

PM Series

Industrial Ultrasonic Humidifier

Installation, Operation and Maintenance Manual

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IMPORTANT: Read this manual before installing, operating or servicing the humidifier. Keep it available for future reference.

Industrial Ultrasonic Humidification Systems

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Document Information

Document title	PM Series Installation, Operation and Maintenance Manual
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Important note	Product configuration may vary depending on the model and optional accessories supplied.

Contents

1. About This Manual.....	3
2. Safety Information.....	4
3. Product Description	5
4. Technical Data and Model Identification.....	7
5. Receiving, Handling and Storage	8
6. Installation.....	9
7. Electrical, Water and Drain Connections	12
8. Controller and Operating Modes.....	14
9. Commissioning and Start-up	21
10. Water Quality and White Dust	22
11. Preventive Maintenance and Cleaning	22
12. Atomizing Module Service	24
13. Troubleshooting.....	27
14. Shutdown, Storage and Disposal	28
15. Warranty and Technical Support	28
16. Appendices	29

1. About This Manual

This manual provides comprehensive guidance for the safe installation, commissioning, operation and maintenance of PHIMAXX PM Series industrial ultrasonic humidifiers. It is intended for installers, maintenance technicians, facility engineers and authorized operators.

1.1 Scope

- Applies to PM Series models unless a model-specific document states otherwise.
- Covers standalone discharge and PVC duct distribution installations.
- Does not replace local electrical, plumbing, building or occupational safety requirements.
- Model-specific capacity, power, outlet quantity and dimensions must be confirmed on the product datasheet and rating plate.

1.2 Symbols Used

DANGER	Immediate risk of severe injury or death.
WARNING	Potential risk of injury or major equipment damage.
CAUTION	Risk of minor injury, water damage or reduced performance.
NOTE	Useful operating or maintenance information.

1.3 Before You Begin

- Confirm model, voltage, frequency and plug or terminal requirements.
- Confirm the water source and local water quality.
- Confirm whether the unit will discharge directly or through ducts.
- Prepare sufficient drainage and service access.
- Ensure the installation location is level, stable and protected from freezing.

2. Safety Information

DANGER: Electrical work must be carried out by qualified personnel. Disconnect and isolate the power supply before opening the unit, removing modules or performing maintenance.

2.1 Electrical Safety

- Connect only to the voltage and frequency shown on the rating plate.
- Use protective grounding. Never operate the unit with the protective earth disconnected.
- Use an appropriately rated circuit breaker and residual-current protection where required by local regulations.
- Never handle electrical components with wet hands.
- Do not use damaged cables, loose sockets or temporary wiring.
- Do not wash the electrical compartment with water.

2.2 Water and Mechanical Safety

- Keep the humidifier upright and level during operation.
- Do not operate the atomizing modules without the correct water level.
- Do not block the overflow, drain or mist outlets.
- Prevent hoses and cables from creating trip hazards.
- Lock the casters after positioning the unit.
- Use only compatible cleaning solutions. Do not use strong acids, strong alkalis, solvents or abrasive tools.

2.3 Built-in Protection Functions

Function	Description
Overflow Protection	Water is discharged through the overflow outlet if the inlet valve fails.
Low Water Protection	The humidifier automatically stops when the water supply is interrupted.

2.4 Operating Environment

- Indoor installation only unless the ordered configuration is specifically rated otherwise.
- Protect the electrical section from direct spray, persistent condensation and corrosive vapours.
- Do not install in explosive atmospheres or near combustible dust unless specifically approved.
- Do not operate below freezing. Drain the unit when freezing conditions are possible.
- Place the unit outside extremely humid rooms where practical and distribute mist through ducting.
- Ensure adequate ventilation around the electrical compartment during maintenance.

2.5 Intended Use

The equipment is designed to humidify air in industrial and commercial environments. Typical applications include electronics manufacturing, printing and packaging, textiles, storage, food processing and greenhouse applications. It is not designed for direct medical use, breathing therapy or the atomization of chemicals, oils or flammable liquids.

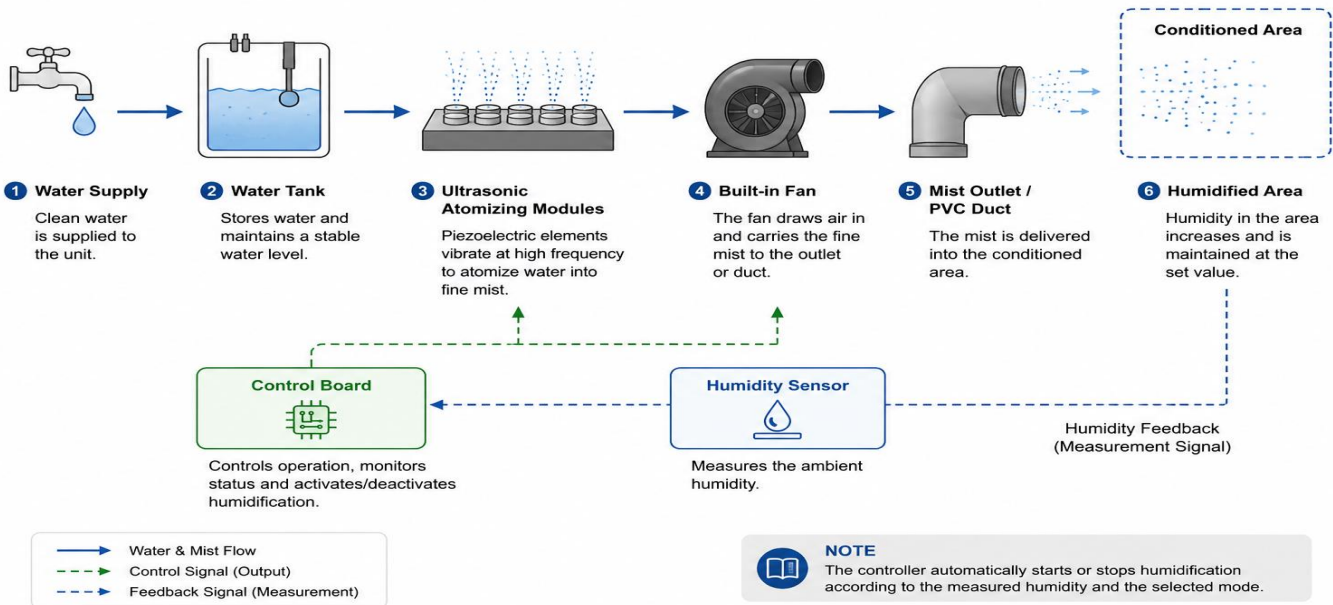
WARNING: Always disconnect and isolate the power supply before opening the electrical compartment. Failure to do so may result in serious injury or death.

3. Product Description

3.1 Working Principle

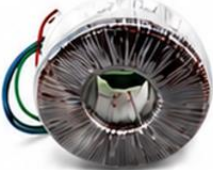
The humidifier uses high-frequency ultrasonic atomization. Piezoelectric atomizing elements convert electrical energy into mechanical vibration, producing a fine water mist. A built-in fan moves the mist through the outlet or connected PVC ductwork into the conditioned area. The controller starts and stops humidification according to the measured humidity and selected operating mode.

Figure 3-1 Working Principle Diagram



3.2 Main Assemblies

No.	Component	Function
1	Intelligent controller	Displays humidity, operating status and settings.
2	Humidity sensor	Measures ambient relative humidity.
3	Atomizing modules	Generate ultrasonic mist; The atomizing module contains a fully resin-potted PCB for improved moisture protection.
4	Fan / air mover	Transfers mist to the outlet or duct system.
5	Water inlet assembly	Provides automatic direct water supply.
6	Water-level control	Maintains the correct operating water level and provides low-water protection.
7	Overflow and drain	Protect against overfilling and allow maintenance drainage.
8	Power section	Supplies controlled power to the fan, controller and atomizing modules.
9	Mist outlets	Connect directly to the room or to PVC ductwork.
10	Casters	Allow repositioning; lock after installation.
11	Mist output adjustment knob	Adjusts the humidifier's mist output from minimum to maximum.

No.	Name / Image	Quantity	No.	Name / Image	Quantity	No.	Name / Image	Quantity
1	 Display Panel (Smart Control Only)	1	2	 Time Control Module Base (For models ≥ 3200 W)	1	3	 Water Bucket Float Ball (Level Control)	1
4	 AC Contactor (For models ≥ 3000 W)	1	5	 Toroidal Transformer (For models ≥ 4000 W)	1	6	 Rectifier Board (For models ≥ 4000 W)	1
7	 Centrifugal Blower (For models ≥ 3000 W)	1	8	 Time Control Module (For models ≥ 3200 W)	1	9	 Humidity Sensor (Smart Control Only)	1
10	 Caster Wheel	4	11	 Cooling Fan	1	12	 Water Level Float Switch	1
13	 Water Filter	1	14	 Stainless Steel Screws	4	15	 Filter Mounting Plate	1
16	 Filter Housing Wrench	1	17	—	—	18	 Mist Distribution Manifold	1



NOTE: Accessories may vary depending on the model.
For specific details, please refer to the packing list or contact PHIMAXX.

4. Technical Data and Model Identification

NOTE: Use the approved model datasheet and rating plate as the final reference. Specifications may differ between PM series and customized units. Refer to the latest PHIMAXX datasheet for detailed specifications.

4.1 Figure 4-1 Typical Product Rating Plate

Figure 4-1 Typical Rating Plate

Model:	PM-27I	Humidification Capacity:	27 L/h
Serial No.:	PM27000158	Ultrasonic Frequency:	1.7 MHz
Power Supply:	AC 220–240 V, 50/60 Hz		
Rated Power:	4400 W	Manufacturing Date:	2026–07

* Figure 4-1 shows a typical rating plate. The actual information may vary depending on the model.

Before installation, verify the following information on the rating plate:

- ☒ Model number
- ☒ Serial number
- ☒ Humidification capacity
- ☒ Rated voltage and frequency
- ☒ Maximum (rated) power
- ☒ Production date

4.2 Typical PM Series Model Range

Model	Capacity	Control	Water Supply	Application	Outlet(s)
PM-03IF to PM-12IF	3-12 L/h	Intelligent	Direct & External tank	Standalone / ducted	Model-specific
PM-15I to PM-24I	15-24 L/h	Intelligent	Direct	Industrial / ducted	3 x 110 mm
PM-27I	27 L/h	Intelligent	Direct	Industrial / ducted	3 x 110 mm
PM-30I	30 L/h	Intelligent	Direct	Industrial / ducted	3 x 110 mm

4.3 Automatic Water Supply

- The humidifier is designed for direct water supply.
- The water level is automatically maintained during operation, eliminating the need for manual refilling.

4.4 Automatic Humidity Control

- Automatic-control models are equipped with an external humidity sensor.
- The controller automatically starts and stops humidification according to the configured upper and lower humidity limits.

4.5 Installation Data to Confirm

- Room volume and ceiling height.
- Current and target relative humidity.
- Fresh-air and exhaust ventilation rate.
- Number and position of production areas.
- Water quality and supply pressure.
- Duct length, diameter, branches and outlet-hole arrangement.

- Available electrical supply and protective devices.

5. Receiving, Handling and Storage

5.1 Inspection on Delivery

1. Inspect the carton or wooden case for impact, water or puncture damage.
2. Confirm the model and quantity against the packing list.
3. Check the machine, casters, sensor, inlet hose, cable and ordered accessories.
4. Photograph any damage before unpacking further and notify the carrier and supplier promptly.

5.2 Handling

- Keep the unit upright.
- Do not lift the machine by the mist outlets, controller, cables or hoses.
- Use appropriate lifting equipment for heavy models.
- Protect the controller and outlets from impact.

5.3 Storage

- Store indoors in a dry, clean and frost-free location.
- Drain all water before extended storage.
- Cover openings to prevent dust or insects entering the unit.
- Before returning to service, inspect cables, hoses, seals and the atomizing tank.



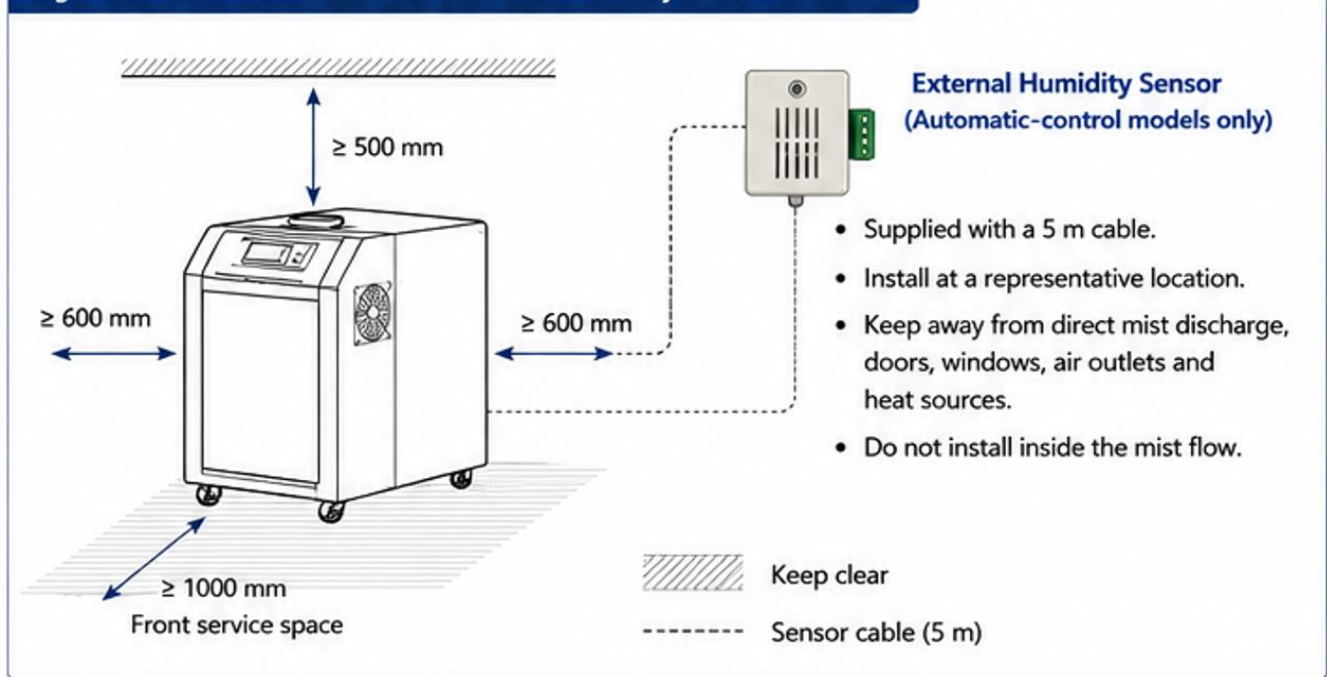
6. Installation

Proper installation is essential to ensure optimum humidification performance, reliable operation and long service life. Follow the recommendations below when installing the humidifier.

6.1 Location and Clearance

- Install the humidifier on a firm, level surface capable of supporting the operating weight when filled with water.
- Leave sufficient space around the unit for inspection, maintenance and atomizing module replacement.
- Keep electrical components away from direct water spray.
- For applications operating continuously above 85% RH, it is recommended to install the humidifier outside the humidified room and distribute the mist through PVC ductwork.
- Automatic-control models are supplied with an external humidity sensor (5 m cable). Install the sensor at a representative location away from direct mist discharge, doors, windows, outdoor-air inlets and heat sources.

Figure 6-1 Minimum Clearance and External Humidity Sensor Installation



6.2 Standalone Discharge

When the humidifier is used **without PVC ductwork**, position the mist outlet so that the mist can disperse freely throughout the room.

Observe the following recommendations:

- Direct the mist toward an open area with good air circulation.
- Maintain sufficient clearance from walls, ceilings and nearby equipment.
- Do not discharge mist directly from the front (control panel side) of the humidifier.
- Avoid directing mist toward electrical cabinets, control panels or other moisture-sensitive equipment.
- If prolonged operation is required under high-humidity conditions, ducted installation is recommended.

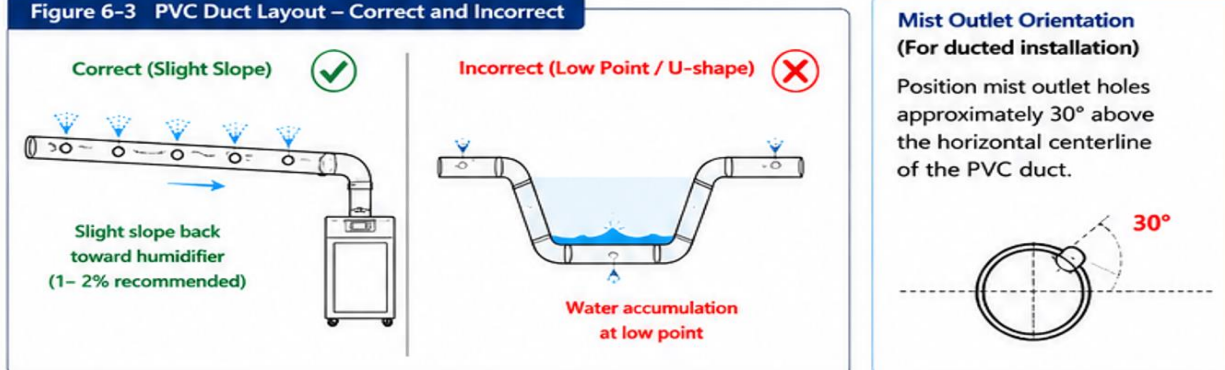
Figure 6-2 Standalone Discharge – Recommended and Not Recommended

6.3 Ducted Installation

PVC duct installation is recommended for applications requiring controlled mist distribution or operation in high-humidity environments.

For optimum performance:

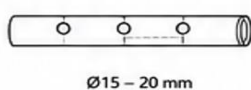
- Use smooth, corrosion-resistant PVC or stainless-steel mist ducting of the specified diameter.
- Keep the duct as short and straight as practical.
- Install at least 1 m of PVC duct before the first mist outlet.
- Position mist outlet holes approximately 30° above the horizontal centerline of the duct.
- The recommended mist outlet hole diameter is Ø15–20 mm.
- Hole spacing should be determined according to duct length and the required humidification distribution.
- Maintain a continuous slight slope (approximately 1–2%) back toward the humidifier so that condensate can return naturally.
- Avoid U-shaped sections or low points where water may accumulate.
- Seal the end of the PVC duct unless otherwise specified by the installation design.
- Support the duct independently to avoid excessive load on the humidifier outlet.

Figure 6-3 PVC Duct Layout – Correct and Incorrect

Mist Outlet Diameter

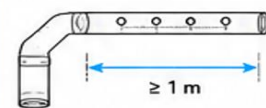
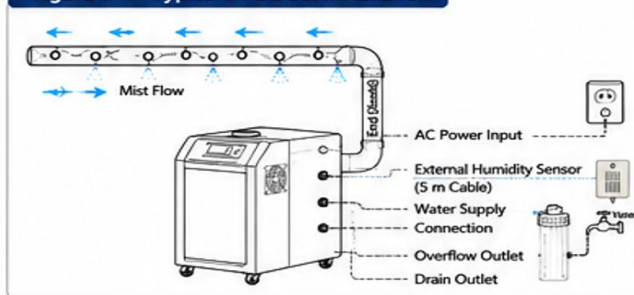
Recommended hole diameter:
15 – 20 mm

Hole spacing depends on duct length and humidification distribution.



Minimum PVC Length (For ducted installation)

Install at least 1 m of PVC duct before the first mist outlet.
A 45° elbow may be used.

**Figure 6-4 Typical PVC Duct Installation**

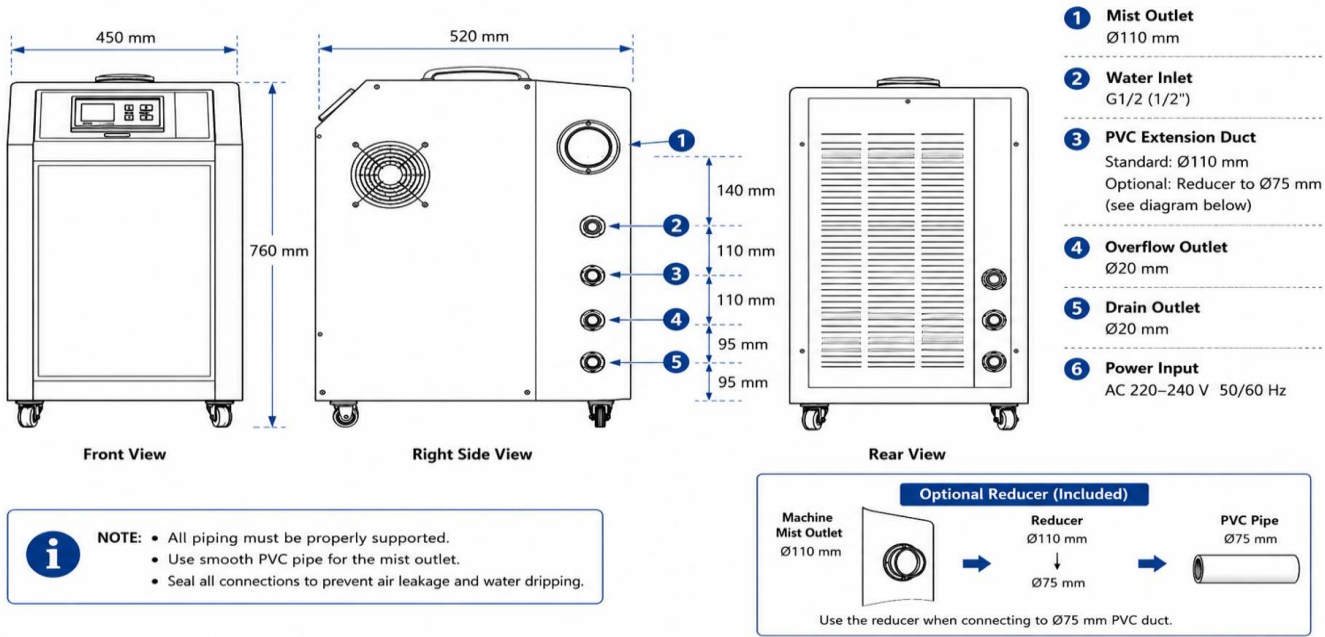
6.4 Connection Requirements

Before installation, verify that the required utility connections are available and match the humidifier specifications.

Item	Specification
Mist Outlet	Ø110 mm
Water Inlet	G1/2 (1/2")
PVC Extension Duct Ø110 mm (Reducer to Ø75 mm if required)	
Power Supply	AC 220–240 V, 50/60 Hz

Figure 6-5 Machine Connections and Dimensions

The following diagram shows the connection locations and dimensions. All dimensions are for reference only. Please refer to the actual product.



CAUTION:

- ⚠ Condensation may form inside PVC ducts if the duct slope is incorrect or low points are present.
- ⚠ Incorrect duct installation may cause water accumulation, dripping and reduced mist distribution.
- ⚠ Do not discharge mist directly from the front (control panel side). Direct the mist toward the left, right or rear side whenever possible.
- ⚠ For applications operating continuously above 85% RH, install the humidifier outside the humidified room and distribute the mist through PVC ductwork.

IMPORTANT NOTE:

- This installation guide shows recommended installation practices. Actual installation shall comply with local electrical and plumbing regulations.
- Automatic-control models are supplied with an external humidity sensor (5 m cable). Install the sensor at a representative location away from direct mist discharge.
- Inspect the PVC duct regularly and remove any accumulated scale or condensate if necessary.
- Verify all water, drain and electrical connections before commissioning the humidifier.

7. Electrical, Water and Drain Connections

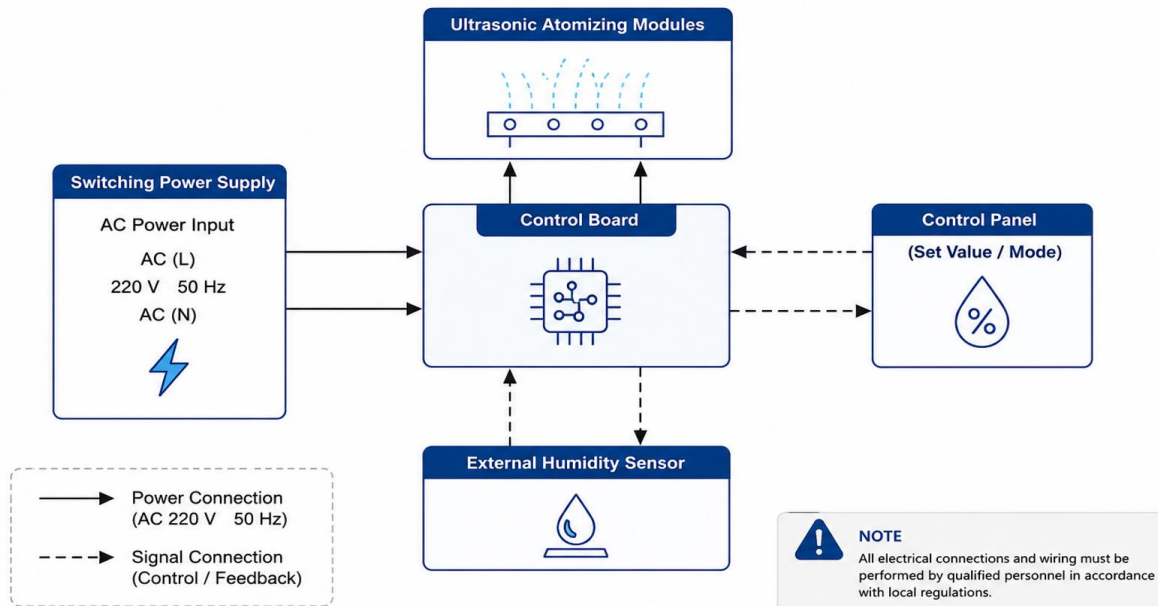
7.1 Electrical Connection

- Confirm voltage and frequency before connecting power.
- Connect protective earth first.
- Use a dedicated circuit sized for the maximum power shown on the rating plate.
- If supplied with a Schuko-type plug, use a correctly grounded compatible socket and confirm that the plug and socket rating is suitable for the load.
- High-power models may require fixed wiring or an industrial connector. Follow the approved wiring plan.
- Do not energize the unit until water and drain connections are complete.

Electrical Protection

- Use a dedicated circuit breaker suitable for the rated current.
- Ensure reliable protective grounding before energizing the humidifier.
- Replace blown fuses only with the same type and rating.
- Disconnect the power supply before servicing the unit.

Figure 7-1 Electrical Control Block Diagram



The electrical control system shown is for reference only.
Actual configuration may vary depending on the model and control option.

7.2 Water Supply

- Connect the supplied inlet hose or approved equivalent to a clean water source.
- Install an isolation valve upstream of the unit.
- Flush the supply line before connection.
- Install a shut-off valve near the humidifier to facilitate maintenance.
- Use a sediment pre-filter when the source contains sand, rust or suspended particles.
- A standard sediment filter does not remove dissolved calcium and magnesium hardness.
- Check all connections for leaks before operation.
- Connect the clean-water supply line to the **WATER INLET**. Do not connect the water supply to the overflow or drain outlet.

WARNING: For hard water applications, RO water or properly filtered water is recommended to reduce mineral scale.
Use clean tap water or RO water where recommended.

7.3 Drain and Overflow

- Connect the OVERFLOW OUTLET to a suitable open drain where required. Do not cap or isolate the overflow outlet.
- Use the DRAIN OUTLET to empty the water tank during cleaning, maintenance or extended shutdown.
- Keep the OVERFLOW OUTLET and DRAIN OUTLET unobstructed at all times.
- Confirm that any returned duct condensate can flow back without obstruction.
- Route the drain hose with a continuous downward slope, free from kinks, upward loops and restrictions.
- Ensure that the drain and overflow pipes are not connected together unless specifically required by the installation design.



Figure 7-2 Water inlet, overflow outlet and drain outlet

8. Controller and Operating Modes

NOTE: This section applies to the GS862 controller shown in the product photos. The screen may display abbreviated English words such as Man, Hum and Tim.

8.1 Front Panel and Button Functions

Button	Function
Mode	On the main screen, press to cycle through Manual (Man), Humidity (Hum) and Timer (Tim) modes.
Set	Press to enter the parameter menu or move to the next parameter. Press and hold for about 3 seconds to save the settings and return to the main screen.
▲	Increase the selected value. In Manual mode, press to start humidification.
▼	Decrease the selected value. In Manual mode, press to stop humidification.
Power	Press to switch the controller on or off.



Figure 8-1 GS862 controller front panel and button layout

8.2 Main Screen

Display item	Meaning
Temperature	Current temperature measured by the connected sensor.
Man / Hum / Tim	Current operating mode: Manual, Humidity control or Timer control.
RH value	Current measured relative humidity.
Set / upper-limit value	Humidity setting shown in Humidity mode.
Hum icon	Humidification output is active when the icon is shown as operating.
Fan icon	The fan is running. After atomization stops, the fan normally continues running for about 1 minute (factory setting) to discharge the remaining mist inside the unit or connected duct.

Display item	Meaning
Time values	In Timer mode, the display shows the programmed or remaining work/stop time.

8.3 Switching On and Selecting a Mode

1. Check that the water supply is open, the humidity sensor is connected, and the correct water level has been reached.
2. Press the Power button. The main screen appears.
3. Press Mode repeatedly until the required mode appears at the top of the screen: Man, Hum or Tim.
4. Set the parameters for that mode as described below.

8.3.1 Mist Output Adjustment

Use the mist output adjustment knob on the unit's control panel to adjust the amount of mist produced. This adjustment is available in Manual, Humidity and Timer modes.

- Turn the knob clockwise toward MAX to increase the mist output.
- Turn the knob counterclockwise toward MIN to decrease the mist output.
- Adjust the output gradually while observing the room humidity and condensation conditions.



NOTE: The mist output adjustment knob changes the mist output only. It does not change the humidity limits, timer settings or selected operating mode.

IMPORTANT: Changing the mode changes how the humidifier starts and stops. Confirm the mode shown on the screen before leaving the unit unattended.

8.4 Manual Mode (Man)

Use Manual mode when the operator needs to start and stop the humidifier directly.

1. Press Mode until Man appears on the screen.
2. Press ▲ to start humidification. The humidification and fan indicators appear.
3. Press ▼ to stop humidification. The atomizing modules stop first, while the fan normally continues running for about 1 minute to discharge the remaining mist. The fan then stops automatically.

CAUTION: Manual mode does not stop automatically at a target humidity. Monitor the room humidity and condensation conditions during operation.

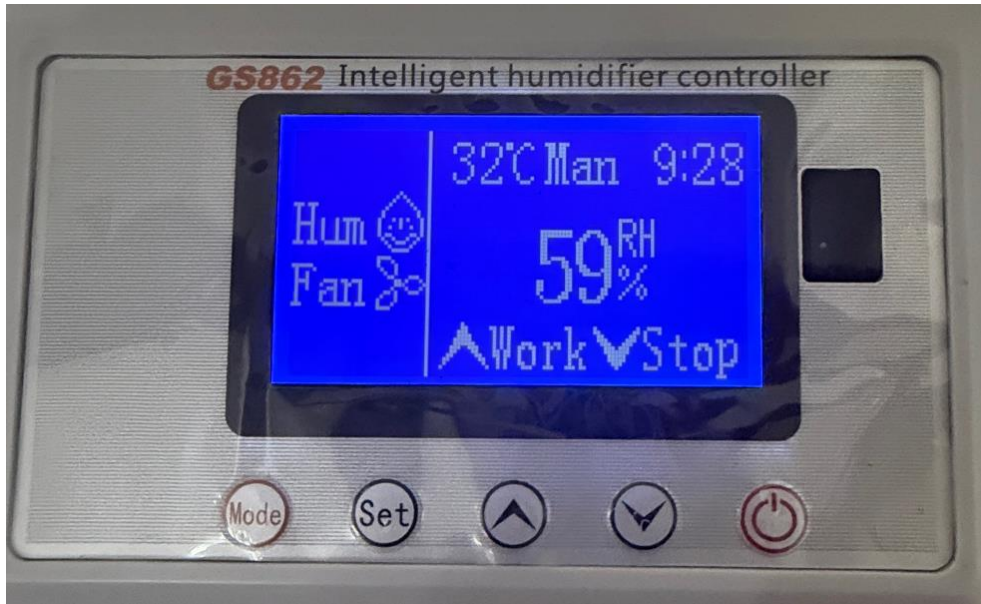


Figure 8-2 Manual mode: press ▲ to Work and ▼ to Stop

8.5 Automatic Humidity Mode (Hum)

In Humidity mode, the controller uses an upper humidity limit and a lower humidity limit. This prevents rapid ON/OFF cycling around a single setpoint.

1. Press Mode until Hum appears on the screen.
2. Press Set once to open the parameter menu. Parameter 1 (Up Limit) is displayed.
3. Use ▲ or ▼ to set the upper humidity limit. This is the humidity at which atomization stops.
4. Press Set to select parameter 2 (Low Limit). Use ▲ or ▼ to set the lower humidity limit. This is the humidity below which humidification starts again.
5. If required, press Set to review Humi Corr and Fan Delay. Change these values only as described below.
6. Press and hold Set for about 3 seconds to save the settings and return to the main screen.

CONTROL LOGIC: When the measured RH is below the lower limit, humidification starts. It continues until the measured RH reaches the upper limit. The atomizing modules then stop, while the fan normally continues running for about 1 minute to discharge the remaining mist inside the unit or connected duct. After the fan-delay time has elapsed, the fan stops automatically. The upper limit must always be higher than the lower limit.

Parameter	Purpose	Operating guidance
1 Up Limit	Stop humidity	Set the maximum desired RH. Atomization stops when this value is reached.
2 Low Limit	Restart humidity	Set the RH below which humidification restarts. Keep this value below Up Limit.
3 Humi Corr	Humidity correction	Sensor offset. Leave at 0 unless a reliable reference instrument confirms a consistent reading error.
4 Fan Delay	Post-run fan time	Sets the time the fan continues running after the atomizing modules stop. The factory setting is normally about 1 minute, allowing the remaining mist inside the unit to be discharged. Keep the factory setting unless a different delay is required for the installation.

NOTE: It is normal for the fan to continue running after humidification stops. This post-run operation does not indicate a controller or fan fault. The fan will stop automatically after the programmed fan-delay time has elapsed.



Figure 8-3 Humidity mode main screen and parameters 1-4

8.6 Timer Mode (Tim)

Timer mode runs the humidifier for a programmed Work time and then stops it for a programmed Stop time. The work/stop cycle repeats while Timer mode is active. For example, Work = 01H00 and Stop = 01H00 means one hour ON followed by one hour OFF, repeated continuously.

1. Press Mode until Tim appears on the screen.
2. Press Set repeatedly to move through the timer parameters. When parameter 7 (Work 1T) is selected, use ▲ or ▼ to set the operating duration.
3. Press Set again to select parameter 8 (Stop 1T), then use ▲ or ▼ to set the pause duration.
4. Press and hold Set for about 3 seconds to save the settings and return to the main screen.

NOTE: Timer mode controls operation by time, not by the measured RH. Check the actual humidity and condensation conditions before using long work periods.



Figure 8-4 Timer mode main screen and period 1 settings

8.7 Optional Daily Scheduling and Advanced Parameters

The controller also contains daily scheduling, clock, calibration and communication parameters. Normal users should change only the settings required for the installation. Leave protection and communication parameters at their factory values unless instructed by PHIMAXX.

CLOCK-BASED SCHEDULING: To use the Start and ShutD clock schedules, set parameter 17 (Timing) to ON, then confirm parameter 18 (Time/Week) and parameter 19 (Work Week). Leave Timing OFF when only the repeating Work/Stop cycle is required.

Menu item	Function / instruction
5 Start 1T / 6 ShutD 1T	Optional start and shutdown clock times for schedule period 1.
7 Work 1T / 8 Stop 1T	Repeated ON and OFF durations used in Timer mode.

Menu item	Function / instruction
9-12 (period 2)	Optional start, shutdown, work and stop settings for schedule period 2.
13-16 (period 3)	Optional start, shutdown, work and stop settings for schedule period 3.
17 Timing	Enables or disables clock-based daily scheduling. Set to ON only when Start/ShutD schedules are required; otherwise leave OFF.
18 Time / Week	Sets the controller clock and day of the week. Manually adjust the time to match the current time shown on your phone or another reliable clock. The controller does not synchronize automatically with a phone.
19 Work Week	Selects the days on which the schedule is allowed to operate.
20 Temp Corr	Temperature display correction. Leave at 0 unless verified against a reliable reference.
21 Shor Stop / 22 Over Stop	Protection-related factory parameters. Do not change without supplier instructions.
23 485 ID	RS-485 communication address. Change only when connecting the controller to a compatible external system.
24 Time Unit	Selects the time unit used by timer settings. H indicates hours. Keep the factory setting unless another time base is specifically required; recheck all Work and Stop durations after any change.

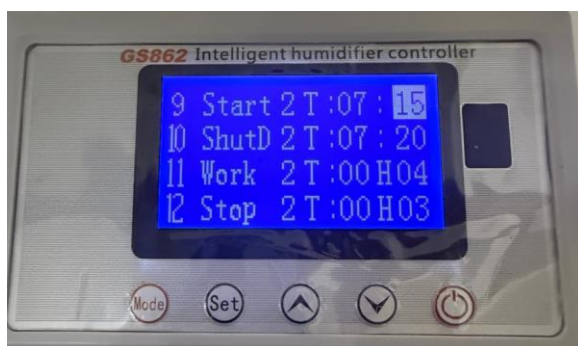


Figure 8-5 Optional schedule periods 2 and 3



Figure 8-6 Timing, controller clock and Work Week settings

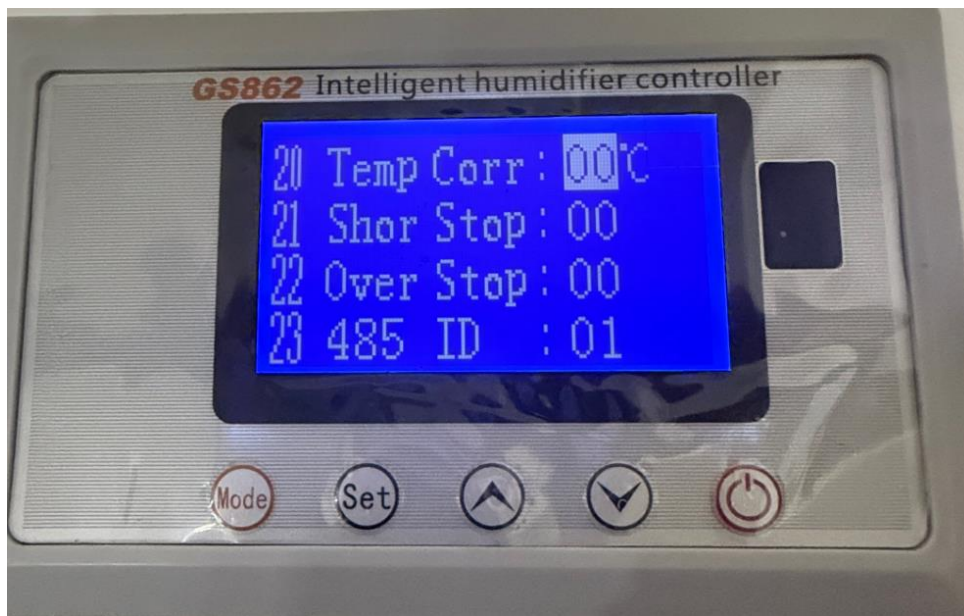


Figure 8-7 Temperature correction, protection and RS-485 settings

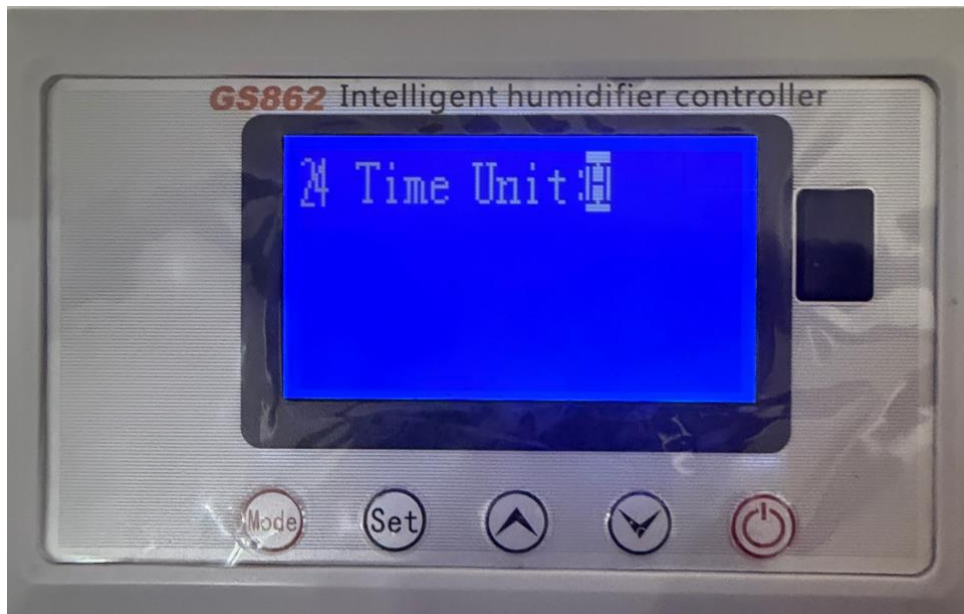


Figure 8-8 Timer time-unit setting (H = hours)

NOTE: The values shown in the controller images are examples only. Set all humidity limits, operating times and schedules according to the actual application requirements.

SETTING METHOD: Press Set to move through the parameters. Use ▲ or ▼ to change the flashing value. After completing the settings, press and hold Set for about 3 seconds to return to the main screen.

8.8 Normal Operating Checks

- Confirm that the displayed RH is reasonable before using Humidity mode.
- Keep the sensor away from direct mist, doors, windows, outdoor-air inlets and heat sources.
- Confirm that Up Limit is higher than Low Limit.
- After the first operating cycle, verify that atomization stops and restarts at the expected humidity limits.
- Confirm that the fan runs during humidification, continues running for about 1 minute after the atomizing modules stop, and then stops automatically.

- If a significant amount of mist remains inside the cabinet or duct after the fan-delay period has ended, inspect the airflow and duct slope before increasing the fan-delay time.
- Do not use Timer mode as a substitute for humidity control where a strict RH limit is required.

9. Commissioning and Start-up

9.1 Pre-start Checklist

OK	Check
☐	Unit is level and casters are locked.
☐	Voltage, frequency and grounding are correct.
☐	Water inlet is open and leak-free.
☐	Drain and overflow are unobstructed.
☐	Ductwork is supported, sealed and sloped correctly.
☐	Humidity sensor is connected and correctly positioned.
☐	Atomizing tank and modules are clean.
☐	No tools or packaging remain inside the unit.

9.2 Initial Start-up

1. Open the water isolation valve.
2. Allow the water level to stabilize.
3. Switch on the main power.
4. Select the required operating mode and set the applicable humidity limits or timer values.
5. Confirm that the fan runs and mist exits evenly.
6. Check the machine, hoses, drain and ductwork for leaks or abnormal vibration.
7. After 15-30 minutes, check for condensation and adjust duct airflow or outlet arrangement if necessary.
8. Record the operating settings and commissioning date.

WARNING: Stop the unit immediately if there is electrical smell, smoke, repeated tripping, uncontrolled overflow, severe vibration or water entering the electrical section.

9.3 Normal Shutdown

1. Stop humidification from the controller.
2. Allow the fan-delay cycle to finish. The fan normally continues running for about 1 minute to discharge the remaining mist.
3. After the fan stops automatically, switch off the unit if it will remain unused.
4. Close the water isolation valve for maintenance or extended shutdown.
5. Drain and clean the tank before prolonged storage.

10. Water Quality and White Dust

10.1 Water Recommendation

Clean tap water is suitable for most applications. For better long-term performance and reduced scale buildup, RO water or softened water is recommended where available, especially in hard water areas.

10.2 Hard Water and Scale

Hard water contains dissolved minerals, mainly calcium and magnesium. These minerals can form scale on atomizing surfaces and inside the tank. Scale reduces mist output, increases maintenance frequency and may shorten component life if allowed to build up.

10.3 White Dust

Ultrasonic humidifiers atomize water directly. Dissolved minerals can therefore be carried with the mist and later appear as white residue on nearby surfaces. A sediment pre-filter removes particles such as sand or rust, but it does not remove dissolved hardness. RO, demineralized or appropriately treated water is the most effective way to reduce white dust.

10.4 Water Treatment Guidance

Water Source	Recommendation	Comments
Clean municipal water	Generally acceptable	Inspect scale regularly; local hardness varies.
Hard municipal water	RO or suitable treatment preferred	More frequent cleaning may be required.
Well / river water	Test water and use suitable filtration/treatment	Sediment and biological contamination may require additional treatment.
RO / demineralized water	Preferred for low scale and low white dust	Maintain hygienic storage and distribution.
Chemically contaminated water	Do not use without written approval	May damage modules, seals or electrical components.

CAUTION: Do not add disinfectants, fragrances, oils, detergents or chemicals to the atomizing tank unless the system has been specifically approved for that liquid.

11. Preventive Maintenance and Cleaning

11.1 Maintenance Guidelines

Regular inspection and cleaning are recommended to maintain optimum performance.

- Inspect and clean the water tank every two weeks, or more frequently if required by the water quality and operating conditions.
- Inspect the atomizing modules regularly and remove mineral scale as required. Poor water quality may require substantially shorter inspection and cleaning intervals.
- During the two-week tank service, inspect the water-level components, WATER INLET, OVERFLOW OUTLET and DRAIN OUTLET at the same time.
- Adjust the maintenance interval according to actual scale, sediment and operating hours.
- Use only original or approved replacement parts during maintenance.

11.2 Recommended Maintenance Schedule

Interval	Item	Action	Record
Daily / each shift	Unit and duct	Check leaks, alarms, unusual noise and mist distribution.	Required
Every 2 weeks	Tank, water-level components, inlet, drain and overflow	Inspect, remove sediment and clean as required; check for restriction and leakage.	Required
As Required (Based on Water Quality)	Atomizing modules and tank	Inspect and clean mineral scale and deposits.	Required
Every 6 months	Sensor and electrical connections	Inspect condition, mounting and cable security.	Recommended
Annually	Complete system	General service, deep cleaning and safety inspection.	Recommended

11.3 Cleaning Procedure

1. Stop the humidifier, disconnect power and close the water supply.
2. Drain the tank completely.
3. Remove the atomizing modules according to the module retention method.
4. Disconnect the connectors from the atomizing modules before removal.
5. Rinse loose sediment with clean water.
6. Clean the atomizing modules using a soft brush and a mild acidic descaling solution.
7. Clean the tank walls, bottom, water-level device, drain and overflow.
8. Rinse all cleaned parts thoroughly with clean water.
9. Reinstall the modules securely and confirm correct water level.
10. Restore water and power, then verify even mist output and leak-free operation.

CAUTION:

- Do not scratch the ceramic atomizing surface.
- Do not immerse electrical connectors or electronic parts in water.
- Use only a soft brush and a mild acidic descaling solution.
- Do not use metal brushes or concentrated acid.

11.4 Required Tools

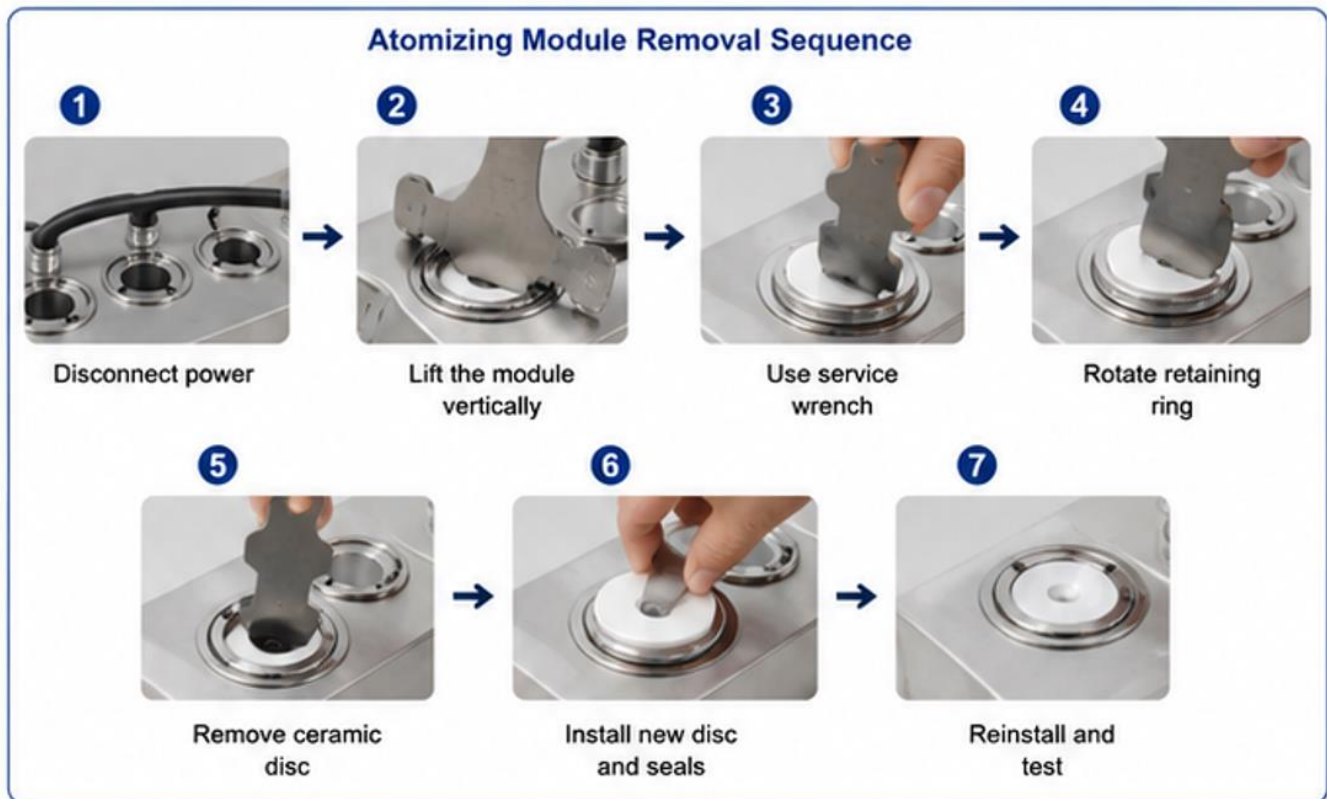
- Soft brush
- Mild acidic descaling solution
- Clean cloth
- Protective gloves
- Safety glasses (recommended)

WARNING: Do not add water through the mist outlet or air outlet.
Always supply water through the designated water inlet.

12. Atomizing Module Service

12.1 Removal and Reinstallation

1. Disconnect and lock out the electrical supply.
2. Drain and dry the tank area.
3. Label and disconnect the module cable if required.
4. Release the module fixing device and lift the module vertically.
5. Inspect seals, cable and housing before reinstallation.
6. Reinstall in the correct position and reconnect securely.
7. Fill the tank and check the water level before energizing.



12.2 Atomizing Disc Replacement

NOTE: Disc replacement should be performed by trained service personnel. Replacement construction varies by module type. Use the correct tool, disc, seals and orientation.

1. Remove and dry the atomizing module.
2. Use the specified tool to loosen the retaining ring.
3. Remove the old disc and seals without damaging the cavity.
4. Clean and dry the seating surface.
5. Install the new disc in the correct orientation with new or serviceable seals.
6. Tighten the retaining ring evenly; do not overtighten.

7. Test the module in water and confirm uniform mist output.

NOTE: During transportation, the float assembly may shift from its correct position.

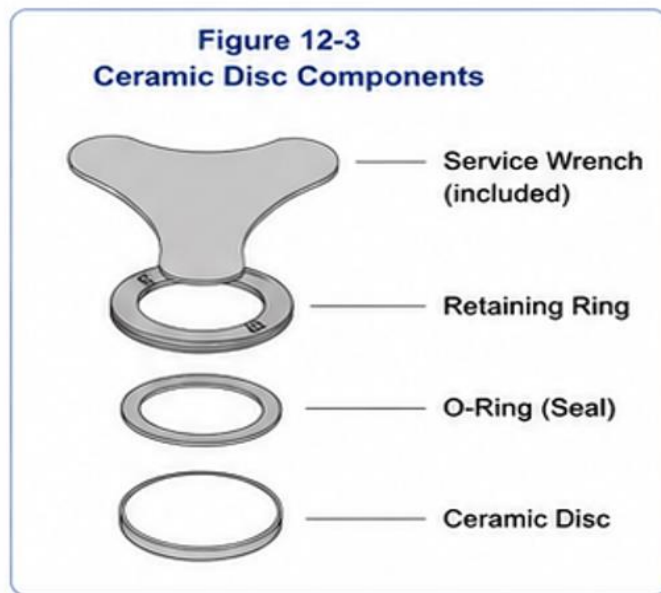
Before first startup, verify that the float assembly moves freely and that the operating water level is correct.

Incorrect water level may reduce mist output or prevent normal atomization.

12.3 Module Inspection

Inspect the following items before reinstalling the atomizing module:

- Ceramic disc surface
- O-ring (seal)
- Retaining ring
- Electrical connector
- Cable insulation
- Water seal



12.4 Disc Inspection

Replace the ceramic disc if any of the following conditions are observed:

- Mist output decreases significantly.
- Water column appears instead of fine mist.
- The ceramic surface is cracked.
- Heavy mineral scale cannot be removed by cleaning.
- The disc is chipped or otherwise damaged.

12.5 Spare Parts Information

No.	Part	Typical Qty.	Remarks
1	Atomizing Module	Model specific	Replace if damaged
2	Humidity Sensor	1 (optional)	Automatic models only
3	Float Assembly	1	Water level control
4	Fan	Model specific	Replace if faulty
5	Switching Power Supply	1	Matching model only
6	Inlet Valve or Hose	Model specific	Replace if damaged
7	Controller	1	Model specific
8	Caster (Wheel)	4	Replace if worn

Expected Service Life

The service life of the ceramic disc depends on several operating conditions, including:

- Water quality
- Operating hours
- Maintenance and cleaning frequency
- Water temperature
- Mineral scale and dissolved solids

Replace the ceramic disc when normal mist output cannot be restored through cleaning.

Actual service life varies depending on water quality, operating conditions and maintenance practices.

WARNING:

Never touch the ceramic surface with metal tools.

Do not overtighten the retaining ring.

Always install the sealing ring correctly.

Do not immerse electrical connectors or electrical parts in water

Test mist output before returning the unit to service.

13. Troubleshooting

WARNING: Disconnect power before opening the unit or checking internal components.

Symptom	Possible Cause	Corrective Action
Unit does not start	No power; breaker open; loose plug; controller OFF	Verify supply, breaker, grounding, plug/terminals and controller status.
Fan runs but no mist	Low water; module not powered; heavy scale; module fault	Check water level and protection status; clean modules; inspect power and module connections.
Fan noise is excessive	Fan damaged; loose mounting; foreign object	Inspect fan, tighten mounting hardware or replace the fan if necessary.
Water leakage	Loose hose; damaged seal; drain connection leaking	Tighten connections, replace damaged seals and inspect the drain system. Check all hose connections for leaks.
Low mist output	Scale buildup; incorrect water level; restricted airflow; module fault	Clean the modules; correct the water level; inspect the fan and duct; check the module connections.
Uneven mist output	Individual disc or module degraded; uneven scale	Clean and compare module output; replace defective disc/module.
Humidity does not rise	Capacity insufficient; high ventilation loss; poor air circulation; incorrect sensor location.	Check load calculation, doors/ventilation, duct layout and sensor position; consider additional capacity.
Humidity overshoots	Sensor exposed to local dry air; upper/lower limits set incorrectly; humidifier capacity excessive for the space	Relocate the sensor; correct the upper and lower humidity limits; use shorter timed work periods if Timer mode is used.
Water overflow	Water-level device or inlet valve stuck; drain/overflow blocked	Switch off water; clean or replace the faulty component; clear drain/overflow.
White dust	Hard water with high mineral content.	Use RO or demineralized water.
Frequent scale buildup	Hard water; insufficient maintenance.	Use treated water and shorten inspection/cleaning interval.
Condensation in duct	Insufficient slope; low airflow; excessive output; poor insulation	Increase the duct slope, eliminate low points, improve insulation and use shorter timed work periods if necessary.
Sensor alarm	Sensor disconnected, damaged or incorrectly configured	Check connection, cable and controller sensor selection; replace if necessary.
Breaker trips	Electrical fault, moisture ingress, overload or short circuit	Disconnect the power immediately and have the unit inspected by qualified service personnel.
Mist droplets or wet surfaces	Excessive output; poor air circulation; outlet too close to equipment	Lower the humidity limits or shorten the timed work period; improve air circulation and reposition the mist outlet.
Poor mist distribution	Insufficient airflow; fan failure; blocked duct; excessive resistance	Check the fan, inspect the duct system and remove any restrictions. Replace the fan if necessary.

NOTE: Most mist-output problems are related to water quality, water level or routine maintenance. Inspect and clean the atomizing modules before replacing electrical components.

13.1 Information to Provide for Support

- Model and serial number.
- Voltage and frequency.
- Photos or video of the machine, controller and fault.
- Water source and recent maintenance history.
- Description of when the problem began and any changes made before it occurred.
- Controller display, alarm code (if available), or indicator status.

14. Shutdown, Storage and Disposal

14.1 Extended Shutdown

1. Stop humidification from the controller.
2. Allow the fan-delay cycle to finish and wait until the fan stops automatically.
3. Isolate the electrical power supply.
4. Close the water supply.
5. Drain the tank and hoses.
6. Clean and dry the atomizing modules and tank.
7. Leave service covers slightly ventilated where safe to prevent trapped moisture.
8. Protect outlets and openings from dust.

14.2 Freezing Conditions

The humidifier, hoses and connected piping must be fully drained before exposure to freezing temperatures. Freeze damage is not covered by the standard warranty.

14.3 Disposal

Dispose of electrical components, electronic controls, cables, metal parts and packaging according to local waste and recycling regulations. Do not dispose of electronic components with unsorted household waste.

15. Warranty and Technical Support

15.1 Standard Warranty

Unless otherwise stated in the sales contract, the standard warranty period is 12 months from the shipment date. The warranty covers manufacturing defects under normal installation, operation and maintenance conditions.

This warranty does not cover normal wear items such as ceramic discs, O-rings or other consumable parts.

15.2 Exclusions

- Damage caused by incorrect voltage, inadequate grounding or unsuitable wiring.
- Damage caused by dry operation, freezing, blocked drainage or uncontrolled water supply.
- Failure caused by lack of cleaning, severe scale, contaminated water or unauthorized chemicals.
- Unauthorized modification, including changes to the specified mist outlet or duct diameter, use of incorrect spare parts, or repair by unqualified personnel.
- Damage during transportation after delivery responsibility has transferred.
- Normal wear items and consumables unless specifically stated otherwise.

15.3 Technical Support

Company	PHIMAXX
Website	www.phimaxx.com
Email	sales@phimaxx.com
WhatsApp / Mobile	+86 134 1897 0098
Support information	Provide model, serial number, photos/video and fault description.

Appendix A - Commissioning Record

Customer / Site	
Model	
Serial Number	
Voltage / Frequency	
Installation Date	
Water Source	
Target Humidity	
Duct Configuration	
Commissioned By	
Comments	

Appendix B - Maintenance Record

Date	Work Performed	Technician	Remarks

NOTICE: This manual is a general PM Series manual. Before release to a customer, insert the model-specific controller images, wiring diagram, rated data and any ordered accessories.