Condair CP3mini

Electrode Humidifiers

MOUNTING INSTRUCTIONS
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1 Introduction

1.1 To the very beginning

We thank you for having purchased the steam humidifier Condair CP3mini.

The steam humidifier Condair CP3mini incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair CP3mini may result in danger to the user or third parties and/or impairment of material assets.

To ensure a safe, proper, and economical operation of the steam humidifier Condair CP3mini, please observe and comply with all information and safety instructions contained in the present manual as well as the instructions given in the manuals for the components used in the humidification system.

If you have questions, which are not or insufficiently answered in this documentation, please contact your Condair supplier. They will be glad to assist you.

1.2 Notes on the mounting instructions

Limitation

The subject of these mounting instructions is the steam humidifier Condair CP3mini in its different versions. The various accessories are only described insofar as this is necessary for proper operation of the equipment. Further information on accessories can be obtained in the respective instructions.

These mounting instructions is restricted to the installation of the steam humidifier Condair CP3mini and is meant for well trained personnel being sufficiently qualified for their respective work.

The mounting instructions are supplemented by various separate items of documentation (operating instructions, spare parts list, manuals for accessories, etc.). Where necessary, appropriate cross-references are made to these publications in the mounting instructions.
Symbols used in this manual

**CAUTION!**
The catchword “CAUTION” designates notes in this documentation that, if neglected, may cause damage and/or malfunction of the unit or other material assets.

**WARNING!**
The catchword “WARNING” used in conjunction with the general caution symbol designates safety and danger notes in this documentation that, if neglected, may cause injury to persons.

**DANGER!**
The catchword “DANGER” used in conjunction with the general caution symbol designates safety and danger notes in this documentation that, if neglected, may lead to severe injury or even death of persons.

Safekeeping
Please safeguard these mounting instructions in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation should be passed on to the new operator. If the documentation gets mislaid, please contact your Condair supplier.

Language versions
These mounting instructions is available in various languages. Please contact your Condair supplier for information.

Copyright protection
The present mounting instructions are protected under the Copyright Act. Passing-on and reproduction of the manual (or part thereof) as well as exploitation and communication of the contents are prohibited without written permission by the manufacturer. Violation of copyright terms is subject to legal prosecution and arises liability for indemnification.

The manufacturer reserves the right to fully exploit commercial patent rights.
2 For your safety

General
Every person working with the Condair CP3mini must have read and understood the mounting instructions before carrying out any installation work. Knowing and understanding the contents of the mounting instructions is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty installation, and to install and operate the unit safely and correctly.

All ideograms, signs and markings applied to the unit must be observed and kept in readable state.

Qualification of personnel
All actions described in the present mounting instructions must be carried out only by well trained and sufficiently qualified personnel authorised by the owner. For safety and warranty reasons any action beyond the scope of this manuals must be carried out only by qualified personnel authorised by the manufacturer.

It is assumed that all persons working with the Condair CP3mini are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

Intended use
The steam humidifier Condair CP3mini is intended exclusively for air humidification via a steam distributor approved by the manufacturer (unit versions Condair CP3mini PD..) or via the integrated ventilation unit (unit versions Condair CP3mini PR..) within the specified operating conditions (see chapter 6 “Product specifications”). Any other type of application without the express written consent of the manufacturer is considered as not conforming with the intended purpose and may lead to the Condair CP3mini becoming dangerous. Operation of the equipment in the intended manner requires that all the information in these instructions is observed (in particular the safety instructions).

Danger that may arise from the unit:
The Condair CP3mini is mains powered.

⚠️ DANGER!
One may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or danger to life.
Prevention: The steam humidifier must be connected to the mains only after all mounting and installation work has been completed and the cover has been relocated properly.
Behaviour in case of danger

All persons working with the Condair CP3mini are obliged to report any alterations to the unit that may affect safety to the owner without delay and to secure such a unit against accidental power-up.

Prohibited modifications to the unit

No modifications must be undertaken on the Condair CP3mini without the express written consent of the manufacturer.

For the replacement of defective components use exclusively original accessories and spare parts available from your Condair supplier.
3 Product Overview

3.1 Models overview

Steam air humidifiers Condair CP3mini are available in the two basic versions for duct air humidification and direct room air humidification with different heating voltages and steam capacities of 2 kg/h and 4 kg/h.

<table>
<thead>
<tr>
<th>Model Condair CP3mini</th>
<th>Duct</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>PD2</td>
<td>PD4</td>
</tr>
<tr>
<td>Max. steam capacity</td>
<td>2 kg/h</td>
<td>4 kg/h</td>
</tr>
<tr>
<td>Heating voltages</td>
<td>230V1~/50...60Hz</td>
<td>4 kg/h</td>
</tr>
<tr>
<td></td>
<td>240V1~/50...60Hz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>200V2~/50...60Hz</td>
<td></td>
</tr>
<tr>
<td>Integrated ventilation unit</td>
<td>——</td>
<td>X</td>
</tr>
<tr>
<td>Display and control unit</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>External On/Off control</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>External P/PI control</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Internal P/PI controller</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Admissible control signals</td>
<td>0–5V, 1–5V, 0–10V, 2–10V, 0–16V, 3.2–16V, 0–20mA, 4–20mA</td>
<td></td>
</tr>
<tr>
<td>Operating parameter</td>
<td>configurable via control software</td>
<td></td>
</tr>
</tbody>
</table>

3.2 Identification of the unit

The identification of the unit is found on the type plate (for the location of the type plate see unit overview):

Type designation: Condair AG, CH-8808 Pfäffikon

- Type: CP3mini PD4
- Serial number: XXXXXXX
- Month/Year: 06.09
- Heating Voltage: 230V / 1~/50...60Hz
- Power: 3.1 kW / 13.5 A
- Steam Capacity: 4.0 kg/h
- Ctrl.Voltage: 230V / 1~/50...60Hz
- Water Pressure: 1...10 bar
- Made in Switzerland
3.3 Steam humidifier construction

Construction Condair CP3mini PD2/PD4

1. Back panel
2. Water cup
3. Water supply hose
4. Heating electrodes
5. Filling hose
6. Overflow hose
7. Steam cylinder
8. Inlet valve (not visible)
9. Drain pump
10. Water drain connector (not visible)
11. Water supply connector (not visible)
12. Tub
13. Power board
14. Type plate
15. Remote operating and fault indication board (Option)
16. Control board with CF card
17. Unit switch
18. Drain key
19. Display and control unit
20. Operation status indicators (LED’s)
21. Intermediate panel
22. Front cover
23. Level sensor
24. Steam outlet connector
Construction Condair CP3mini PR2/PR4

1. Back panel
2. Water cup
3. Water supply hose
4. Heating electrodes
5. Filling hose
6. Overflow hose
7. Steam cylinder
8. Inlet valve (not visible)
9. Drain pump
10. Water drain connector (not visible)
11. Water supply connector (not visible)
12. Tub
13. Power board
14. Type plate
15. Remote operating and fault indication board (Option)
16. Control board with CF card
17. Unit switch
18. Drain key
19. Display and control unit
20. Operation status indicators (LED's)
21. Unit intermediate panel
22. Front cover
23. Level sensor
24. Condensate hose
25. Ventilation unit
3.4 Functional description

The steam humidifier Condair CP3mini is a pressureless steam generator that utilizes an electrode heating. The steam humidifier Condair CP3mini is designed for air humidification via a steam distributor (unit versions Condair CP3mini PD..) or via the integrated ventilation unit (unit versions Condair CP3mini PR..).

Steam generation

Any time steam is requested, the electrodes are supplied with voltage. Simultaneously, the inlet valve opens and water enters the steam cylinder from the bottom via water cup and supply line. As soon as the electrodes come in contact with the water, current begins to flow between the electrodes, eventually heating and evaporating the water. The more the electrode surface is exposed to water, the higher is the current consumption and thus the steam capacity. Upon reaching the requested steam capacity, the inlet valve closes. If the steam generation decreases below a certain percentage of the required capacity, due to lowering of the water level (e.g. because of the evaporation process or drainage), the inlet valve opens until the required capacity is available again. If the required steam capacity is lower than the actual output, the inlet valve is closed until the desired capacity is achieved by lowering of the water level (evaporation process).

Level monitoring

A sensor provided in the steam cylinder cover detects when the water level gets too high. The moment the sensor comes in contact with water, the inlet valve closes.

Drainage

As a result of the evaporation process, the conductivity of the water increases due to an escalating mineral concentration. Eventually, an inadmissibly high current consumption would take place if this concentration process were permitted to continue. To prevent this concentration from reaching a value, unsuitably high for the operation, a certain amount of water is periodically drained from the cylinder and replaced by fresh water.

Control

The steam production can be controlled steplessly via the internal or an external continuous controller or with an On/Off control via an external humidistat.
3.5 Humidification system overview

System overview Condair CP3mini PD2/PD4

1. Steam humidifier
2. Steam connector
3. Water supply connector
4. Water drain connector
5. Filter valve (accessory “Z261”)
6. Manometer (installation recommended)
7. Funnel with siphon (building side)
8. Water drain hose (accessory “DS22”)
9. Connecting cables
10. Steam hose (accessory “DS22”)
11. Condensate hose (accessory “KS10”)
12. Steam distribution pipe (accessory “41-...”)
13. Steam nozzle (accessory “W21”)

Parameters:
- 125...1250 µS/cm
- 1...10 bar
- 1...40 °C
- min. 10%
- ≥ 40 mm
- Ømin. 22 mm
- G 3/4”
- G 3/8”
- min. 30 cm
- min. 20 %
- Pmax. 800 Pa
- Pmin. -800 Pa
- Pmax. 800 Pa
- Pmin. -800 Pa
- Rmin. 300 mm
- Ømin. 200 mm
- Pmax. 800 Pa
- Pmin. -800 Pa
System overview Condair CP3mini PR2/PR4

1 Steam humidifier
2 Ventilation unit
3 Water supply connector
4 Water drain connector
5 Filter valve (accessory “Z261”)
6 Manometer (installation recommended)
7 Funnel with siphon (building side)
8 Water drain hose (accessory “DS22”)
9 Connecting cables
3.6 Options

<table>
<thead>
<tr>
<th>Condair CP3mini</th>
<th>PD2</th>
<th>PD4</th>
<th>PR2</th>
<th>PR4</th>
</tr>
</thead>
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<tr>
<td>Cable glands set with counter nuts</td>
<td>1x CG</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– 1x M20 for cable diameters from 7.0 to 13.0 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– 1x M16 for cable diameters from 4.5 to 10.0 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>– 1x M12 for cable diameters from 2.5 to 6.5 mm</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| Radio humidity sensor | 1x RH |
| – Radio humidity sensor set consisting of radio humidity sensor and receiver board for the humidity control via the internal P/PI humidity controller. The maximum range of the radio humidity sensor in an open room is 25 m |
| Note: the radio humidity sensor as well as the receiver board must be installed and configured only by a service technician of your Condair representative. |

| Water drain hose | 1x WDH |
| – Water drain hose to lead the drain line through the back panel of the unit. |

| Remote operating and fault indication | 1x RFI |
| – PCB with relay contacts for the connection of remote displays for “Operation”, “Steam”, “Fault” and “Service”. |

3.7 Accessories

3.7.1 Accessories overview

Accessories for water installation

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<thead>
<tr>
<th>Condair CP3mini</th>
<th>PD2</th>
<th>PD4</th>
<th>PR2</th>
<th>PR4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Filter valve</td>
<td>1x Z261</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Accessories for steam installation

<table>
<thead>
<tr>
<th>Condair CP3mini</th>
<th>PD2</th>
<th>PD4</th>
<th>PR2</th>
<th>PR4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam nozzle</td>
<td>1x W21</td>
<td></td>
<td></td>
<td></td>
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<td>(Details see chapter 3.7.2.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steam distribution pipe</td>
<td>1x 41-...</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>(Details see chapter 3.7.2.2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Steam hose / meter</td>
<td>1x DS22</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condensate hose / meter</td>
<td>1x KS10</td>
<td></td>
<td></td>
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</tbody>
</table>

Accessories for humidity control

<table>
<thead>
<tr>
<th>Condair CP3mini</th>
<th>PD2</th>
<th>PD4</th>
<th>PR2</th>
<th>PR4</th>
</tr>
</thead>
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<tr>
<td>Humidity sensor for duct installation</td>
<td>EGH110</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Humidity sensor for room installation</td>
<td>EGH130</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duct humidistat</td>
<td>HBC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Room humidistat</td>
<td>HSC</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
3.7.2 Accessory details

3.7.2.1 Steam nozzle W21

The steam nozzle W21 can be mounted in the ventilation duct horizontally or vertically. Keep a minimum distance clearance (A) of 200 mm between nozzle opening and the opposite duct wall.

3.7.2.2 Steam distribution pipe 41-...

The steam distribution pipes are selected on the basis of the duct width (for horizontal installation) or the duct height (for vertical installation) and the capacity of the steam humidifier. Important! Always select the longest possible steam distribution pipe (optimum humidification distance).

<table>
<thead>
<tr>
<th>Steam distribution pipes Type 41-...</th>
<th>Length (L) steam distribution pipe in mm</th>
<th>Duct width (B) in mm</th>
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<td>41-200</td>
<td>200</td>
<td>210...400</td>
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<td>41-350</td>
<td>350</td>
<td>400...600</td>
</tr>
<tr>
<td>41-500</td>
<td>500</td>
<td>550...750</td>
</tr>
<tr>
<td>41-650</td>
<td>650</td>
<td>700...900</td>
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<td>41-800</td>
<td>800</td>
<td>900...1100</td>
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<tr>
<td>41-1000</td>
<td>1000</td>
<td>1100...1300</td>
</tr>
<tr>
<td>41-1200</td>
<td>1200</td>
<td>1300...1600</td>
</tr>
</tbody>
</table>

1) Material: CrNi steel
2) special length on request
3.8 **Standard delivery**

The standard delivery includes:
- Steam humidifier Condair CP3mini equipped with the options ordered according to chapter 3.6, fixing set, mounting instructions (this document) and operating instructions, packaged in cardboard box (W x H x D: 351 mm x 729 mm x 265 mm, shipping weight: 7.4 kg)
- Ordered accessories with operating instructions according to chapter 3.7, packed separately
- Spare parts list

3.9 **Storing/Transportation/Packaging**

**Storing**

Store the unit in a protected area meeting the following requirements:
- Room temperature: 1 ... 40 °C
- Room humidity: 10 ... 75 %rh

**Transportation**

For optimum protection always transport the unit in the original packaging. Always place the unit on its back side.

**Packaging**

Keep the original packaging of the Condair CP3mini for later use.

In case you wish to dispose of the packaging, observe the local regulations on waste disposal. Never dispose of the packaging to the environment.
4 Notes for the planning engineer

4.1 Selecting the unit version

To select the unit version the following steps are required:
1. Selecting the unit version from the table in chapter 4.1.1
2. Calculating the required maximum steam capacity according chapter 4.1.2

4.1.1 Selecting the unit

<table>
<thead>
<tr>
<th>Model</th>
<th>Condair CP3mini PD4 230V1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duct</td>
<td>PD2 ¹⁾</td>
</tr>
<tr>
<td>Room</td>
<td>PD4 ¹⁾</td>
</tr>
<tr>
<td>PR2 ²⁾</td>
<td></td>
</tr>
<tr>
<td>PR4 ²⁾</td>
<td></td>
</tr>
</tbody>
</table>

Heating voltages
- 230V1 230V1 / 50..60Hz
- 240V1 240V1 / 50..60Hz
- 200V2 200V2 / 50..60Hz

Max. steam capacity
- 2 kg/h
- 4 kg/h
- 2 kg/h
- 4 kg/h

Integrated ventilation unit
- X

Display and control unit
- X

External On/Off control
- X

External P/PI control
- X

Internal P/PI controller
- X

Admissible control signals
- 0–5V, 1–5V, 0–10V, 2–10V,
- 0–16V, 3.2–16V, 0–20mA, 4–20mA

Operating parameter
- configurable via control software

¹⁾ Air conditioning systems with supply air portion up to 66%
²⁾ for direct room humidification
### 4.1.2 Calculating the maximum required steam capacity

The maximum required steam capacity must be calculated based on one of the following formulas:

\[
\begin{align*}
m_b &= \frac{V \cdot \rho}{1000} \cdot (x_2 - x_1) \\

\text{or} \\

m_b &= \frac{V}{1000 \cdot \varepsilon} \cdot (x_2 - x_1)
\end{align*}
\]

- \( m_b \): maximum steam demand in \( \text{kg/h} \)
- \( V \): volume of supply air portion per hour in \( \text{m}^3/\text{h} \) (for indirect room humidification) or room volume to be humidified per hour in \( \text{m}^3/\text{h} \) (for direct room humidification)
- \( \rho \): specific gravity of air in \( \text{kg/m}^3 \)
- \( \varepsilon \): specific volume of air in \( \text{m}^3/\text{kg} \)
- \( x_2 \): desired absolute room air humidity in \( \text{g/kg} \)
- \( x_1 \): minimum absolute supply air humidity in \( \text{g/kg} \)

The values for \( \rho \), \( \varepsilon \), \( x_2 \) and \( x_1 \) can be gathered from the \textit{h,x-diagram} or the \textit{Carrier-Diagram} for moist air respectively.

**Important notes:**

- The required maximum steam capacity depends on the specific application and the installation. The calculated steam capacity based on the above formulas, the \textit{h,x} diagram and the condition of the air to be humidified does not consider any steam loss (e.g. due to condensation in the steam hoses and the steam distributors), any heat loss of the unit as well as any absorption or release of humidity of materials located in the room being humidified.

In addition, the calculated steam capacity does not consider any losses caused by the draining rate depending on the water quality as well as any losses occur if the steam humidifier is operated on a mains circuit with a ground fault circuit interrupter.

The total amount of losses depends on the entire system and must be taken into consideration when calculating the required steam capacity. If you have any questions regarding the calculation of the steam capacity please contact your Condair supplier.

- For systems where the max. required steam capacity varies extensively (e.g. for test facilities or for systems with variable air volume flow, etc.), please contact your Condair supplier.

### 4.2 Selecting the options an accessories

For selecting the options and accessories see chapter 3.6 and 3.7.
4.3 Selecting the control system

The steam humidifiers Condair CP3mini are designed to be controlled with On/Off control via an external humidistat or with continuous control via an external P/PI humidity controller or the internal P/PI humidity controller.

– System 1: Room humidity control

System 1 is suited for direct room humidification and air conditioning systems with mainly recirculated air. The humidity sensor or humidistat respectively is preferably located in the room itself or in the exhaust air duct.
System 2: Room humidity control with continuous limitation of the supply air humidity

System 2 is suited for air conditioning systems with a large portion of supply air, low supply air temperature, post-humidification, or variable airflow volume. If the supply air humidity exceeds the preset value, the continuous limitation is effected prior to the room humidity control.

The humidity sensor (A1) is preferably located in the exhaust air duct or in the room itself. The humidity sensor (A2) for the limitation of the supply air humidity is located in the supply air duct after the steam distribution pipe. This control system requires a continuous controller with the option to connect a second humidity sensor.

**Attention!** The continuous limitation of the supply air humidity is no substitute for the safety humidistat.

---

Please contact your Condair supplier, if your application meets the following conditions:
- Humidification of small rooms up to 200 m³
- Air conditioning systems with a high number of air exchanges
- Systems with variable air volume flow
- Test facilities with extreme control accuracy requirements
- Rooms with a high variation in max. steam capacity
- Systems with temperature fluctuations
- Cold rooms and systems with dehumidification
5 Mounting and installation work

5.1 Important notes for mounting and installation work

Qualification of personnel
All mounting and installation work must be carried out only by well qualified personnel authorised by the owner. It is the owner’s responsibility to verify proper qualification of the personnel.

General note
Strictly observe and comply with all information given in the present mounting instructions regarding the location of the unit and the installation of water, steam and electricity.

Observe and comply with all local regulations dealing with water, steam and electrical installations.

Safety
Some installation work requires removal of the unit cover. Please note the following:

⚠️ DANGER! Danger of electrical shock!
You may get in touch with live parts when the unit is open. The steam humidifier must be connected to the mains only after all mounting and installation work has been completed and the cover has been relocated properly.

⚠️ CAUTION!
The electronic components inside the humidifier are very sensitive to electrostatic discharge. When the unit is open for installation work, appropriate measures must be taken to protect these components against damage caused by electrostatic discharge (ESD protection).
5.2 Mounting the unit

5.2.1 Notes on locating and mounting the unit

Note: The minimum spaces apply for a room atmosphere of 15 °C and max. 60 %rh. For lower temperatures and/or higher humidity the values should be adjusted accordingly.

Note: In order to achieve a uniform distribution of the humidity within the room, additional factors such as the room size, the room height, etc., must be taken into consideration besides observing the minimum distances. If you have questions concerning the direct room humidification, please contact your Condair supplier.

In order to avoid deterioration of components, no corrosion/water-sensitive components should be stored below the unit and in the vicinity of the flow of steam.
To **ensure proper functioning** of the steam humidifier and to **obtain an optimal efficiency**, the following points must be considered and observed when choosing the location for the steam humidifier:

- Install the steam humidifier in such a manner that it is **freely accessible** with sufficient space available for maintenance purposes. The **minimum distances** shown in the preceding figure must be maintained.

- Install the steam humidifier so that the **length of the steam** hose is kept as short as possible (**max. 4 m**) and that the **minimum bend radius (R= 300 mm)** and up-slope (20 %) or down-slope (5 %) of the steam hose is observed (see chapter 5.3.4).

- During operation steam is blown out via the outlet opening of the steam humidifiers type PR... Therefore, locate the steam humidifiers type PR.. in such a way, that no persons can be hurt by the steam flow.

- The steam humidifiers Condair CP3mini are designed for wall-mounting. Make sure that the construction (wall, pillar, floor-mounted console, etc.) to which the humidifiers are to be mounted, offers a **sufficiently high load-bearing capacity** (take notice of the weight information found in the dimension sand weights table above), and is suitable for the installation.

**CAUTION!**

Do **not** mount the steam humidifier directly to the ventilation duct (insufficient stability).

- The back panel of the Condair CP3mini is retaining heat during operation (max. surface temperature of the metal housing approx. 60 - 70 °C). Make sure, therefore, that the construction (wall, pillar, etc.) to which the units are to be mounted, does not consist of heat-sensitive material.

- The Condair CP3mini is protected according to **IP20**. Make sure the units are installed in a drip-proof location and the admissible ambient conditions are complied with.

- The steam humidifier Condair CP3mini may only be installed in rooms with a floor drain.

**CAUTION!**

If for some reason the Condair CP3mini must be installed in a location without floor drain, it is mandatory to provide a leakage monitoring device to safely interrupt the water supply in case of leakage.

- When fixing the Condair CP3mini use **only the fixing materials supplied with the unit**. If fixing with the materials supplied is not possible in your particular case, select a method of fixing that is of similar stability.
5.2.2 Mounting the humidifier

Procedure

1. Mark the attachment points “A” on the wall with the assistance of a spirit level.

2. Drill the holes for the attachment points “A” (diameter: 8 mm, depth: 40 mm), then insert the supplied plastic plugs.

3. Fix the wall support with the two long screws and washers “B”. Before tightening the screws, adjust the wall support vertically and horizontally with the spirit level.

4. Hang the unit up onto the wall support.

5. Loosen the fixing screw of the front cover on the bottom side of the unit a few turns, then remove the front cover.

6. Remove all transportation locks (steam cylinder, drain pump, water cup) inside the unit.

7. Undo the steam cylinder: release the hose clamp on the steam connector of the steam cylinder, then detach the steam hose from the steam connector. Remove the plugs from the electrodes and from the level sensor. Carefully lift steam cylinder out of the cylinder receptacle, then remove it to the front.

8. Undo the two screws of the intermediate panel. Then, carefully remove the intermediate panel to the front, swivel it to the left and hang it onto the pins of the back panel.

9. Fix unit to the wall support using the two screws “C” and to the wall using the screw and washer “D”. Before tightening the screws, readjust the unit vertically with the spirit level.

10. Assemble the unit in the reverse sequence.

Wall break-through to lead the connecting cables as well as the water supply pipe and the water drain hose (option WDH) through rear wall into the unit.
5.2.3 Inspecting the installed unit

Check the following points:
- Is the unit installed in the correct place (see chapter 5.2.1)?
- Is the supporting surface stable enough?
- Is the unit correctly aligned, vertically and horizontally?
- Is the unit properly secured (see chapter 5.2.2)?
- Are all transportation locks inside the unit removed?
- Is the unit reassembled correctly and the front panel fixed with the screw?
5.3 Steam installation

5.3.1 Overview steam installation
5.3.2 Positioning and mounting of the steam distribution pipe

The location for the steam distribution pipes should be determined at the time of dimensioning the air conditioning system. Please note the following instructions to ensure proper humidification of the duct air.

Calculating the humidification distance

The water vapour, emitting from the steam distribution pipes, requires a certain distance to be absorbed by the ambient air so that it is no longer visible as steam. This distance is referred to as humidification distance “B_N” and serves as a basis for the determination of the minimum distances from the upstream components in the system.

The calculation of the humidification distance “B_N” is dependent on several factors. For a rough estimation of the humidification distance “B_N”, the following table is useful. Recommended standard values listed in this table are based on a supply-air temperature range of 15 °C to 30 °C.

<table>
<thead>
<tr>
<th>Humidity at inlet $\varphi_1$ in %rh</th>
<th>Length of humidification distance $B_N$ in m</th>
<th>Humidity at outlet $\varphi_2$ in %rh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>5</td>
<td>0,9</td>
<td>1,1</td>
</tr>
<tr>
<td>10</td>
<td>0,8</td>
<td>1,0</td>
</tr>
<tr>
<td>20</td>
<td>0,7</td>
<td>0,9</td>
</tr>
<tr>
<td>30</td>
<td>0,5</td>
<td>0,8</td>
</tr>
<tr>
<td>40</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>50</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>60</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>70</td>
<td>–</td>
<td>–</td>
</tr>
</tbody>
</table>

$q_1$ in %rh: Relative supply air humidity prior to humidification at the lowest supply air temperature

$q_2$ in %rh: Relative supply air humidity after the steam distribution pipe at maximum capacity

Example

given: $q_1 = 30$ %rh, $q_2 = 70$ %rh

humidification distance $B_N$: 1.4 m
Minimum distances to be observed

To prevent the water vapour, that is emitting from the steam distribution pipe, from condensing on downstream system components, a minimum distance to the steam distribution pipe must be observed (depends on the humidification distance “B_N”).

Installation notes and dimensions

The steam distribution pipes are designed for either horizontal installation (on the duct wall) or, with accessories, for vertical installation (in the duct floor). The outlet orifices should always point upwards and at right angles to the airflow.

If possible, the steam distribution pipes should be installed on the pressure side of the duct (max. duct pressure 800 Pa). If the steam distribution pipes are installed on the suction side of the duct, the maximum vacuum must not exceed 800 Pa.

Select a location for the installation, tailored to suit your duct (see the following illustrations) and position the steam distribution pipes in the duct so that a uniform distribution of steam is achieved.
In positioning the steam distribution pipe/steam nozzle, the following dimensions should be observed:

**Guidelines for dimensioning the ventilation ducts**
- To facilitate the installation of the steam distribution pipes and for control purposes, a sufficiently sized control opening should be planned.
- Within the range of the humidification distance, the ventilation duct should be waterproofed.
- Air ducts passing through cold rooms should be insulated to prevent the humidified air from condensing along the duct wall.
- Poor airflow conditions within the air duct (e.g. caused by obstacles, tight bends, etc.) can lead to condensation of the humidified air.
- Steam distribution pipes must not be mounted to round ducts.

If you have questions relating to the dimensioning of ventilation ducts in combination with steam humidifiers Condair CP3mini, contact your Condair supplier.

**5.3.3 Installing the steam distributors**

Detailed information on the installation of the steam nozzle W21 and the steam distribution pipe 41-... can be found in the separate mounting instructions for this products.
5.3.4 Installing the steam hose

**Important!** Use original Condair steam hose exclusively. Other types of steam hoses can cause undesired operational malfunctions.

Instructions for the hose layout
The hose layout depends on the position of the steam distribution pipe:

- Steam distribution pipe is mounted **more than 300 mm above the top edge of the humidifier**:

![Diagram of hose layout with a steam distribution pipe more than 300 mm above the top edge of the humidifier]

Initially, lead the steam hose with an **upslope of at least 20% over a minimum height of 300 mm** above the top edge of the unit, then lead the hose with a **minimum upslope of 20%** and/or a **minimum downslope of 5%** to the steam distribution pipe.

- Steam distribution pipe is mounted **less than 300 mm above the top edge of the humidifier**:

![Diagram of hose layout with a steam distribution pipe less than 300 mm above the top edge of the humidifier]

Initially, lead the steam hose with an **upslope of at least 20% over a minimum height of 300 mm** above the top edge of the unit, then lead the hose down to the steam distribution pipe with a **minimum slope of 5%**.

- The steam hose should be kept as short as possible (**max. 4 m**) while observing the **minimum bend radius of 300 mm**. **Important!** Allowance must be made for a **pressure loss of 10 mm water column (approx. 100 Pa)** per meter steam hose.

  **Note:** If your particular installation exceeds the maximum steam hose length of 4 m contact your Condair representative. In any case, steam hoses longer than 4 m must be insulated in their entire length.

- Reductions in the cross section such as kinks should be avoided throughout the entire length of the hose. The installation of a stop cock in the steam hose is not permissible.
Steam hoses must be prevented from sagging (condensate pockets); if necessary, support with pipe clamps, trough, or wall brackets, or install a condensate drain in the steam hose.

**Important!** When deciding on the length and layout of the hose, it should be noted that the steam hose may become somewhat shorter with progressive ageing.

### Securing the hose

The steam hose must be secured to the steam distribution pipe and humidifier steam outlet by means of **hose clamps**.

**Caution!** Do not overtighten the hose clamp on the steam connector of the steam humidifier.

### Steam line with fixed piping

For steam lines with fixed piping, the **same instructions apply to the laying of the piping** as already described. The following additional notes should be observed:

- **The minimum internal diameter of 22 mm** should be applied over the whole length of the piping.
- Use exclusively Cu or stainless steel pipes (min. DIN 1.4301).
- To minimize the condensate formation (=loss), the steam pipes must be insulated.
- The **minimum bend radius** for solid pipes is **4-5 x internal diameter**.
- Connection of the steam pipes to the steam distribution pipe and steam humidifier is effected by means of short lengths of steam hose secured with hose clamps.
- **Important!** Allowance must be made for a **pressure loss of 10 mm water column (approx. 100 Pa)** per meter length or per 90° bend.

### 5.3.5 Installing the condensate hose

**Important!** Use original Condair condensate hose exclusively. Other types of hoses can cause operational malfunctions.

The hose layout depends on the position of the steam distribution pipe:

- Steam distribution pipe is mounted **more than 300 mm above the top edge of the humidifier:**

Lead the condensate hose down to the humidifier with a **minimum slope of 20 %**, in the form of a **siphon (min. hose bend diameter Ø200 mm)**. Then, lead the hose into the unit through the break-through on the top side of the unit and insert it about 2 cm into the specified opening of the water cup.
– Steam distribution pipe is mounted less than 300 mm above the top edge of the humidifier:

Lead the condensate hose down with a minimum slope of 20 %, in the form of a siphon (min. hose bend diameter Ø200 mm), directly into a discharge funnel.

Important! Before putting the unit into operation, the siphon of the condensate hose must be filled with water.

5.3.6 Inspecting the steam installation

Use the following check list to ascertain that the steam installation was performed correctly:

– Steam distributor
  - Steam distributors (steam distribution pipe or steam nozzle) correctly positioned and secured?
  - Are the outlet orifices at right angles to the air flow direction?

– Steam hose
  - Maximum length of 4 m?
  - Minimum bend radius of 300 mm (4-5 x internal diameter with fixed piping)?
  - Have the instructions for hose positioning been followed?
  - Steam hose: no sagging (condensate pocket) or condensate drain with siphon (hose bend with a minimum diameter of 200 mm) installed at the lowest point?
  - Rigid steam lines: properly insulated? Correct installation material used? Minimum internal diameter maintained?
  - Steam hose securely attached with clamps?
  - Heat expansion during operation and shortening of the hose with ageing taken into consideration?

– Condensate hose
  - Downslope of at least 20 %?
  - Siphon (min. ø 200 mm) existing and filled with water?
  - Condensate hose correctly fixed and not kinked?
5.4 Water installation

5.4.1 Overview water installation

For the connection of the water supply line and the water drain line, the unit must be opened. Proceed as follows: loosen the fixing screw of the front cover on the bottom side of the unit a few turns, then remove the front cover. Undo the two screws of the intermediate panel. Then, carefully remove the intermediate panel to the front, swivel it to the left and hang it onto the pins of the back panel.

Water supply

The water supply is to be carried out according to the figure found in chapter 5.4.1 and the applicable local regulations for water installations. The indicated connection specifications must be observed.

- The installation of the filter valve (accessory “Z261”, alternatively a shut-off valve and a 5 µm water filter can be used) should be made as close as possible to the steam humidifier.
- Admissible mains pressure **1.0 to 10.0 bar (hammer-free system)**
  For mains pressures >10 bar, the connection must be made via a pressure reducing valve (adjusted to 1.0 bar). For mains pressures <1.0 bar please contact your Condair supplier.
– **Notes on water quality:**
  – For the water supply of the Condair CP3mini, use exclusively **untreated drinking water**.
  – The use of **additives** such as corrosion inhibitors, disinfectants, etc. is **not allowed**, since these additives may endanger health and affect proper operation.
  – If the Condair CP3mini shall be operated with softened or partly softened water, please contact your Condair supplier.
  – The connection material must be **pressure-proof** and **certified for use in drinking water systems**.
  – **Important!** Before connecting the water line, **the line should be well flushed out**.

**CAUTION!**
The thread at the humidifier connection is made of plastic. To avoid overtightening, the union nut of the water pipe must be **tightened by hand** only.

**Water drain**
The water drain is to be carried out according to the figure found in chapter 5.4.1 and the applicable local regulations for water installations. The indicated connection specifications must be observed.
– Make sure that the drain pipe is correctly fixed and easily accessible for inspections and cleaning purposes.
– The draining temperature is: **80…90 °C**. Use temperature-resistant installation materials only!

### 5.4.3 Inspecting the water installation

Check the following topics:
– **Water supply**
  - □ Has filter valve (accessory “Z261”) or shut-off valve and 5 µm water filter respectively been installed in supply line?
  - □ Have admissible water pressure (1 – 10 bar) and admissible temperature (1 – 40 °C) been observed?
  - □ Does the supply capacity match the humidifier and is the minimum inside diameter of the supply pipe maintained throughout the entire length?
  - □ Are all components and pipes properly secured and are all threaded connections securely tightened?
  - □ Is the water system properly sealed?
  - □ Does the water supply installation meet the requirements of the local regulations for water installations?
– **Water drain**
  - □ Is the minimum inside diameter of the drain pipe of 40 mm maintained throughout the entire length?
  - □ Has drain pipe been installed with a downslope of at least 10 %?
  - □ Has the heat resistance of the material used been verified to be at least 100 °C?
  - □ Is the drain hose properly secured (hose clamps at unit connection tightened)?
  - □ Does the water drain installation meet the requirements of the local regulations for water installations?
  - □ Is the unit reassembled correctly and the front panel fixed with the screw?
5.5 Electric installation

5.5.1 Wiring diagram Condair CP3mini

A1 Controller (active) or humidity sensor
A2 Controller (passive), set jumper on JP1 (5V) and remove jumper from JP2 (24V)
A3 On/Off controller, set jumper on JP2 (24V) and remove jumper from JP1 5V)
A4 Limitation signal
BAT Backup battery (CR1632, Lithium 3V)
B1 Ventilation interlock
B2 Safety humidistat
B3 Airflow monitor
F1 Internal fuse “Power board”: control signal (200 mA, fast acting)
F2 Internal fuse “Power board”: control 5 V (1 A, slow acting)
F3 Internal fuse “Power board”: control 24 V (1 A, slow acting)
F4 Internal fuse “Power board”: control voltage (1 A, slow acting)
F5 External fuse supply voltage (see table in chapter 5.5.2)
H1 Remote operating and fault indication
J Short circuited, if no external monitoring devices are connected

JP1 Outlet voltage at X1, V+ = 5 V
JP2 Outlet voltage at X1, V+ = 24 V
JP3 Do not set jumper
JP4 Jumper must be set
K External safety chain (24 VDC)
M Ventilation unit (unit type PR... only)
Q3 External Service switch voltage supply
S1 Unit switch
REL4 Relay Heating voltage
U1 Receiver radio humidity sensor
X1 Connector control signal
X3 Connector ventilation unit (unit type PR... only)
X4 Connector limit signal
X6 Connector external safety chain
X8 Connector Unit switch
X9 Connection terminal voltage supply

JP1 Outlet voltage at X1, V+ = 5 V
JP2 Outlet voltage at X1, V+ = 24 V
JP3 Do not set jumper
JP4 Jumper must be set
K External safety chain (24 VDC)
M Ventilation unit (unit type PR... only)
Q3 External Service switch voltage supply
S1 Unit switch
REL4 Relay Heating voltage
U1 Receiver radio humidity sensor
X1 Connector control signal
X3 Connector ventilation unit (unit type PR... only)
X4 Connector limit signal
X6 Connector external safety chain
X8 Connector Unit switch
X9 Connection terminal voltage supply
5.5.2 Notes on electric installation

Important notes

– For the electric installation, the unit must be opened. Proceed as follows: loosen the fixing screw of the front cover on the bottom side of the unit a few turns, then remove the front cover. Undo the two screws of the intermediate panel. Then, carefully remove the intermediate panel to the front, swivel it to the left and hang it onto the pins of the back panel.

– The electric installation must be carried out according to the wiring diagram in chapter 5.5.1, the notes on electric installation as well as the applicable local regulations. All information given in the wiring diagram must be followed and observed.

– All cables must be lead into the unit via the cable openings equipped with cable glands (e.g. option “CG-cable gland”).

– Maximum cable length and required cross section per wire must be observed.

Supply voltage (heating voltage)

**CAUTION!**

Before connecting, ensure that the mains voltage corresponds with the unit voltage (see type plate).

The Condair CP3mini is to be connected to the mains supply in accordance with the wiring diagram, via a service switch “Q3” (disconnecting device with a minimum contact opening of 3 mm is an essential requirement) and an fuse “F5” (essential requirement, fuses are to be as detailed in the following table). The supply wiring is to be fed into the unit via a tension-relieving device (cable gland) and connected to the terminals “X9”.

<table>
<thead>
<tr>
<th>Heating voltage</th>
<th>Max. steam capacity [kg/h]</th>
<th>Nominal power [kW]</th>
<th>Nominal current [A]</th>
<th>Main fuse F5 [A]</th>
</tr>
</thead>
<tbody>
<tr>
<td>230V1~/50..60Hz</td>
<td>2</td>
<td>1.6</td>
<td>7.0</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3.1</td>
<td>13.5</td>
<td>16</td>
</tr>
<tr>
<td>240V1~/50..60Hz</td>
<td>2</td>
<td>1.6</td>
<td>6.6</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3.1</td>
<td>12.9</td>
<td>16</td>
</tr>
<tr>
<td>200V2~/50..60Hz</td>
<td>2</td>
<td>1.6</td>
<td>8.0</td>
<td>2x 13</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>3.1</td>
<td>15.5</td>
<td>2x 20</td>
</tr>
</tbody>
</table>

The cross-section of the mains cable must comply with the applicable local regulations.

External safety circuit “K”

To guarantee the safety of the humidification system, monitoring the operation by means of a safety circuit is an absolute requirement.

To accomplish this, the potential-free contacts (max. contact loading 30V/0.15A) of external monitoring devices (e.g. safety high limit humidistat, airflow monitor, ventilation interlock, etc.) are connected in series to the contacts “SC1” and “SC2” of the terminal plug ”X6” in accordance with the wiring diagram.

If, for whatever reason, no external monitoring devices are connected, a connecting bridge “J” must be installed on the contacts “SC1” and “SC2” of the terminal plug “X6”.

Do not apply any extraneous voltage to the connector “X6”.

The cross-section of the cable must comply with the applicable local regulations (minimum of 1 mm²).
Remote operating and fault indication H1 (Option “RFI”)

The optional remote operating and fault indication PCB contains the potential-free relay contacts for the connection of the following operating and fault indications:

- **“Error”:** This relay is activated if an error is present.
- **“Service”:** This relay is activated when the set service interval has expired.
- **“Steam”:** This relay closes as soon as the unit produces steam.
- **“Unit On”:** This relay closes as soon as the unit is switched on via the main switch.

The maximum contact loading is 250V/5A.

Appropriate suppressor modules are to be used for the switching of relays and miniature contactors.

Control signal (Signal Y)

- **External continuous humidity controller or humidity sensor (A1)**
  
  An external humidity continuous controller or a humidity sensor (operation with the internal P/PI controller) is to be connected to the contacts “CTRL” (+) and “GND” (–) of the terminal plug “X1”.
  
  **Note:** The control signal must be set via the control software. The admissible control signals are stated in the technical data.

- **Ohmic humidity controller (passive)**
  
  An ohmic humidity controller (140Ω...10kΩ) is to be connected to the contacts “V+”, “CTRL” and “GND” of the terminal plug “X1”.
  
  **Note:** for the ohmic humidity control a jumper must be set on “JP1”.

- **24 VDC On/Off humidistat (passive)**
  
  An 24 VDC On/Off humidistat is to be connected to the contacts “V+” and “CTRL” of the terminal plug “X1”.
  
  **Note:** for the 24 VDC On/Off control a jumper must be set on “JP2”.

Air supply limit signal (Signal Z)

- **External air supply limiter (A4)**
  
  An external air supply limiter (P/PI humidity controller) is to be connected to the contacts “LIM” (+) und “GND” (–) of the terminal plug “X4”.
  
  **Note:** the air supply limiter must be activated and configured via the control software. The admissible limit signals are stated in the technical data.
5.5.3 Inserting the CF card

All important operating parameters such as the maximum steam capacity and the heating voltage are permanently stored on the CF card. Before you start the electrical installation, check whether the CF card is installed. If it is not, check whether the type designation on the CF card supplied corresponds with the type designation and the heating voltage on the type plate on the intermediate panel of the unit. If the designations match, place the CF card in the card holder on control print. If the type designation on the CF card and the type plate of the unit do not match, the CF card must not be installed. If this is the case, contact your Condair supplier.

5.5.4 Inspecting the electrical installation

Check the following points:

- Does the supply voltage (mains voltage) comply with the unit voltage (heating voltage) stated on the type plate?
- Is the correct CF card installed?
- Is the voltage supply correctly fused?
- Is the service switch “Q3” installed in the voltage supply line?
- Are all components correctly connected according to the wiring diagram?
- Are all connecting cables fastened?
- Are the connecting cables free of tension (passed through cable glands?)
- Does the electric installation meet the applicable local regulations for electric installations?
- Is the unit reassembled correctly and the front panel fixed with the screw?
# 6 Product specifications

## 6.1 Technical data

<table>
<thead>
<tr>
<th></th>
<th>Condair CP3mini</th>
</tr>
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<td>PD2</td>
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<td><strong>Heating voltages</strong></td>
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<tr>
<td></td>
<td>230V1~ / 50..60Hz</td>
</tr>
<tr>
<td><strong>Steam capacity</strong></td>
<td>2 kg/h</td>
</tr>
<tr>
<td><strong>Max. power consumption</strong></td>
<td>1.6 kW</td>
</tr>
<tr>
<td><strong>Control voltages</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>230V1~ / 50..60Hz</td>
</tr>
</tbody>
</table>

### Operating data

|                      |                 |                 |                 |                 |
| **Air volume fan**   | ——              |                 |                 |                 |
| **Sound pressure level** | ——          | 37 dB(A)        |                 |                 |
| **Max. room size (guideline)** | ——          | 200 m³          | 400 m³          |                 |
| **Admissible control signals** | On/Off (24VDC), 0..5VDC Potentiometer, 1..5VDC, 0..10VDC, 2..10VDC, 0..16VDC, 3.2..16VDC, 0..20mA, 4..20mA |
| **Admissible water pressure** | 1...10 bar (100...1000 kPa) |
| **Admissible water temperature** | 1...40 °C |
| **Admissible ambient temperature** | 1...40 °C |
| **Admissible ambient humidity** | max. 75 %rh |
| **Admissible duct air pressure** | -0.8 kPa...0.8 kPa |
| **Type of protection** | IP20 |
| **Conformity** | CE, VDE |

### Dimensions/Weights

|                      |                 |
| **Housing (B x H x T)** | 265 mm x 650 mm x 175 mm |
| **Net weight** | 6.2 kg |
| **Operating weight** | 11.0 kg |

### Equipment

|                      |                 |
| **Steam cylinder type** | A2.. |

### Options

|                      |                 |
| **Cable glands set** | 1x CG |
| **Radio humidity sensor (transmitter and receiver)** | 1x RH |
| **Water drain hose** | 1x WDH |
| **Remote operating and fault indication** | 1x RFI |

### Accessories

|                      |                 |
| **Filter valve** | 1x Z261 |
| **Steam nozzle** | 1x W21 |
| **Steam distribution pipe** | 1x 41-... |
| **Steam hose / meter** | DS22 |
| **Condensate hose / meter** | KS10 |
| **Humidity sensor for duct installation** | 1(2)x EGH110 |
| **Humidity sensor for room installation** | 1(2)x EGH130 |
| **Duct humidistat** | 1x HBC |
| **Room humidistat** | 1x HSC |
6.2 Unit dimensions

Condair CP3mini (dimensions in mm)
## Declaration of conformity

### Konformitätserklärung

Wir, Condair AG
CH-8808 Pfäffikon SZ
erklären in alleiniger Verantwortung, dass das Produkt

Condair CP3mini

auf das sich diese Erklärung bezieht, mit den folgenden Normen oder normativen Dokumenten übereinstimmt

<table>
<thead>
<tr>
<th>Norm/Standard</th>
<th>EN 61000-6-2</th>
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<td>EN 60335-2-98</td>
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<td>EN 62233</td>
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und den Bestimmungen der folgenden Richtlinien entspricht

<table>
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<tr>
<th>Richtlinie</th>
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<tr>
<td>2006 / 95 / EC</td>
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<td>2004 / 108 / EC</td>
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</table>

Pfäffikon, January 01, 2012

Condair Ltd

Thomas Grütter
Head of Development

---

Wir, Condair Ltd.
CH-8808 Pfäffikon SZ
declare under our sole responsibility, that the product

Condair CP3mini

to which this declaration relates is in conformity with the following standards or other normative standards

<table>
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<tr>
<th>Norm/Standard</th>
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et est conforme aux normes ou autres documents normatifs

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Pfäffikon, January 01, 2012

Condair Ltd

Thomas Grütter
Head of Development
CONSULTING, SALES AND SERVICE:

JS Humidifiers plc
Artex Avenue, Rustington,
LITTLEHAMPTON, West Sussex
BN16 3LN (United Kingdom)
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www.jshumidifiers.com, sales@jshumidifiers.com
Condair CP3mini
Electrode Humidifiers

OPERATING INSTRUCTIONS
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### Contents (continued):

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  - Unit faults
  - Resetting the error indication (red LED lights)
  - Notes on fault elimination
  - Replacing the backup battery on the control board
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  - Taking out of service
  - Disposal/Recycling
- **Product specifications**
  - Technical data
  - Wiring diagram Condair CP3mini
1 Introduction

1.1 To the very beginning

We thank you for having purchased the steam humidifier Condair CP3mini.

The steam humidifier Condair CP3mini incorporates the latest technical advances and meets all recognized safety standards. Nevertheless, improper use of the Condair CP3mini may result in danger to the user or third parties and/or impairment of material assets.

To ensure a safe, proper, and economical operation of the steam humidifier Condair CP3mini, please observe and comply with all information and safety instructions contained in the present manual as well as the instructions given in the manuals for the components used in the humidification system.

If you have questions, which are not or insufficiently answered in this documentation, please contact your Condair supplier. They will be glad to assist you.

1.2 Notes on the operating instructions

Limitation

The subject of these operating instructions is the steam humidifier Condair CP3mini in its different versions. The various accessories are only described insofar as this is necessary for proper operation of the equipment. Further information on accessories can be obtained in the respective instructions.

These operating instructions are restricted to the commissioning, operation, servicing and trouble shooting of the steam humidifier Condair CP3mini and is meant for well trained personnel being sufficiently qualified for their respective work.

The operating instructions is supplemented by various separate items of documentation (spare parts list, manuals for accessories, etc.). Where necessary, appropriate cross-references are made to these publications in the operating instructions.
Symbols used in this manual

**CAUTION!**
The catchword “CAUTION” designates notes in this documentation that, if neglected, may cause damage and/or malfunction of the unit or other material assets.

**WARNING!**
The catchword “WARNING” used in conjunction with the general caution symbol designates safety and danger notes in this documentation that, if neglected, may cause injury to persons.

**DANGER!**
The catchword “DANGER” used in conjunction with the general caution symbol designates safety and danger notes in this documentation that, if neglected, may lead to severe injury or even death of persons.

Safekeeping
Please safeguard these operating instructions in a safe place, where it can be immediately accessed. If the equipment changes hands, the documentation should be passed on to the new operator. If the documentation gets mislaid, please contact your Condair supplier.

Language versions
These operating instructions are available in various languages. Please contact your Condair supplier for information.

Copyright protection
The present operating instructions are protected under the Copyright Act. Passing-on and reproduction of the manual (or part thereof) as well as exploitation and communication of the contents are prohibited without written permission by the manufacturer. Violation of copyright terms is subject to legal prosecution and arises liability for indemnification.

The manufacturer reserves the right to fully exploit commercial patent rights.
2 For your safety

General
Every person working with the Condair CP3mini must have read and understood the operating instructions before carrying out any work. Knowing and understanding the contents of these operating instructions is a basic requirement for protecting the personnel against any kind of danger, to prevent faulty operation, and to operate the unit safely and correctly.

All ideograms, signs and markings applied to the unit must be observed and kept in readable state.

Qualification of personnel
All actions described in the present operating instructions (operation, maintenance, etc.) must be carried out only by well trained and sufficiently qualified personnel authorised by the owner. For safety and warranty reasons any action beyond the scope of this manuals must be carried out only by qualified personnel authorised by the manufacturer.

It is assumed that all persons working with the Condair CP3mini are familiar and comply with the appropriate regulations on work safety and the prevention of accidents.

Intended use
The steam humidifier Condair CP3mini is intended exclusively for air humidification via a steam distributor approved by the manufacturer (unit versions Condair CP3mini PD..) or via the integrated ventilation unit (unit versions Condair CP3mini PR..) within the specified operating conditions (see chapter 8 “Product specifications”). Any other type of application without the express written consent of the manufacturer is considered as not conforming with the intended purpose and may lead to the Condair CP3mini becoming dangerous.
Operation of the equipment in the intended manner requires that all the information in these instructions is observed (in particular the safety instructions).
Danger that may arise from the unit

- The Condair CP3mini is mains powered.

⚠️ **DANGER!**

One may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or danger to life.

**Prevention:** Before carrying out any work set the Condair CP3mini out of operation as described in chapter 4.3 (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.

- The Condair CP3mini produces steam. When producing steam, the steam cylinder inside the humidifier gets very hot (up to 100 °C).

⚠️ **WARNING!**

If the unit is opened immediately after having produced steam there is danger of burning when touching the steam cylinder.

**Prevention:** Before carrying out any work set the Condair CP3mini out of operation as described in chapter 4.3, then wait until the evaporation unit has cooled down sufficiently thus preventing danger of burning.

**Behaviour in case of danger**

If it is suspected that safe operation is no longer possible, then the Condair CP3mini should immediately be shut down and secured against accidental power-up according to chapter 4.3. This can be the case under the following circumstances:

- if the Condair CP3mini or its mains cable is damaged
- if the Condair CP3mini is no longer operating correctly
- if connections and/or piping are not sealed

All persons working with the Condair CP3mini must report any alterations to the unit that may affect safety to the owner without delay.

**Prohibited modifications to the unit**

No modifications must be undertaken on the Condair CP3mini without the express written consent of the manufacturer.

For the replacement of defective components use exclusively original accessories and spare parts available from your Condair supplier.
3 Product Overview

3.1 Models overview

Steam air humidifiers Condair CP3mini are available in the two basic versions for duct air humidification and direct room air humidification with different heating voltages and steam capacities of 2 kg/h and 4 kg/h.

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<th>Model</th>
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<td>Room</td>
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<td></td>
<td>PR2</td>
<td>PR4</td>
</tr>
<tr>
<td>Max. steam capacity</td>
<td>2 kg/h</td>
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<td>Heating voltages</td>
<td>230V1~/50..60Hz</td>
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<td>200V2~/50..60Hz</td>
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<tr>
<td>Integrated ventilation unit</td>
<td>——</td>
<td>X</td>
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<tr>
<td>Display and control unit</td>
<td>X</td>
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<tr>
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<td>External P/PI control</td>
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<td>Admissible control signals</td>
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</tbody>
</table>
| Operating parameter  | configurable via control software |}

3.2 Identification of the unit

The identification of the unit is found on the type plate (for the location of the type plate see unit overview):

Type designation: Condair AG, CH-8808 Pfäffikon

- Type: CP3mini PD4
- Serial number (7 digits): XXXXXXX
- Month/Year: 06.09

- Heating Voltage: 230V / 1~/50...60Hz
- Power: 3.1 kW / 13.5 A
- Steam Capacity: 4.0 kg/h
- Ctrl. Voltage: 230V / 1~/50...60Hz
- Water Pressure: 1...10 bar

Made in Switzerland
3.3 Steam humidifier construction

Construction Condair CP3mini PD2/PD4

1. Back panel
2. Water cup
3. Water supply hose
4. Heating electrodes
5. Filling hose
6. Overflow hose
7. Steam cylinder
8. Inlet valve (not visible)
9. Drain pump
10. Water drain connector (not visible)
11. Water supply connector (not visible)
12. Tub
13. Power board
14. Type plate
15. Remote operating and fault indication board (Option)
16. Control board with CF card
17. Unit switch
18. Drain key
19. Display and control unit
20. Operation status indicators (LED’s)
21. Intermediate panel
22. Front cover
23. Level sensor
24. Steam outlet connector
Construction Condair CP3mini PR2/PR4

1 Back panel
2 Water cup
3 Water supply hose
4 Heating electrodes
5 Filling hose
6 Overflow hose
7 Steam cylinder
8 Inlet valve (not visible)
9 Drain pump
10 Water drain connector (not visible)
11 Water supply connector (not visible)
12 Tub
13 Power board
14 Type plate
15 Remote operating and fault indication board (Option)
16 Control board with CF card
17 Unit switch
18 Drain key
19 Display and control unit
20 Operation status indicators (LED's)
21 Unit intermediate panel
22 Front cover
23 Level sensor
24 Condensate hose
25 Ventilation unit
3.4 Functional description

The steam humidifier Condair CP3mini is a pressureless steam generator that utilizes an electrode heating. The steam humidifier Condair CP3mini is designed for air humidification via a steam distributor (unit versions Condair CP3mini PD..) or via the integrated ventilation unit (unit versions Condair CP3mini PR..).

Steam generation

Any time steam is requested, the electrodes are supplied with voltage. Simultaneously, the inlet valve opens and water enters the steam cylinder from the bottom via water cup and supply line. As soon as the electrodes come in contact with the water, current begins to flow between the electrodes, eventually heating and evaporating the water. The more the electrode surface is exposed to water, the higher is the current consumption and thus the steam capacity.

Upon reaching the requested steam capacity, the inlet valve closes. If the steam generation decreases below a certain percentage of the required capacity, due to lowering of the water level (e.g. because of the evaporation process or drainage), the inlet valve opens until the required capacity is available again.

If the required steam capacity is lower than the actual output, the inlet valve is closed until the desired capacity is achieved by lowering of the water level (evaporation process).

Level monitoring

A sensor provided in the steam cylinder cover detects when the water level gets too high. The moment the sensor comes in contact with water, the inlet valve closes.

Drainage

As a result of the evaporation process, the conductivity of the water increases due to an escalating mineral concentration. Eventually, an inadmissibly high current consumption would take place if this concentration process were permitted to continue. To prevent this concentration from reaching a value, unsuitably high for the operation, a certain amount of water is periodically drained from the cylinder and replaced by fresh water.

Control

The steam production can be controlled steplessly via the internal or an external continuous controller or with an On/Off control via an external humidistat.
3.5 Humidification system overview

System overview Condair CP3mini PD2/PD4

1 Steam humidifier
2 Steam connector
3 Water supply connector
4 Water drain connector
5 Filter valve (accessory “Z261”)
6 Manometer (installation recommended)
7 Funnel with siphon (building side)
8 Water drain hose (accessory “DS22”) 9 Connecting cables
10 Steam hose (accessory “DS22”)
11 Condensate hose (accessory “KS10”)
12 Steam distribution pipe (accessory “41-...”) 13 Steam nozzle (accessory “W21”)

- 125...1250μS/cm
- 1...10 bar
- 1...40 °C
- min. 10 %
- ≥ 40 mm
- Ømin. 200 mm
- Rmin. 300 mm
- Pmax. 800 Pa
- Pmin. -800 Pa
System overview Condair CP3mini PR2/PR4

1 Steam humidifier
2 Ventilation unit
3 Water supply connector
4 Water drain connector
5 Filter valve (accessory “Z261”)
6 Manometer (installation recommended)
7 Funnel with siphon (building side)
8 Water drain hose (accessory “DS22”)
9 Connecting cables
4 Operation

4.1 Commissioning

Proceed as follows when putting the unit into operation:

1. **Examine the steam humidifier and installation for possible damage.**

   **DANGER!**

   Damaged devices or devices with damaged installation may present danger to human life or cause severe damage to material assets.

   **Damaged units and/or units with damaged or faulty installation must not be operated.**

2. Check whether the front panel is mounted and fixed with the screw.

3. Open the **filter valve** (or the shut-off valve, respectively) in the water supply line.

4. Verify the set humidity value at the humidity controller or at the humidistat, and readjust as required.

5. **Switch on the service switch** for mains supply.

6. **Actuate the unit switch** of the steam humidifier. **Switch lights up.**

   The steam humidifier carries out a **system test**, during which all the LEDs light up and the opposite display is shown.

   If a failure occurs on the system test, a corresponding error message is shown in the display.

   After the system test the unit is in **normal operation mode**. The display shows the **standard operating display** (first page of the indication level).

   Note: The contents of the standard operating display depends on the actual operating status and on the configuration of the Condair CP3mini and can differ from the opposite display.

   As soon as the humidity controller or the humidistat requires humidity, power is switched on for heating. The inlet valve opens (slight delay) and the steam cylinder fills with water. As soon as the submerged electrodes heat the water up the green LED lights up and after a few minutes (approx. 5–10 minutes, depending on the conductivity of the water) steam is produced.

   **Note:** If the Condair CP3mini is operated with water of low conductivity it may happen that the maximum steam capacity is not reached in the first few hours of operation. This is normal. As soon as the conductivity has reached a sufficient level (due to the vaporisation process) the humidifier will reach the maximum steam capacity.
4.2 Notes on operation

4.2.1 Function of the display and operating elements

Display and control unit
Function: Configuration of the Condair CP3mini
Indication of operating parameters
Reset of maintenance counter

red LED “Error”
Function: The LED flashes in case of a temporary malfunction of the unit (Warning status). Further operation of the unit is still possible. The warning message is shown in the display, see chapter 6).

The LED lights in case of a severe malfunction of the unit (Fault status). Further operation is not possible any longer. The fault message is shown in the display, see chapter 6).

The LED flashes alternately with the green LED if the external safety chain (ventilation interlock has triggered) is open. As soon as the safety chain is closed again, the indication disappears.

yellow LED “Maintenance”
Function: The LED lights if the steam cylinder must be replaced.

green LED “Steam”
Function: The LED lights if the unit produces steam.

The LED flashes alternately with the red LED if the external safety chain (ventilation interlock has triggered) is open. As soon as the safety chain is closed again, the indication disappears.

Drain key
Function: Starting and stopping manual draining of the steam cylinder.

Unit switch
Function: Switches the unit on and off. The switch is illuminated when the unit is running.
### 4.2.2 Remote operating and fault indication

If your unit is equipped the optional remote operating and fault indication PCB the following operating status are shown remotely:

<table>
<thead>
<tr>
<th>Activated remote indication relay</th>
<th>When?</th>
<th>Display on unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Error”</td>
<td>A error is present, further operation is normally not possible any longer, the heating voltage is interrupted.</td>
<td>Red LED lights and an error message is shown in the display.</td>
</tr>
<tr>
<td>“Service”</td>
<td>The steam cylinder is spent and must be replaced. The unit remains operational for a certain time.</td>
<td>Yellow LED lights and the service warning message is shown in the display.</td>
</tr>
<tr>
<td>“Steam”</td>
<td>Steam demand/Steam production</td>
<td>Green LED lights and the standard operating display is shown.</td>
</tr>
<tr>
<td>“Unit on”</td>
<td>Unit is switched on.</td>
<td>Unit switch lights and the standard operating display is shown.</td>
</tr>
</tbody>
</table>

### 4.2.3 Inspections during operation

During operation the Condair CP3mini and the humidification system have to be inspected weekly. On this occasion check the following:

- the water and steam installation for any leakage.
- the steam humidifier and the other system components for correct fixing and any damage.
- the electric installation for any damage.

If the inspection reveals any irregularities (e.g. leakage, error indication) or any damaged components take the Condair CP3mini out of operation as described in chapter 4.3. Then, contact your Condair representative.

### 4.2.4 Carrying out manual draining

Proceed as follows to drain the unit manually:

**Briefly press the drain key.**

The heating voltage is interrupted and the drain pump starts. As long as the manual drain cycle is in progress the three LED light up successively.

To stop the drain cycle press the **drain key** again.
4.3 Taking the unit out of operation

In order to take the Condair CP3mini out of operation, perform the following steps:

1. If the unit has to be switched off because of a malfunction, please note the error code of the actual error message shown in the display.
2. Close the shut-off valve in the water supply line
3. Start manual draining (see chapter 4.2.4) and wait until the steam cylinder is empty.
4. Actuate the unit switch on the bottom of the unit.
5. **Disconnect steam humidifier from the mains**: Switch off the service switch to mains supply and secure the switch in “off” position against accidentally being switched on, or clearly mark the switch.

⚠️ **WARNING!**

If steam was produced just before the unit is taken out of operation, wait before opening the unit and let the steam cylinder cool down to prevent danger of burning.
4.4 Overview and operating of the menu

Operating

The operating and display unit is operated via the four keys located just below the display. The 4 status fields at the bottom of the display show the active keys the functions assigned to them.

Menu overview

Indication level

**Menu level**

**Menu Info**
- Interrogation of unit information
- Interrogation of the malfunction list

**Menu User**
- Resetting the maintenance counter
- Unit settings
4.5 Interrogation functions

4.5.1 Interrogation of the operating information in the indication level

In the normal operating mode the operating and display unit is in the indication level. The indication level forms a loop that includes several pages holding operating information which can be accessed with the arrow keys. The various displays of the indication level are shown below.

**Info page 1: standard operating display**

The appearance of the standard operating display depends on the actual operating status and the configuration of the Condair CP3mini. The following display are possible.

Note: if the optional radio humidity sensor and/or the “Time-Off” function for the steam LED is/are activated the sensor symbol and/or the crossed out LED symbol is/are shown in the upper right corner of the standard operating display.

<table>
<thead>
<tr>
<th>CP3 PD4 230V2</th>
<th>Demand : 50%</th>
<th>Lim. Control : 80%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14.06.2009 12.00.00</td>
<td></td>
</tr>
</tbody>
</table>

Standard operating display with control via the **external** controller

- Standby (no humidity demand) or Demand % (humidity demand present)
- Set supply air limitation in % *

* this parameter appears only if external supply air limitation is activated

<table>
<thead>
<tr>
<th>CP3 PD4 230V2</th>
<th>Act.Humidity: 75%rh</th>
<th>Num.Setpoint: 50%rh</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Lim.Humidity: 60%rh</td>
<td>Lim.Range : 70-90%</td>
</tr>
</tbody>
</table>

Standard operating display with control via the **internal** controller

- Actual humidity in %rh
- Set nominal humidity %rh
- Set supply air limitation in % **
- Set range for supply air limitation in % **

** these parameters appear only if internal supply air limitation is activated

**Info page 2: settings**

- Software version (1.00)/language version (LA00)
- Set control signal range (signal Y) or radio humidity sensor
- Set control signal range for the supply air limitation (signal Z). Appears only if supply air limitation is activated.

**Info page 3: performance data**

- Set power limitation in % of the maximum capacity
- Actual humidity demand in % of the maximum capacity
- Actual steam capacity of the unit in kg/h

**Info page 4: operating hours**

- Operating hours since the last reset.

**Info page 5: drain settings**

- Set drain factor
- Conductivity of the water
- Set draining type in standby operation
- Set time interval for forced draining

**Info page 6: timer settings**

- Actual status of On/Off timer
- Actual status of power limit timer
- Actual status of humidity setpoint timer (appears only if internal P/PI controller is activated)
4.5.2 Interrogation of unit information

Select the list with the unit information:
Path: **Main menu > Info > Unit Status**

Press **<** and **<** keys, in order to select the unit information available in the list:

1. Total operating hours since the initial commissioning.
2. Actual status of the remote indication relay “Steam”
3. Actual status of the remote indication relay “Service”
4. Actual status of the remote indication relay “Error”
5. Actual status of the remote indication relay “Unit on”
6. Calculated mean drain time in seconds
7. Current average request
8. Actual status of the maximum level sensor
9. Counter showing the number of times the maximum level in the steam cylinder has been exceeded
10. Actual status of the inlet valve
11. Actual status of the drain pump
12. Actual status of the switch relay
13. Current number of revolutions of the fan (appears only with units type PR..)
14. Current set address of the radio humidity sensor
15. Actual signal on address 1 of the radio humidity sensor
16. Actual signal on address 2 of the radio humidity sensor
17. Actual signal on address 3 of the radio humidity sensor
18. Actual signal on address 4 of the radio humidity sensor

Press the **<Esc>** key several times to quit the unit information list and to return to the standard operating display.
4.5.3 Interrogation of the malfunction list

The error messages generated by the last 20 malfunctions that occurred are saved in the malfunction list of the Condair CP3mini and can be interrogated.

Select the error history list:
Path: Main menu > Info > ErrorHistory

The last error that occurred is shown with:
– running number of the error
– date and time of occurrence
– error code (Warning: W..., Error: E...)
– error message
– additional info text regarding the error

Press <←→> and <→→> keys, in order to select further error messages in the list.

Press the <Esc> key several times to quit the error history list and to return to the standard operating display.
4.6 Unit settings

4.6.1 Launching the unit settings menu

Select the unit settings menu:
Path: **Main menu > User > Password entry: 8808 > Settings**

Press the \(<\downarrow>\) and \(<\uparrow>\) keys in order to select the individual settings in the settings menu. Detailed information on the different settings are found in the following chapters.

4.6.2 Selecting the dialogue language

Select “**Language**” in the settings menu, then press the **<Set>** key.

In the upcoming modification dialogue select the desired dialogue language. After confirmation, the unit automatically switches to the selected dialogue language.

Factory setting: **country specific**
Options: **divers languages**
### 4.6.3 Control settings

Select “Controls” in the settings menu, then press the <Set> key.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The control settings appear. The settings available depend on the selected signal source and the control type. The above display shows the maximum number of settings available. Informations regarding the individual settings can be found in the following chapters.

#### 4.6.3.1 Selecting the signal source

Select “SignalSource” in the control settings menu, then press the <Set> key.

<table>
<thead>
<tr>
<th>Settings Language: English</th>
<th>Controls</th>
<th>SignalSource: Analog</th>
<th>CP3 PD4 230V2</th>
<th>Hum.Control: External</th>
<th>24VOn/Off</th>
<th>Int.(P)</th>
<th>Int.(PI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the upcoming modification dialogue select the desired signal source.

Factory setting: Analog or RF Hum. (if the optional radio humidity sensor is used)

Note: if “RF Hum.” is selected as signal source (optional radio humidity sensor), the sensor symbol is shown in the upper right corner of the standard operating display afterwards (see the most right display above).

#### 4.6.3.2 Selecting the control type

Select “Hum.Control” in the control settings menu, then press the <Set> key.

<table>
<thead>
<tr>
<th>Settings Language: English</th>
<th>Controls</th>
<th>Hum.Control: External</th>
<th>24VOn/Off</th>
<th>Int.(P)</th>
<th>Int.(PI)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In the upcoming modification dialogue select the desired control type.

Factory setting: External

Options:

- External (external continuous controller)
- 24VOn/Off (external On/Off humidistat)
- Int. (P) (Internal P controller)
- Int. (PI) (Internal PI controller)
4.6.3.3 Selecting the control signal

Note: This setting is available only if the signal source is set to “Analog” and the control type is set to “External”, “Int. (P)” or “Int. (PI)”. Select “Controlsign.” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue select the desired control signal.
Factory setting: 0–10V
Options: 0–5V, 1–5V, 0–10V, 2–10V, 0–16V, 3.2–16V, 0–20mA, 4–20mA

4.6.3.4 Set the radio address of the optional radio humidity sensor

Note: This setting is available only if the signal source is set to “RF Hum.”
Select “RF Hum. Addr” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue set the radio address of the optional radio humidity sensor.
Note: Please refer to the separate instruction manual for detailed information regarding the radio humidity sensor.

4.6.3.5 Configuring humidity setpoint

Note: This menu item is available only if the internal P or PI controller is activated.

With the parameters in the “Hum.Setpoint” submenu you determine whether the Condair CP3mini is to be controlled with a fix humidity setpoint (factory setting) or whether it is to be operated timer controlled with different humidity setpoints.

Control with fix humidity setpoint:

Select “Hum.Setpoint” in the control settings menu, then press the <Set> key.

Let the timer deactivated (Off) or deactivate the timer if necessary. Select “Hum.Setpoint”, then press the <Set> key. In the upcoming modification dialogue set the value for the fix humidity setpoint (Factory setting: 50 %rh, Setting range: 15...95 %rh).
Timer controlled with different humidity setpoints:

Select “Hum.Setpoint” in the control settings menu, then press the <Set> key.

Select “Timer”, then press the <Set> key. In the upcoming modification dialogue activate the timer function and confirm the setting with the <Set> key.

If the timer is activated, up to eight switching points (events 1 - 8) with different humidity setpoints can be defined. Each switching point is defined by a weekday or weekday range, the switching point and the humidity setpoint.

Configuration notes:
- the settings of an event remain active up to the next event.
- the software does not check the plausibility of the timer settings. Therefore, make sure your settings make sense.
- the On/Off timer (see chapter 4.6.5) overrides the humidity setpoint timer.

4.6.3.6 Setting the proportional range for the internal P/PI controller

Note: This menu item is available only if the internal P or PI controller is activated.

Select “P-Band” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue set the proportional range in % for the internal P/PI controller.

Factory setting: 18 %
Options: 6...65 %
4.6.3.7 Setting the integral time for the internal PI controller

Note: This setting is available only if the internal PI controller is activated.
Select “Integr.-Time” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue set the integral time in minutes for the internal PI controller.
Factory setting: 8 minutes
Options: 1...60 minutes

4.6.3.8 Activating/Deactivating the supply air limitation

Note: This setting is available only if the control type is set to “External”, “Int. (P)” or “Int. (PI)”.
Select “Lim. Control” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue activate or deactivate the supply air limitation (Signal Z).
Factory setting: Off
Options: On, Off

4.6.3.9 Selecting the supply air limitation signal

Note: This setting is available only if the external controller or the internal P or PI controller and the supply air limitation are activated.
Select “Limitsignal” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue select the desired supply air limitation signal.
Factory setting: 0–10V
Options: 0–5V, 1–5V, 0–10V, 2–10V, 0–16V, 3.2–16V, 0–20mA, 4–20mA


4.6.3.10 Setting the lower limit value for the supply air limitation

Note: This setting is available only if the external controller or the internal P or PI controller and the supply air limitation are activated.

Select “Limit Min” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue set the lower limit value in %rh for the supply air limitation.

Factory setting: 70 %rh
Options: 15 ... 95 %rh

4.6.3.11 Setting the upper limit value for the supply air limitation

Note: This setting is available only if the external controller or the internal P or PI controller and the supply air limitation are activated.

Select “Limit Max” in the control settings menu, then press the <Set> key.

In the upcoming modification dialogue set the upper limit value in %rh for the supply air limitation.

Factory setting: 90 %rh
Options: 15 ... 95 %rh

4.6.4 Configuring the capacity limitation

With the parameters in the “Power Limit” submenu you determine whether the Condair CP3mini is to be operated with a fix capacity limit (factory setting) or whether it is to be operated with a timer controlled capacity limitation.

Note: set the desired capacity limitation in % of the maximum capacity of the humidifier.

– Operation with fix capacity limit:

Select “Power Limit” in the settings menu, then press the <Set> key.

Let the timer deactivated (Off) or deactivate the timer if necessary. Select “Power Limit”, then press the <Set> key. In the upcoming modification dialogue set the value for the fix capacity limitation (Factory setting: 100 %, Setting range: 4kg/h unit: 30-100 %, 2kg/h unit: 50-100 %).
– **Operation with timer controlled capacity limitation:**

Select **“Power Limit”** in the settings menu, then press the **<Set>** key.

Select **“Timer”**, then press the **<Set>** key. In the upcoming modification dialogue activate the timer function and confirm the setting with the **<Set>** key.

If the timer is activated, up to eight switching points (events 1 - 8) with different capacity limits can be defined. Each switching point is defined by a weekday or weekday range, the switching point and the capacity limit.

**Configuration notes:**

– the settings of an event remain active up to the next event.

– the software does not check the plausibility of the timer settings. Therefore, make sure your settings make sense.

– the On/Off timer (see chapter 4.6.5) overrides the capacity limit timer.
4.6.5 Configuring the On/Off timer

With the parameters in the “On/Off Timer” submenu you determine whether or not (factory setting) the Condair CP3mini is to be switched on and off timer controlled.

- **Deactivate** On/Off timer:
  Select “On/Off Timer” in the settings menu, then press the <Set> key. Let the timer deactivated (Off) or deactivate the timer if necessary.

- **Activate and configure** On/Off timer:
  Select “On/Off Timer” in the settings menu, then press the <Set> key.

  Select “Timer”, then press the <Set> key. In the upcoming modification dialogue activate the timer function and confirm the setting with the <Set> key.

If the timer is activated, up to eight switching points (events 1 - 8) with different On/Off events can be defined. Each switching point is defined by a weekday or weekday range, the switching point and the operating mode.

Configuration notes:
- the settings of an event remain active up to the next event.
- the software does not check the plausibility of the timer settings. Therefore, make sure your settings make sense.
- the On/Off timer overrides all other timers.
4.6.6 Activating/Deactivating fault current relay operation

Select "GFCI-Mode" in the settings menu, then press the <Set> key.

In the upcoming modification dialogue select whether or not the Condair CP3mini is connected to a fault current relay protected mains supply.

Factory setting: Off
Options: On (mains supply with fault current relay protection), Off (mains supply without fault current relay protection)

4.6.7 Water management settings

Select "Water Manag." in the settings menu, then press the <Set> key.

The water management settings appear. Press the <↓> and <↑> keys in order to select the individual settings. Detailed information on the different settings are found in the following chapters.

4.6.7.1 Selecting the conductivity range of the supply water

Select "Conductivity" in the water management settings submenu, then press the <Set> key.

In the upcoming modification dialogue select the conductivity range of the supply water.

Factory setting: >125 μS/cm
Options: >125 μS/cm, <125 μS/cm
4.6.7.2 Setting the drain factor

Select "Drain Factor" in the water management settings submenu, then press the <Set> key.

In the upcoming modification dialogue set the drain factor in relation to the steam capacity.
Factory setting: 1.0
Setting range: 0.5...2.0

4.6.7.3 Selecting the type of draining in standby operation

Select "Standby Drain" in the water management settings submenu, then press the <Set> key.

In the upcoming modification dialogue select the type of draining which takes place after a certain time (see following setting) in standby operation.
Factory setting: Full
Options: Full (complete draining of the cylinder)
Partial (partial draining of the cylinder) **
Off (draining deactivated)
** The cylinder is drained so far that the water does not touch the electrodes any longer.

4.6.7.4 Setting the period of time in standby operation after which an automatic cylinder draining takes place

Select "Standby Delay" in the water management settings submenu, then press the <Set> key.

In the upcoming modification dialogue set the period of time in standby operation after which an automatic cylinder draining takes place.
Factory setting: 72 hours
Setting range: 1...720 hours
4.6.7.5 Activating/Deactivating the forced draining

Select “Force Drain” in the water management settings submenu, then press the <Set> key.

Activating/Deactivating the forced draining which takes place after a certain time of operation (see following setting).

Note: The forced draining takes place also during steam production.

Factory setting: Off
Options: On (Forced draining activated)
         Off (Forced draining deactivated)

4.6.7.6 Setting the time of operation after which a forced draining takes place

Select “Force Delay” in the water management settings submenu, then press the <Set> key.

In the upcoming modification dialogue set the time of operation after which a forced draining takes place.

Factory setting: 72 hours
Setting range: 1...720 hours

4.6.8 Performing remote relay tests

Select “Remote Test” in the settings menu, then press the <Set> key.

The list with the remote relay tests appears, the first relay test (relay steam) is shown.

Press the <↓> and <↑> keys in order to select the further relay tests available and press the <Set> key to activate/deactivate the corresponding relay for testing.
4.6.9 Setting the date

Select “Date” in the settings menu, then press the <Set> key.

In the upcoming modification dialogue set the actual date (format:“dd.mm.yy”).

4.6.10 Setting the time

Select “Time” in the settings menu, then press the <Set> key.

In the upcoming modification dialogue set the actual time (format:“hh.mm”).

4.6.11 Configuring the display and the steam LED

Select “Display/LED” in the settings menu, then press the <Set> key.

The display/LED settings appear. Press the <↓> and <↑> keys in order to select the individual settings. Detailed information on the different settings are found in the following chapters.

6.6.11.1 Configuring the backlight

Select “Backlight” in the display/LED settings submenu, then press the <Set> key.

In the upcoming modification dialogue select whether the backlight should be permanently switched on (On) or the backlight is switched off after certain period of time (Time-Off).

Factory setting: On
Options: On (backlight permanently switched on) Time-Off (backlight is switched off after a certain period of time, see chapter 4.6.11.3)
4.6.11.2 Setting the display behaviour of the LED steam

Select "Steam-LED" in the display/LED settings submenu, then press the <Set> key.

In the upcoming modification dialogue select whether the steam LED lights permanently (On) when steam is produced or the steam LED is switched off after certain period of time (Time-Off).

Factory setting: On
Options:
  On (Steam LED lights permanently when steam is produced)
  Time-Off (Steam LED is switched off after certain period of time, see chapter 4.6.11.3)

Note: if “Time-Off” is selected, the crossed out LED symbol is shown in the upper right corner of the standard operating display afterwards (see the most right display above).

4.6.11.3 Setting the “Off-Timeout”

Note: this setting appears only if the settings “Backlight” and/or “Steam-LED” are set to “Time-Off”.

Select “Off-Timeout” in the display/LED settings submenu, then press the <Set> key.

In the upcoming modification dialogue set the period of time after which the backlight and/or the steam LED should be switched off.

Factory setting: 5 minutes
Setting range: 1...60 minutes

4.6.11.4 Setting the contrast

Select “Contrast” in the display/LED settings submenu, then press the <Set> key.

In the upcoming modification dialogue set the desired value for the display contrast.

Factory setting: 30
Setting range: 10 (no display) ... 60 (display turns black)
4.6.11.5 Setting the brightness of the backlight

Select "Brightness" in the display/LED settings submenu, then press the <Set> key.

In the upcoming modification dialogue set the desired brightness value for the backlight in % of the maximum value.

Factory setting: 80 %
Setting range: 20...100 %
5 Maintenance

5.1 Important notes on maintenance

Qualification of personnel
All maintenance work must be carried out only by well trained personnel who is familiar with the unit and the associated risks.

General notes
The instructions and details for maintenance work must be followed and upheld.
Only the maintenance work described in this documentation may be carried out.
Only use original Condair spare parts to replace faulty parts.

Safety
Some maintenance work requires removal of the unit cover. Please note the following:

⚠️ DANGER! Danger of electrical shock!
You may get in touch with live parts when the unit is open. Touching live parts may cause severe injury or even lethal violation.
Prevention: Before carrying out any maintenance work set the Condair CP3mini out of operation as described in chapter 4.3 (switch off the unit, disconnect it from the mains and stop the water supply) and secure the unit against inadvertent power-up.

⚠️ CAUTION!
The electronic components inside the humidifier are very sensitive to electrostatic discharge.
Prevention: Before carrying out any maintenance work to the electrical or electronic equipment of the humidifier, appropriate measures must be taken to protect the respective components against damage caused by electrostatic discharge (ESD protection).
5.2 Maintenance list

To maintain operational safety the Condair CP3mini steam humidifier must be maintained at regular intervals. This is differentiated between the first maintenance after approx. 500 operating hours (I), the replacement of the steam cylinder after the yellow LED lights (II) and annual maintenance (III).

Below you will find a summary of the work to be carried out for each of the three maintenance stages.

<table>
<thead>
<tr>
<th>Components</th>
<th>Interval</th>
<th>Work to be done</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steam cylinder type A..</td>
<td>X</td>
<td>Remove and replace.</td>
</tr>
<tr>
<td>Drain pump</td>
<td>X</td>
<td>Remove, disassemble and clean, replace if necessary.</td>
</tr>
<tr>
<td>Steam cylinder receptacle</td>
<td>X</td>
<td>Inspect, clean if necessary.</td>
</tr>
<tr>
<td>Inlet valve</td>
<td>X</td>
<td>Remove and clean filter insert, replace if necessary.</td>
</tr>
<tr>
<td>Drain pipe and siphon</td>
<td>X</td>
<td>Inspect, clean if necessary (decalcify and rinse out).</td>
</tr>
<tr>
<td>Steam installation</td>
<td>X</td>
<td>Inspect steam and condensate hoses for cracks and to see that they are correctly attached, replace faulty hoses.</td>
</tr>
<tr>
<td>Water installation</td>
<td>X</td>
<td>Inspect water hoses in the unit for cracks and to see that they are correctly attached, replace faulty hoses Check supply pipe is tight, make tight if necessary. Clean water filter, if available.</td>
</tr>
<tr>
<td>Electrical installation</td>
<td>X</td>
<td>Check all cables in the unit are firmly positioned and examine status of insulation.</td>
</tr>
</tbody>
</table>
5.3 Removing and installing parts for maintenance

5.3.1 Removal and installation of the steam cylinder

1. Loosen the fixing screw of the front cover on the bottom side of the intermediate panel a few turns. Pull the lower part of the front cover to the front, then push the cover upward and remove it.

2. Release the hose clamp on the steam connector of the steam cylinder, then detach the steam hose from the steam connector.

3. Remove the plugs from the electrodes and from the level sensor.

4. Carefully lift steam cylinder out of the cylinder receptacle, then remove it to the front.

CAUTION!

Put steam cylinder down carefully to avoid damage to the lower connection piece!
**Installation** of the steam cylinder follows the reverse sequence. **Observe the following**:

- Before installing the steam cylinder in the unit, check the O-ring of the cylinder receptacle for damage and replace if necessary.
- Moisten the O-ring of the cylinder receptacle with water (do not use grease or oil), then insert steam cylinder into the receptacle and push it down to the stop.
- Attach the electrode plugs and the level sensor plug to the respective electrode and sensor connections according to the colour dots on the steam cylinder (see also following illustration).

![Diagram](image)

- Fasten steam hose on the steam connector of the cylinder with hose clamps.

<table>
<thead>
<tr>
<th>CAUTION!</th>
</tr>
</thead>
<tbody>
<tr>
<td>A leaky steam hose can cause damage due to moisture inside the unit.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CAUTION!</th>
</tr>
</thead>
<tbody>
<tr>
<td>The outlet connector of the steam cylinder is made of plastic. <strong>Do not overtighten</strong> the hose clamp on the steam connector of the steam cylinder.</td>
</tr>
</tbody>
</table>
5.3.2 Disassembly and assembly of the components of the water system

To dismount the components of the water system proceed as follows:

1. Dismount the steam cylinder (see chapter 5.3.1).
2. Undo the two screws of the intermediate panel. Then, carefully remove the intermediate panel to the front, swivel it to the left and hang it onto the pins of the back panel.
3. Undo water supply and water drain pipe.
4. Unit type PR.. only: Disconnect the electric cables, then remove the ventilation unit together with the steam and condensate hose to the front.
5. Undo the attachment of the flat ribbon cable on the tub (rubber band), then pull cable out of the bracket.
6. Release the fixing clip of the water cup, then carefully pull out the water cup together with the hoses and tub to the front. While pulling out the parts disconnect the electric cables from the drain pump and the inlet valve as well as the ground cable from the corresponding connector in the water drain.
7. Now, the individual components of the water system can be separated for inspection and cleaning.

The installation of the components of the water system follows the reverse sequence. Before fixing the water hoses to the connector using the hose clamps, align the hoses in a way that they are not twisted. Make sure all electric cables are reconnected correctly.
### 5.4 Notes on cleaning the unit components

<table>
<thead>
<tr>
<th>Unit component</th>
<th>What to clean and how to clean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water hoses</td>
<td>• Remove any limescale by slightly knocking on the tubes using a rubber hammer. Then, rinse the tubes well with hot tap water.</td>
</tr>
</tbody>
</table>
| Inlet valve    | • Remove strainer insert with pointed pliers. Use a brush (do not use a wire brush) to remove any limescale.  
• Wash strainer insert with a lukewarm soap solution, then rinse well with tap water.  
**Let the inlet valve dry before reinstallation!** |
| Drain pump     | • Use a brush to remove any limscale from the pump housing and the pump wheel (do not use a wire brush).  
• Then, wipe pump wheel with a damp cloth. Wash the pump housing with a lukewarm soap solution and rinse well with tap water. |
| Cylinder receptacle in the unit | • Remove any limscale from the cylinder receptacle and its connectors using a brush (do not use a wire brush).  
• Wash the cylinder receptacle with a lukewarm soap solution and rinse well with tap water.  
• Check O-ring and replace if necessary. |
| Water cup      | • Remove any limscale from the water cup and its connectors using a brush (do not use a wire brush).  
• Wash the water cup with a lukewarm soap solution and rinse well with tap water. |
<table>
<thead>
<tr>
<th>Unit component</th>
<th>What to clean and how to clean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interior of the unit (water side only)</td>
<td>Wipe the interior of the unit with a damp cloth without using any cleaning agent. Take care that the electrical connections and the electronic components remain dry.</td>
</tr>
</tbody>
</table>

5.5 Notes on cleaning agents

Only use cleaning agents stated in the table above. The use of disinfectants is only permitted if they do not leave any toxic residues. In any case the parts must be thoroughly rinsed with water after cleaning.

**DANGER!**

Formic acid is indeed harmless to the skin, but it attacks the mucous membranes. Therefore prevent your eyes and respiratory tracts from getting in touch with the acid and its vapours (wear goggles and work in a well ventilated room or outside).

**CAUTION!**

Do not use any solvents, aromatized or halogenized hydrocarbons or other aggressive substances as they may cause damage to the components of the unit.

It is mandatory to observe and comply with the information and instructions regarding cleaning agents. Observe in particular: all information relating to the protection of personnel, environmental protection and restrictions regarding usage.

5.6 Resetting the maintenance indication

After completing maintenance work, the maintenance indication (yellow LED lights) must be reset as follows:

Select the maintenance menu:
Path: **Main menu > User > Password entry: 8808 > Maintenance**

![Menu Diagram]

Select “Cyl. Reset”, then press the <Set> key.

The reset dialogue shows up in the display. Press the <Yes> key to reset the maintenance counter.
Note: Press the <No> key if you wish to abort the reset procedure.

To return to the standard operating display press the <Esc> key several times.
6 Fault elimination

6.1 Fault indication

Malfunctions during operation are indicated by a corresponding Warning or Fault message in the display of the control unit (each warning and fault message is stored in the error list):

- **Warning messages** (additionally to the warning message the red LED flashes)

  ![Warning](image)

  Further operation is still possible. The control of the CP3mini checks whether there is a temporary problem (e.g. water supply interrupted for a short time) or whether it can resolve the problem by taking necessary measures. If the cause of the malfunction disappears of its own accord or if the control can repair the malfunction, the alarm message will automatically switch off. If the cause of the malfunction does not disappear even after a longer period of time, a fault message is triggered.

- **Fault message** (additionally to the fault message the red LED lights)

  ![Error](image)

  Further operation is normally not possible any longer, the unit is blocked. To eliminate the malfunction see chapter 6.1 and 6.3.

  Note: After eliminating the malfunction the fault message must be reset (see chapter 6.4).

By pressing the <Info> key additional information can be displayed for each warning and/or fault message.

![Error 33](image)
6.2 Malfunction list

Important! Most operational malfunctions are not caused by faulty equipment but rather by improper installation or disregarding of planning guidelines. Therefore, a complete fault diagnosis always involves a thorough examination of the entire system. Often, the steam hose connection has not been properly executed, or the fault lies with the humidity control system.

6.2.1 System faults

<table>
<thead>
<tr>
<th>Warning</th>
<th>LED</th>
<th>Display</th>
<th>Error</th>
<th>LED</th>
<th>Display</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>CF card missing (Test run possible)</td>
<td>—</td>
<td>red lights</td>
<td>CF card missing</td>
<td>W1: CF card Missing</td>
<td>Error</td>
<td>E1: CF card Missing</td>
<td>No CF card installed on the control board. Install CF card or start test run.</td>
</tr>
<tr>
<td>CF card is empty</td>
<td>—</td>
<td>red lights</td>
<td>E2: CF card Empty</td>
<td>No data stored on the CF card. Install new CF card.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF card is defective</td>
<td>—</td>
<td>red lights</td>
<td>Error</td>
<td>E3: CF card Invalid</td>
<td>Invalid data stored on the CF card. Install new CF card.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF card is incompatible</td>
<td>—</td>
<td>red lights</td>
<td>Error</td>
<td>E4: CF card incompat</td>
<td>The installed CF card is not compatible with the hardware of the unit or with the basic settings of the control electronics. Install correct CF card. Let your Condair service technician adjust the basic settings.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wrong hardware settings</td>
<td>—</td>
<td>red lights</td>
<td>Error</td>
<td>E9: Illegal Settings</td>
<td>False test run parameters. Let your Condair service technician adjust the test run parameters (heating voltage, Cylinder-No.).</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hardware fault</td>
<td>—</td>
<td>red lights</td>
<td>Error</td>
<td>E10: Flash R/W Fault</td>
<td>Control board defective. Replace control board.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>On/Off timer active</td>
<td>—</td>
<td>Warning</td>
<td>W12: Timer Disable</td>
<td>The system is deactivated via the On/Off-Timer. None. If necessary adjust On/Off timer settings.</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### 6.2.2 Unit faults

<table>
<thead>
<tr>
<th><strong>LED Display</strong></th>
<th><strong>Error Display</strong></th>
<th><strong>Cause</strong></th>
<th><strong>Remedy</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>External safety chain is open</strong></td>
<td>---</td>
<td>Ventilation interlock open.</td>
<td>If applicable, check/turn on ventilation system.</td>
</tr>
<tr>
<td><strong>Max. filling level of steam cylinder reached</strong></td>
<td>Warning W21: Cyl. Max. Level</td>
<td>Water conductivity too low (after initial operation).</td>
<td>Wait until the mineral content of the cylinder has increased</td>
</tr>
<tr>
<td><strong>Max. filling level of steam cylinder reached but no heating current</strong></td>
<td>---</td>
<td>Phase failure heating voltage.</td>
<td>Check service switch in the mains supply line and switch on if applicable. Check mains fuse(s) and replace if applicable.</td>
</tr>
<tr>
<td><strong>Permissible filling time exceeded (20 minutes)</strong></td>
<td>Warning W22: Max. Filltime</td>
<td>Water supply obstructed/shut-off valve closed/water pressure too low.</td>
<td>Inspect water supply (filter, water piping, etc.), check/open shut-off valve, check water pressure.</td>
</tr>
<tr>
<td><strong>Permissible filling time exceeded (more than 4 hours)</strong></td>
<td>---</td>
<td>Inlet valve blocked or defective.</td>
<td>Inspect strainer insert in the inlet valve, if applicable clean strainer insert or replace inlet valve.</td>
</tr>
<tr>
<td><strong>Leakage in the water system.</strong></td>
<td>---</td>
<td>Excessive back pressure in the steam line (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.</td>
<td>Check duct pressure, inspect steam installation. If applicable install pressure compensation kit (see options).</td>
</tr>
<tr>
<td><strong>No electrode current for more than 20 minutes</strong></td>
<td>Warning W23: No Current</td>
<td>Phase failure heating voltage.</td>
<td>Inspect/turn on service switch of the mains supply line. Inspect the fuses of the mains supply, replace if necessary.</td>
</tr>
<tr>
<td><strong>No electrode current for more than 4 hours</strong></td>
<td>---</td>
<td>Water supply obstructed/shut-off valve closed/water pressure too low.</td>
<td>Inspect water supply (filter, water piping, etc.), check/open shut-off valve, check water pressure.</td>
</tr>
<tr>
<td><strong>Excessive back pressure in the steam line (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.</strong></td>
<td>---</td>
<td>Inlet valve blocked or defective.</td>
<td>Inspect strainer insert in the inlet valve, if applicable clean strainer insert or replace inlet valve.</td>
</tr>
<tr>
<td><strong>Drain pump defective.</strong></td>
<td>---</td>
<td>Excessive back pressure in the steam line (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.</td>
<td>Check duct pressure, inspect steam installation. If applicable install pressure compensation kit (see options).</td>
</tr>
<tr>
<td><strong>Leakage in the water system.</strong></td>
<td>---</td>
<td>Excessive back pressure in the steam line (duct pressure too high, steam line too long or kinked), causing water loss via filling cup.</td>
<td>Check duct pressure, inspect steam installation. If applicable install pressure compensation kit (see options).</td>
</tr>
<tr>
<td><strong>Electrode current in relation to the steam demand too high</strong></td>
<td>Warning W24: Over Current</td>
<td>Humidity demand has decreased too fast.</td>
<td>Automatic adaptation of the operating point.</td>
</tr>
<tr>
<td><strong>Drain pump defective.</strong></td>
<td>---</td>
<td>Drain in steam cylinder blocked.</td>
<td>Replace steam cylinder.</td>
</tr>
<tr>
<td><strong>Max. admissible electrode current exceeded</strong></td>
<td>Warning W25: Excess Current</td>
<td>Drain in steam cylinder blocked.</td>
<td>Replace the steam cylinder.</td>
</tr>
<tr>
<td>LED Display</td>
<td>Error LED Display</td>
<td>Cause</td>
<td>Remedy</td>
</tr>
<tr>
<td>-------------</td>
<td>------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Relay heating voltage jammed red lights</td>
<td>Error E26: Req. Off Current</td>
<td>Relay heating voltage jammed in activated position.</td>
<td>Inspect relay, replace if necessary.</td>
</tr>
<tr>
<td>Foam detection</td>
<td>Foam detection (4 automatic drainings within 24 hours) red lights</td>
<td>Foaming in steam cylinder.</td>
<td>Drain steam cylinder via drain key (several times, if necessary). Check quality of the supply water.</td>
</tr>
<tr>
<td>Steam cylinder needs service yellow lights</td>
<td>Service interval for steam cylinder exceeded red and yellow flash</td>
<td>Mineral deposits and/or electrodes spent.</td>
<td>Replace steam cylinder. Important: After replacement of the steam cylinder, reset the maintenance counter (see chapter 5.6).</td>
</tr>
<tr>
<td>Humidity sensor signal (signal Y) missing red lights</td>
<td>No sensor signal present at signal input (Signal Y).</td>
<td>Check humidity sensor (signal Y), replace if necessary. Inspect wiring.</td>
<td></td>
</tr>
<tr>
<td>Signal of humidity limitation sensor (signal Z) missing red lights</td>
<td>No sensor signal present at signal input (signal Z).</td>
<td>Check humidity sensor (signal Z), replace if necessary. Inspect wiring.</td>
<td></td>
</tr>
<tr>
<td>Standby draining of steam cylinder active</td>
<td>Automatic standby draining of steam cylinder active.</td>
<td>No measures must be taken.</td>
<td></td>
</tr>
<tr>
<td>Forced draining of steam cylinder active</td>
<td>Forced draining of steam cylinder active.</td>
<td>No measures must be taken.</td>
<td></td>
</tr>
<tr>
<td>Safety chain instable</td>
<td>Safety chain opens and closes in short intervals.</td>
<td>Check/replace safety humidistat, ventilation interlock and air flow monitor.</td>
<td></td>
</tr>
<tr>
<td>Control signal instable</td>
<td>The signal at the control signal input fluctuates strongly in short intervals.</td>
<td>Check/replace humidity sensor or external humidity controller.</td>
<td></td>
</tr>
<tr>
<td>Limit humidity signal instable</td>
<td>The signal at the limit signal input fluctuates strongly in short intervals.</td>
<td>Check/replace humidity sensor or external humidity controller.</td>
<td></td>
</tr>
</tbody>
</table>
6.3 Resetting the error indication (red LED lights)

To reset the error indication:

Disconnect the steam air humidifier from the mains. Wait approx. 5 seconds, then reconnect the unit to the mains.

Note: If the fault has not been eliminated, the error indication reappears after a short while.

6.4 Notes on fault elimination

⚠️ DANGER!

For the elimination of faults set the steam humidifier out of operation as described in chapter 4.3, separate the unit from the mains and secure it against inadvertent power-up.

The elimination of faults must be carried out by qualified and well trained professionals only. Malfunctions relating to the electrical installation (e.g. replacement of the backup battery, replacement of fuses) must be repaired by authorized personnel or by your Condair representative’s service technician only.

Repair work and the replacement of faulty components must be carried out by your Condair representative’s service technician only!

---

<table>
<thead>
<tr>
<th>LED</th>
<th>Display</th>
<th>LED</th>
<th>Display</th>
<th>Cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>No reception from radio humidity sensor</td>
<td>No reception from radio humidity sensor for more than 15 minutes</td>
<td>The control does not receive any signal from the radio humidity sensor.</td>
<td>Check/replace radio humidity sensor and/or receiver on the control board. If necessary change radio address.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery in the radio humidity sensor spent</td>
<td>Battery in the radio humidity sensor spent</td>
<td>Battery in the radio humidity sensor spent</td>
<td>Replace Battery of the radio humidity sensor.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Warning W44: RF Hum. Battery</td>
<td>Error E44: RF Hum. Battery</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6.5 Replacing the backup battery on the control board

1. Set the Condair CP3mini out of operation as described in chapter 4.3, disconnect it from the mains and secure the unit against inadvertent power-up.

2. Loosen the fixing screw of the front cover on the bottom side of the intermediate panel a few turns. Pull the lower part of the front cover to the front, then push the cover upward and remove it.

3. Undo the two screws of the intermediate panel. Then, carefully remove the intermediate panel to the front, swivel it to the left and hang it onto the pins of the back panel.

**CAUTION!**
The electronic components inside the humidifier are very sensitive to electrostatic discharge. Before carrying out the next step, appropriate measures must be taken to protect the electronic components against damage caused by electrostatic discharge (ESD protection).

4. Replace the backup battery (CR1632, Lithium 3V).

5. Reassemble the unit in reverse order.

6. If necessary set date and time (see chapter 4.6.9 and 4.6.10).

**WARNING!**
The old battery must be returned to an authorised collecting point for correct disposal/recycling in accordance with local regulations. In no case the old battery must be disposed of in the domestic waste or into the environment.
7 Taking out of service/Disposal

7.1 Taking out of service

If the Condair CP3mini must be replaced or if the humidification system is not needed any more, proceed as follows:

1. Take the unit out of operation as described in chapter 4.3.
2. Have the unit (and all other system components, if necessary) unmounted by a qualified service technician.

7.2 Disposal/Recycling

Components not used any more must not be disposed of in the domestic waste. Please dispose of the unit or the individual components in accordance with local regulations at the authorised collecting point.

If you have any questions, please contact the responsible authority or your local Condair representative.

Thank you for your contribution to environmental protection.
8 Product specifications

8.1 Technical data

<table>
<thead>
<tr>
<th></th>
<th>PD2</th>
<th>PD4</th>
<th>PR2</th>
<th>PR4</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heating voltages</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230V1~/50..60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>240V1~/50..60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200V2~/50..60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Steam capacity</strong></td>
<td>2 kg/h</td>
<td>4 kg/h</td>
<td>2 kg/h</td>
<td>4 kg/h</td>
</tr>
<tr>
<td><strong>Max. power consumption</strong></td>
<td>1.6 kW</td>
<td>3.1 kW</td>
<td>1.6 kW</td>
<td>3.1 kW</td>
</tr>
<tr>
<td><strong>Control voltages</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>230V1~/50..60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>240V1~/50..60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>200V2~/50..60Hz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Operating data**

|                     |     |     |     |
| Air volume fan      |     |     |     |
| 22 m³/h             |     |     |     |
| Sound pressure level|     |     |     |
| 37 dB(A)            |     |     |     |
| Max. room size (guideline) | 200 m³ | 400 m³ |
| Admissible control signals | On/Off (24VDC), 0..5VDC Potentiometer, 1..5VDC, 0..10VDC, 2..10VDC, 0..16VDC, 3.2..16VDC, 0..20mA, 4..20mA |
| Admissible water pressure | 1...10 bar (100...1000 kPa) |
| Water quality       |     |     |     |
| Untreated drinking water with a conductivity of 125...1250 µS/cm |
| Admissible water temperature | 1...40 °C |
| Admissible ambient temperature | 1...40 °C |
| Admissible ambient humidity | max. 75 %rh |
| Admissible duct air pressure | -0.8 kPa...0.8 kPa |
| Type of protection  |     |     |     |
| IP20                |     |     |     |
| Conformity          |     |     |     |
| CE, VDE            |     |     |     |

**Dimensions/Weights**

|                     |     |     |     |
| Housing (B x H x T) | 265 mm x 650 mm x 175 mm |
| Net weight          | 6.2 kg |
| Operating weight    | 11.0 kg |

**Equipment**

|                     |     |
| Steam cylinder type | A2.. |

**Options**

|                     |     |
| Cable glands set    | 1x CG |
| Radio humidity sensor | 1x RH |
| (transmitter and receiver) |
| Water drain hose    | 1x WDH |
| Remote operating and fault indication | 1x RFI |

**Accessories**

|                     |     |
| Filter valve        | 1x Z261 |
| Steam nozzle        | 1x W21 |
| Steam distribution pipe | 1x 41-.. |
| Steam hose / meter  | DS22 |
| Condensate hose / meter | KS10 |
| Humidity sensor for duct installation | 1(2)x EGH110 |
| Humidity sensor for room installation | 1(2)x EGH130 |
| Duct humidistat     | 1x HBC |
| Room humidistat     | 1x HSC |
## 8.2 Wiring diagram Condair CP3mini

A1 Controller (active) or humidity sensor
A2 Controller (passive),
set jumper on JP1 (5V) and remove jumper from JP2 (24V)
A3 On/Off controller,
set jumper on JP2 (24V) and remove jumper from JP1 5V)
A4 Limitation signal
BAT Backup battery (CR1632, Lithium 3V)
B1 Ventilation interlock
B2 Safety humidistat
B3 Airflow monitor
F1 Internal fuse “Power board”: control signal (200 mA, fast acting)
F2 Internal fuse “Power board”: control 5 V (1 A, slow acting)
F3 Internal fuse “Power board”: control 24 V (1 A, slow acting)
F4 Internal fuse “Power board”: control voltage (1 A, slow acting)
F5 External fuse supply voltage (see table in chapter 5.5.2 of the mounting instructions)
H1 Remote operating and fault indication
J Short circuited, if no external monitoring devices are connected

JP1 Outlet voltage at X1, V+ = 5 V
JP2 Outlet voltage at X1, V+ = 24 V
JP3 Do not set a jumper
JP4 Jumper must be set
K External safety chain (24 VDC)
M Ventilation unit (unit type PR... only)
Q3 External Service switch voltage supply
S1 Unit switch
REL4 Relay Heating voltage
U1 Receiver radio humidity sensor
X1 Connector control signal
X3 Connector ventilation unit (unit type PR... only)
X4 Connector limit signal
X6 Connector external safety chain
X8 Connector Unit switch
X9 Connection terminal voltage supply
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