
 - a. Turn OFF the power source to the unit and prevent accidental power-up.
 - b. Disable test run mode by setting DS201 pin 2 on the remote controller to OFF. Ensure that all other pins on DS201 are OFF.
 - c. Close the water supply service valve and clean out the water supply strainer (refer to the operation manual)

6 Product Specifications

Model/Type		Condair Ceiling Mounted Evanorative Humidifier		
Model No. and product name		Condair TE-05		
		4.95 lb/b (2.2 kg/b)		
		4.03 lb/h (2.2 kg/h)		
Standard numidification capacity	Fan-Low (60 Hz) 2.43 lb/h (1.1kg/h)			
	at 73.4°F (23°C) and 40% RH. Standard humidification capacity varies depending on intake air conditions.			
Rated Air Flow	Fan-High (60 Hz)	20 129 ft³ (570 m³), 350 cfm		
	Fan-Low (60 Hz)	9 888 ft³ (280 m³), 175 cfm		
Operating noise	40 dBA at high fan operation (60 H	z), and 21 dBA at low fan operation) (60 Hz)		
Air flow switching	Two fan speed levels: high and low, toggled via remote controller (two-position humidistat installation supported)			
Rated power source	120 VAC, 60 Hz			
Rated power consumption	97 W (at high fan speed with waste	water drainage pump operating 60 Hz)		
Weight during operation	29 kg (63.9 lb)			
Drain pump capacity	Max. 0.9 L/min. (0.24 gal/min), max	. lift: 800 mm (31.5 in) when located 1200 mm (47.2 in) from ceiling surface		
Max. instantaneous waste water discharge volume	Approx. 0.9 L/min. (0.24 gal/min), ii	nstantaneous volume when drain pump starts operation		
	Voltage allowance range	Within ±10% range		
Electrical characteristics	Insulation resistance	100 M Ω or greater		
	Dielectric strength	1000 VAC for 1 min. with no abnormal voltage application		
	<u> </u>			
	(1) Drain pan high water level deter	ction (operation stopped, alarm indicator lamp illuminates)		
	(2) Detection of water leakage (one	eration stopped, alarm indicator lamp illuminates)		
Safety protection functions	(2) Detection of water colonoid volve leakage (operation stopped, elementation tamp infinites)			
	(3) Detection of water solehold valve leakage (operation stopped, alarm indicator lamp illuminates)			
	(4) Drain error detection in waste w	rater drainage pump (operation stopped, ararm indicator ramp inuminates)		
	(1) Drying operation function: fan operated to dry humidification module, stops automatically after approx. 2 hours.			
	This product dries the humidification module following cessation of unit operation (stopped via the remote controller or external control signal input) in order to ensure hygienic air conditioning operations. The remote controller's drying operation indicator light illuminates during drying operation.			
Health and sanitation measures	(2) Periodic drying function: automatically forces humidification module drying operations when necessary in accordance with operating conditions.			
	When the humidifier unit is operate hours (approx.) to prevent unplease during these operations.	d 24 hours a day, forced humidification module drying will be carried out once every 24 ant odours and other problems. The drying operation indicator light does not illuminate		
	When using a humidistat, humidifier operation starts and stops automatically in response to humidity level signals.			
	When using external control, manual starting and stopping is carried out via the remote controller or external control signal input from a remote location (external command control), which are processed as second-Input priority.			
Starting/Stopping Operation	External control signal inputs include steady-state input signals and instantaneous input signals.			
	Changing of the humidifier main unit's control unit DIP switch settings may be required depending on signal type used (set			
	for steady-state input signals as default in newly shipped products).			
External signal output	(1) Operation signal output: no-voltage contact output (arbeit contact, 125 V / 3 A resistive load), output via power indicator light or humidification indicator light (set to power indicator light output as default in newly shipped products)			
	(2) Alarm signal output: no-voltage contact output (arbeit contact, 125 V / 3 A resistive load), self-holding			
	Address setting is required when connecting the humidifier main unit(s) and remote controller.			
During address setting	The remote controller's automatic address setting function detects the number of connected humidifier main units and completes settings.			
	(The number of connected units can be confirmed by operating the remote controller and checking the number of blinks which indicates the number of connected units.)			
	Ambient temp. and humidity	5°C–40°C (no freezing), 30%–90% RH (no condensation) Indoor use only.		
Remote Controller (with Humidistat) Settings	Set humidity level range	35%–70% RH, 5% increments The humidistat level for newly shipped products is set at 40% RH.		
	Hysteresis	-5% RH		

Table 4: Product Specifications

6.1 Dimensions



Figure 18: Dimensions and connections

Notes:

- The drain pump does not require on-site assembly or wiring (pre-assembled).
- The mounting of the cover (and grill) can be adjusted within a range of 0.59 in (15 mm) up and down (due to sponge layer).
- The broken line will be prepared by the customer.
- When starting up the drainage pipe, use a PVC pipe (nominal diameter 0.51 in (13 mm)) or a hose (inner diameter 0.59 in (15 mm)).
- The piping after start-up should be 3/4 in (19 mm) or more, and the slope of the drain line should be 1/100 or more



Appendix: Wiring Diagram

Α

Warranty

Condair Inc. and/or Condair Ltd. (hereinafter collectively referred to as THE COMPANY), warrant for a period of two years after installation or 30 months from manufacturer's ship date, whichever date is earlier, that THE Company's manufactured and assembled products, not otherwise expressly warranted, are free from defects in material and workmanship. No warranty is made against corrosion, deterioration, or suitability of substituted materials used as a result of compliance with government regulations.

THE COMPANY's obligations and liabilities under this warranty are limited to furnishing replacement parts to the customer, F.O.B. THE COMPANY's factory, providing the defective part(s) is returned freight prepaid by the customer. Parts used for repairs are warranted for the balance of the term of the warranty on the original humidifier or 90 days, whichever is longer.

The warranties set forth herein are in lieu of all other warranties expressed or implied by law. No liability whatsoever shall be attached to THE COMPANY until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of THE COMPANY.

THE COMPANY's parts or materials that are considered consumables, including but not limited to: cylinders, filters, nozzles, membranes, media, gaskets, O-rings, etc. are NOT covered by the warranty.

THE COMPANY makes no warranty and assumes no liability unless the equipment is installed in strict accordance with a copy of the catalog and installation manual in effect at the date of purchase and by a contractor approved by THE COMPANY to install such equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for consequential damage or damage resulting directly from misapplication, incorrect sizing or lack of proper maintenance of the equipment.

THE COMPANY makes no warranty and assumes no liability whatsoever for damage resulting from freezing of the humidifier, supply lines, drain lines, or quality of the water used.

THE COMPANY retains the right to change the design, specification and performance criteria of its products without notice or obligation.

THE COMPANY's limited warranty on accessories, not of the companies manufacture, such as controls, humidistats, pumps, etc. is limited to the warranty of the original equipment manufacturer from date of original shipment of humidifier.

Extended Warranty

Extended warranties are available to purchase under the conditions listed above.

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