STEAMOVAP

AEM

AEM – Adiabatic humidifier by absorption

Installation and Operation Manual

Please read and save this manual

Tel.: 1-844-357-4477 • www.steamOvap.com

Rev.241001

Foreword

Thank you for purchasing AEM steamOvap adiabatic humidifier by absorption
If you have questions or comments please contact us:
www.steamOvap.com
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1-844-357-4477

Description

Principle of operation & intended use

AEM absorption humidifier and air cooler with media is designed for Air Handling Unit or duct installation. Cold water is dripping down the absorption media; warm air is passing through the wetted media. Water is evaporating naturally with latent energy from the surrounding warm air. Air is cooling down to 12°C max delta T and humidified at same time.
Evaporation efficiency is a function of the depth of the wetted media, greater the surface contact between water and air is, better the efficiency will be. However pressure drop across media is also increasing with media depth.
AEM absorption humidifier and air cooler is ideal for AHU equipped with a heat exchanger recovering some of the heat from returned air.

1. **AEM** will allow for direct cooling and humidification when installed in the supply air at the outlet of the heat exchanger.
2. **AEM** will also improve efficiency of heat exchanger as indirect cooler when installed in the return at the inlet of the heat exchanger.

One of its great advantages over other adiabatic humidifier is that **AEM** can operate with untreated water; it can accept city (tap) water or reverse osmosis (RO) water. Any minerals contains in water will stay on the media and will not be evaporated during the process. Minerals deposit on the media can be partially and regularly washed up with excess water.
absorption humidifier and cooler is free from any water droplet and due to the natural water evaporation process will never exceed moisture saturation at any given time or abnormal operation. Those two functions is making this technology the best choice for any electronic or server room and data center sensitive to risk of corrosion caused by too much moisture.

AEM absorption humidifier and air cooler intended use is to evaporate cold water in ventilation duct to increase moisture content and cooling the circulating air.

AEM Main feature

1. Modular assembly inside AHU or Air duct, great adaptability
2. Evaporative media made of inorganic ceramic
3. UL900 class 1 rated
4. Media is UL green GUARD gold certified, guaranteed without risk of VOCs
5. Evaporation efficiency up to 99%
6. Very low pressure drop across media
7. Droplet separator available and required when face air velocity is above 600FPM [3.5m/s]
8. Accepts city (tap) water or reverse osmosis (RO) water
9. Legionella safe, no aerosol and no stagnant water by design.
   No re-circulation of possible contaminated water,
   No stagnant water,
   No need to manage tank flush off at every 24h,
10. Electrically safe, no electrical equipment closed to or immersed in water.
11. Excess water wasted sensor
12. Lowest power consumption of the industry.

Intended use

AEM absorption humidifier is intended exclusively to add humidity to the air from water at atmospheric pressure for air humidification.
Operating conditions are specified in this Installation and Operation Manual (IOM).
Operation of this humidifier in the intended use scope requires that all directions and information contained in this IOM are observed.
Any other use or operation outside the above design scope without written authorization from steamOvap may lead to trouble and hazardous conditions and will void warranty.
No alteration or modification to the humidifier must be done without written authorization from steamOvap.
Replacement of any defective components must be done with original component and spare parts from steamOvap representative.

Installation and Operation Manual Limitation

This IOM is intended for trained and qualified personnel and must be applied along with the applicable local codes and regulations.
Any work related to installation or service for this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

End of life disposition

Ensure that **AEM** absorption humidifier is empty from water.
Disconnect **AEM** absorption humidifier from power supply, electrical control signal, water main supply and drain. **AEM** absorption humidifier can then be removed from the AHU or Duct
AEM absorption humidifier is an electrical equipment and as such MUST not be disposed of in domestic waste.
This humidifier should be returned to the closest steamOvap authorized representative for proper dismantling, recycling and disposition of components according to local regulations.

Warranty

AEM humidifier is warranted for 3 years from invoice date with the exception of replacement items listed in the routine maintenance section.
Industry longest standard warranty terms!

Table of content

Safety warnings

General

Risk of electric shock.
Disconnect power supply before installation or service.
For safety and warranty reasons, Installation and service of this humidifier should be carried out by trained and qualified personnel.
Any work related to installation and service of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

Electrical Warning

Risk of electric shock.
Disconnect power supply before installation or service.
Power supply connexion must be done by a trained and qualified electrician.
Any work related to power supply installation or service of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

Water safety warning

Any work related to water supply, drain connections installation or service of such for this humidifier must comply with local code and regulation regarding safety and prevention of accidents.
Water supply connection must be done by a trained and qualified plumber.

Hygiene

AEM humidifier has been designed to reduce as far as possible the risk of Legionnaires' disease and other similar conditions, but it is important that users are aware of their responsibilities in reducing the risk of Legionellosis, such as:

- **AEM** humidifier must be connected to a clean, potable mains water supply. It is the responsibility of the user to ensure that the water system complies with local regulations.
  The use of mains water fed tanks and reservoirs is only permitted as part of a managed water treatment system.
- Carry out a risk assessment of the water system, and implement an appropriate monitoring and control.
- Avoid water temperatures which favour the growth of Legionella, typically above 20°C [68°F].
- Avoid water stagnation in water supply piping.
- Clean and disinfect the system in accordance with Health & Safety guidance and instructions.

Others

Risk of flooding. In order to avoid any risk of flooding steamOvap recommends connection to overflow drain connection.
Risk of freezing. Plan an anti-freeze system in case of installation in a location that would be exposed to outside conditions and susceptible of freezing.
Risk of malfunction. Do not block air flow to evaporation media. This would create air velocity increase on other exposed part of the evaporation and cause water carry-over through the AEM evaporation module and down stream.

Before to proceed to Installation

Please read this Installation and Operation manual before to proceed to the Installation

Receiving & Unpacking

1. Upon receipt verify that packaging is complete and not damaged.
   In case of damage, and/or missing boxes advise immediately the carrier by writing a note on the waybill.
2. Verify that model of the humidifier matches the purchase order and that all accessories are included.
3. Any missing item should be reported as soon as possible to steamOvap or its representative and within 5 business days after receipt.
   steamOvap will not assume any responsibility for missing item after this delay.
4. Proceed carefully to unpacking, and check that the humidifier and its accessories are not damaged. in case of damage please proceed as for point 3

Included in standard delivery of AEM absorption humidifier

- **AEM** absorption humidifier, evaporation module
  Depending on the size of this one, it might be delivered un-assembled, to be assembled on site.
- In this case, evaporation media will be delivered in separate box(es).
- AEM electronic controller
- AEM water valve and control connection box
- Water supply hose
- This IOM

Depending on other accessories ordered

- Duct air proving switch
- RH% sensors for duct or room

AEM Overview

AEM absorption humidifier

AEM absorption humidifier is composed of the following elements:

A) AEM evaporation module to be installed in duct
B) Water valve box to be installed next to the evaporation module in or outside the duct as per the best installation configuration
C) Water filters to be installed outside or inside the duct.
D) AEM electronic controller to be installed outside the duct.

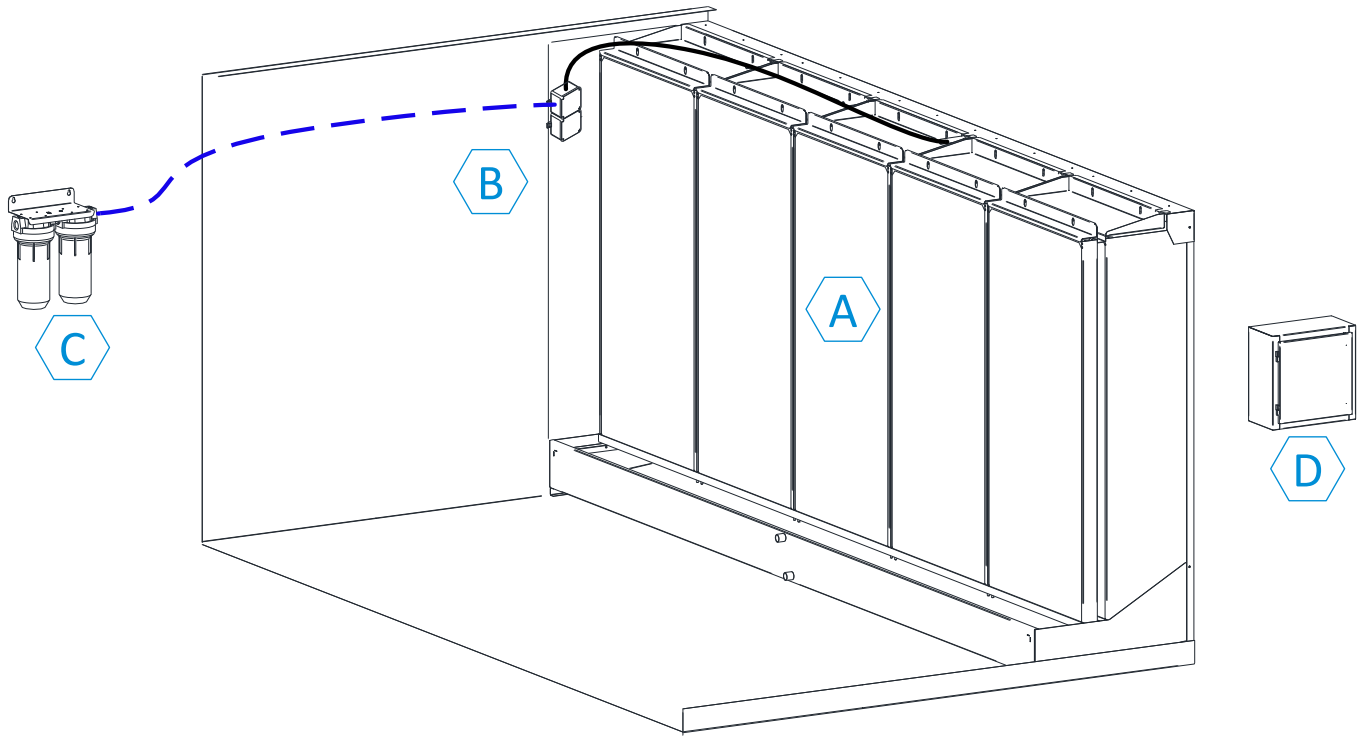


Figure 1 – AEM Overview

AEM name plate

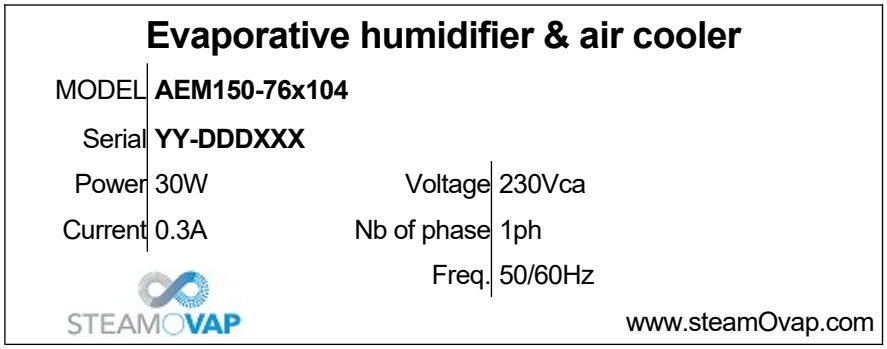


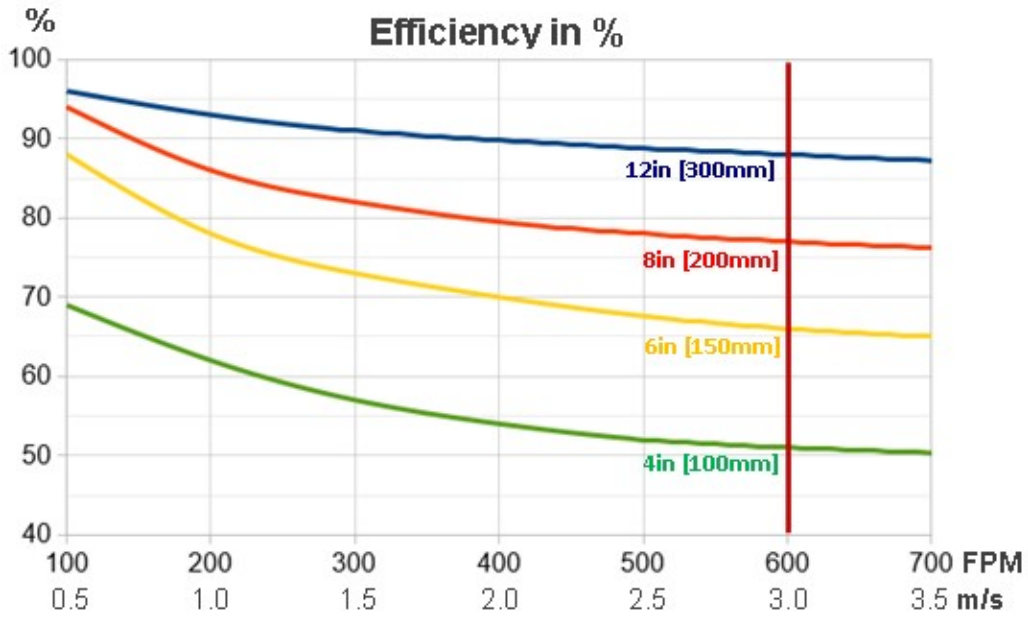
Figure 2 –AEM name plate

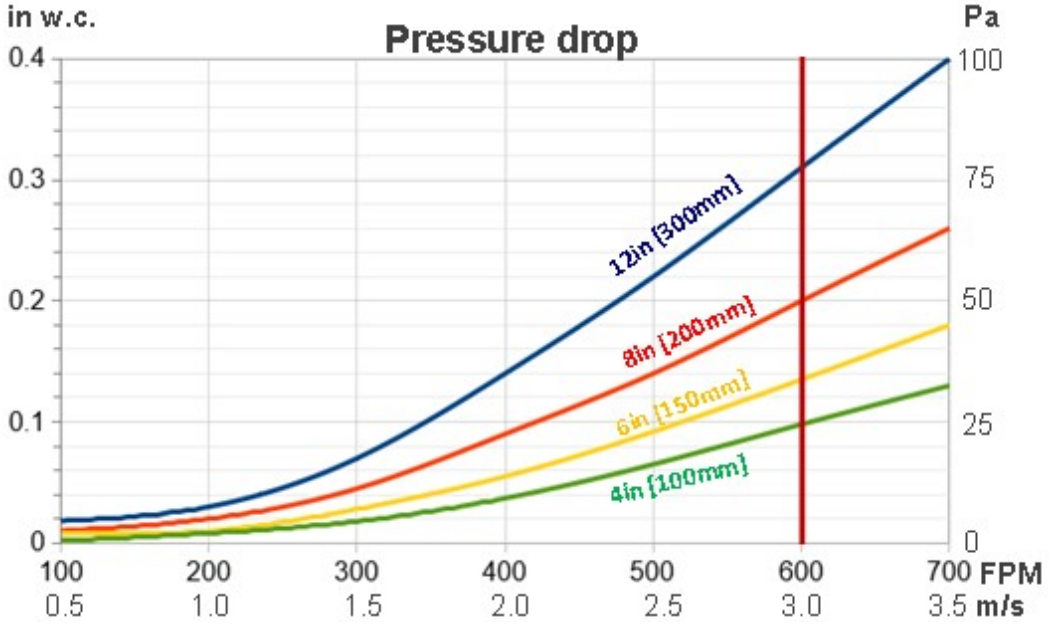
Technical data

Generic Data	information
Dimensions	Width min : 24in [600mm], max : 120in [3000mm]
	Height min : 24in [600mm], max : 120in [3000mm]
	Depth : 24in [600mm]
Electrical supply	120Vac, 1ph, 50Hz
Power	30W
Current	0.3A
Water supply	City water or reverse osmosis
Conductivity	> 30 - 50 µS cm-1 to 20 °C
Water filtration supplied	Sediment filter 1microns + antibacterial cartridge with silver ions.
Water pressure & flow	100PSI [5bar] max, 2.6GPM [10 l/min]
Max water temperature	68°F [20°C] max
Material for frame and bottom tank	Stainless steel grade 304
Main drain diameter	1in [DN25]
Over flow diameter	1in [DN25]
Stage modulation	Pulse to demand control 1 water valve (24Vac) whatever the size of the evaporation module
Evaporative material	Inorganic ceramic
	non-combustible UL900 class 1 rated
Media testing & certification	VDI6022 tested, no aerosol containing legionella
	UL greenGUARD Gold (no VOCs)

AEM Evaporation module technical data

AEM evaporation module is made to measure based on duct dimensions.
AEM evaporation module width should be 100mm[4in] less than AHU or duct width, the module height should be 100mm l[4in] ess than AHU or duct height.
Depth of media is based on required evaporation efficiency
If Air velocity in the air conduit is calculated top exceed 3.0m/s [600FPM] a droplet separator made of one more layer of dry media of 50mm [2in] depth will be added in the evaporation module.





AEM Controller technical data

Dimensions (WxHxD)	Weight	Voltage	Power	Control signal	Remote control
559x229x152mm [22x9x6in]	5kg [11lb]	230Vac/1ph	30W	0-10Vdc or 2-10Vdc or 4-20mA (or orthers) external signal or RH% demand	N/A

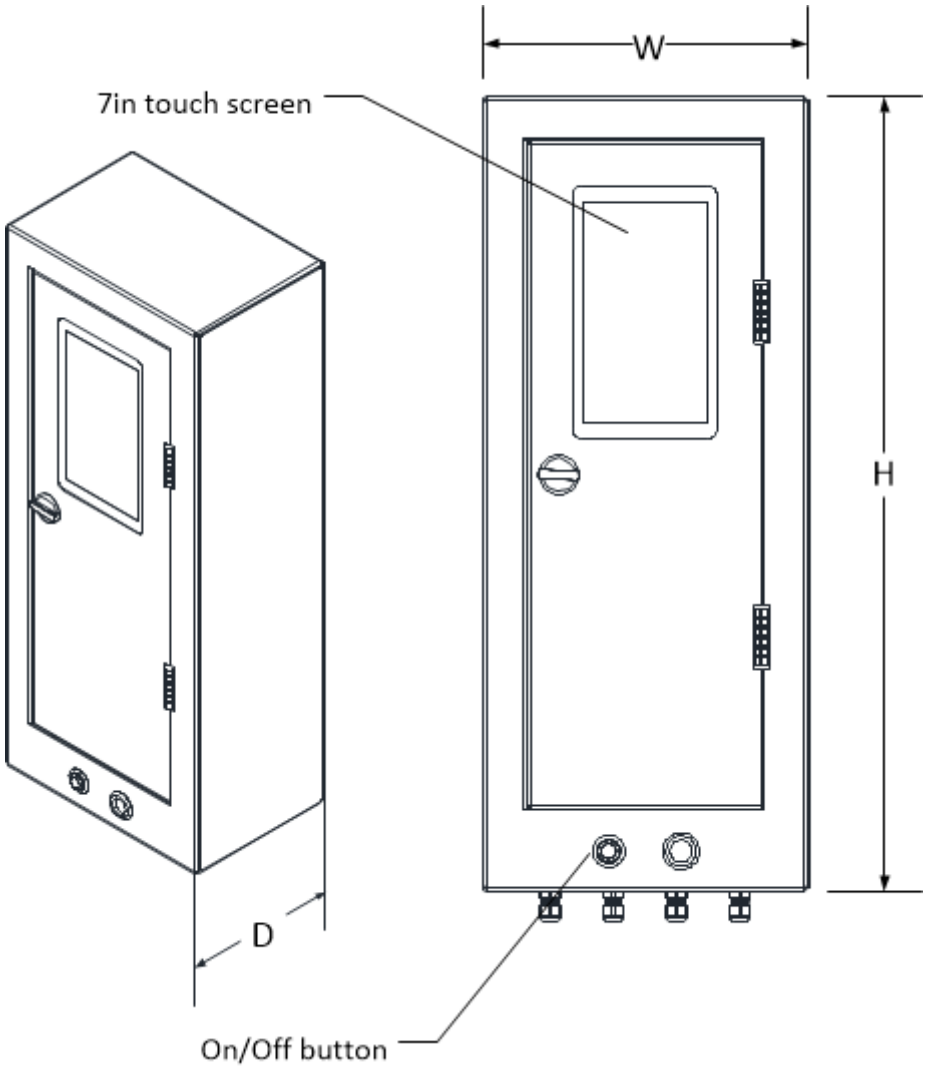


Figure 3 - AEM controller

Installation overview

General

1. Installation of this humidifier should be carried out by trained and qualified personnel.
2. Any work related to installation of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

WARNING. Risk of electric shock.
Power supply must be disconnected during installation.
Main power should be connected only after all installation steps have been completed and properly verified.

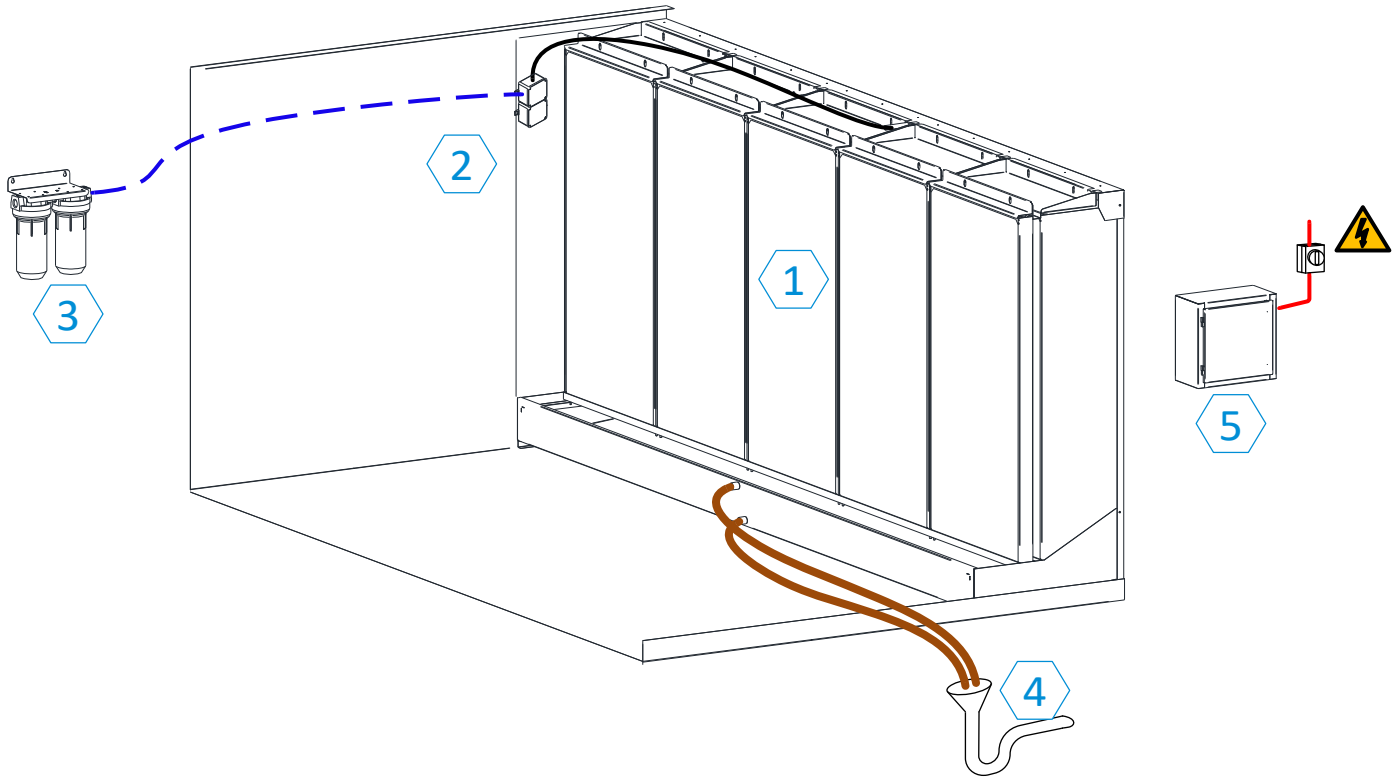


Figure 4 –Installation steps

Installation steps

5. Positioning and mounting evaporation module in the AHU.
6. Water valve box installation
   Can be installed inside or outside the duct.
7. Water filter installation
   Can be installed inside or outside the duct.
8. Drain lines installation
9. Electronic controller and electrical supply installation.

Installation – step 1
AEM Positioning & Mounting

General guidelines for positioning

AEM absorption humidifier should be positioned so that:

- Water line between water filtration unit and evaporation module should be as short as possible
- Electronic controller should be installed closed to evaporation module outside the AHU or duct
- Humidifier is easily accessible for service

CAUTION. Risk of flooding. Ensure that the duct or AHU where AEM evaporation module will be installed is equipped **with floor drain.**

In case of no floor drain is available; installation of a water leak detector is required in order to prevent any flooding in case of abnormal operation or service.

Recommendation for the evaporation module positioning in the duct:

1. The AHU / duct-work floor must be designed with a loading capacity capable of supporting the humidifier's weight when wet.
Largest AEM module would weight 465kg (1025 lb) when in operation.
2. Module must be positioned on a minimum height 50 mm [2in] up-stand or runners to allow for drain pipe-work installation and removal of the tank and media through the side of the AHU if required.
3. Provisions should be made for the water inlet, drain pipe-work and interconnecting control cable through the side of the AHU.
4. Side access through a door should be provided and a minimum of 600mm [24in] access front and rear of system for installation, start-up and maintenance.
5. Blanking plates (by others) must be installed around the AEM evaporation module in order to make that air flow is passing through the evaporation media.

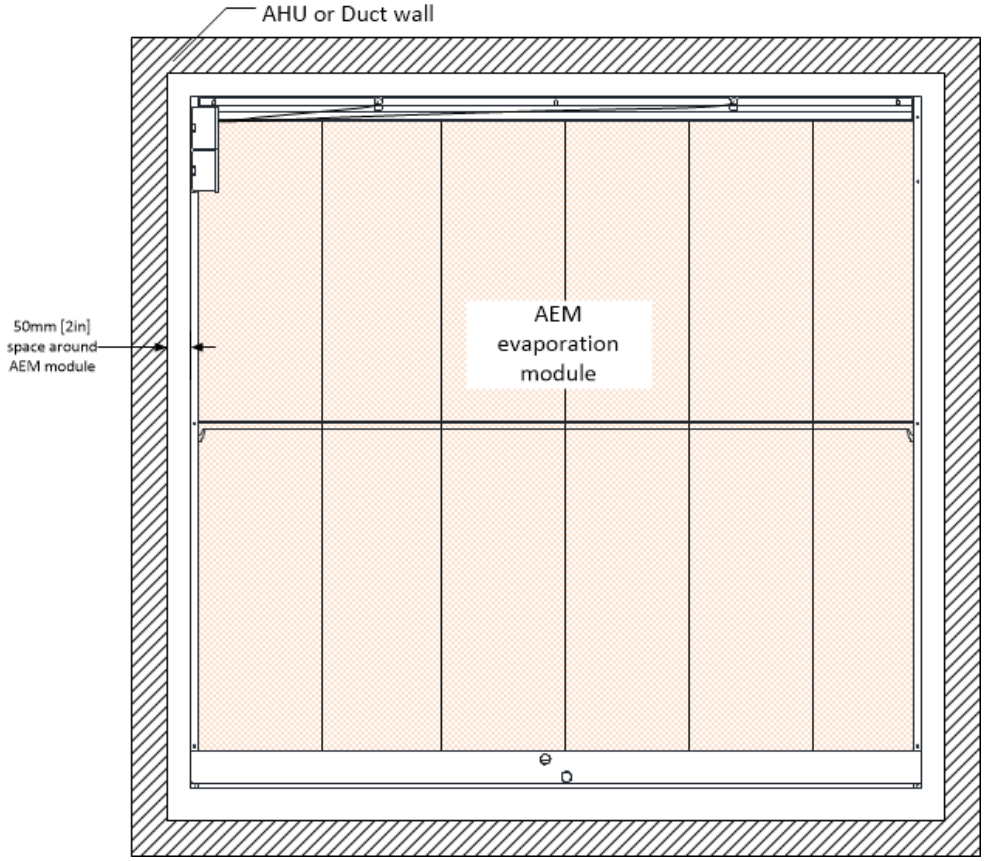


Figure 5 –Single module positioning

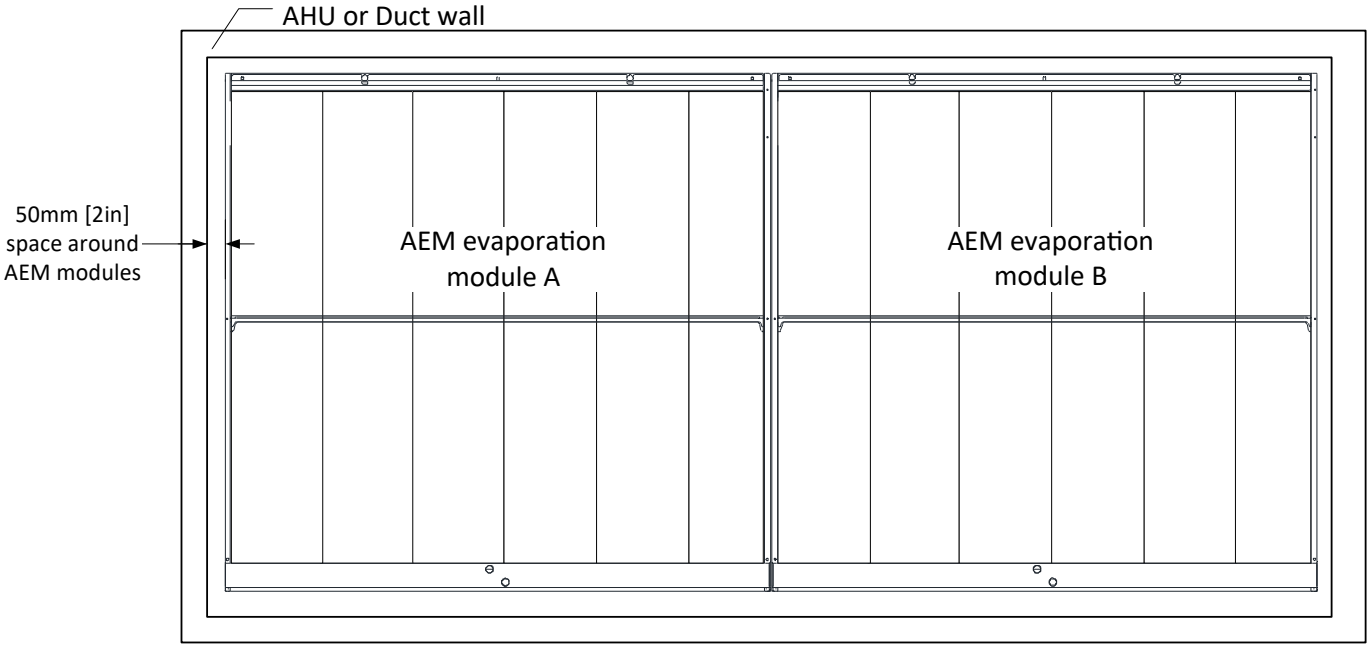


Figure 6 –Two modules positioning side by side

Guidelines in case of two evaporation modules side by side in the duct:

Follow same positioning and installation recommendations as for a single module (see above)
Make sure to attach the two evaporation with the supplied brackets

Provisions are required for the Water supply and drain installation,
Please refer to the appropriate section of this IOM for detail.

Installation – step 2
Water supply installation

Water supply specification & quality:

AEM humidifier must be connected to a clean, potable (drinking water quality) mains water supply. It can accept a wide range of water quality.
Untreated water will lead to scale deposits that will need to be regularly removed from evaporation media surface
Use of additives such as scale inhibitor or corrosion inhibitors, disinfectants or other can impair the normal operation of the humidifier and are not allowed.
For areas of hard water and to minimize scale build up the water supply may be treated with Reverse osmosis (RO) filtration,
De-ionized (DI) water cannot be used as it would lead to early damage to evaporation media.
Water supply pressure: 30 to 80PSI [2 to 5bar] – hammer free
Water supply temperature: 37 to 59°F [3 to 15°C]
Water supply conductivity: 30 to 1500µS/cm (at 20 °C)
Water supply hardness: 0 to 16grains/gallon [0 to 15°gH][268mg $CaCO_3$/l]
Water supply PH: 6.5 to 7.5
Water supply chloride content: 0 to 50ppm

The use of RO water fed tanks and reservoirs should be part of a managed and hygiene monitored water system and should form part of the water system risk assessment.

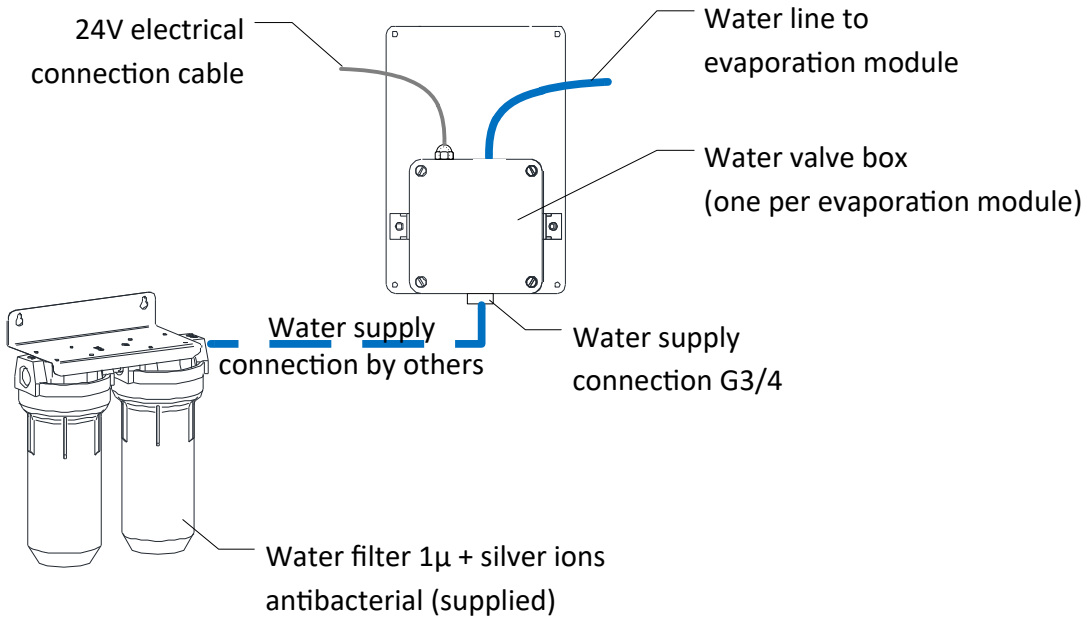


Figure 7 –Water supply installation

Water supply connection:

1. Install a manual; shut off valve on the water main line.
2. If AEM humidifier is supplied with tap water it is recommended to install a 10µ sediment filter on the line. This filter will protect internal water fill valve from clogging.
3. A flexible braided hose is supplied for an easy and secure connection to the water supply inlet. This hose is equipped with 1/2in [12mm] female swivel connection at both ends.

2 or more evaporation module:
In case of more than one evaporation module is required – there will be one water valve box per module.

Installation – step 3
Drain installation

Water drained specification:

Each AEM evaporation module is equipped with a main drain port and a safety overflow drain port.
Drain outlet dimension: DN25 [1in]
Overflow outlet dimension: DN25 [1in]

Maximum drained water flow rate = same as water supply flow in case of full saturation of evaporation media.

Installation steps :

1. Ensure that an Open drain with a P-trap is installed offset from the AEM module
2. **IMPORTANT**: Risk of flooding. A minimum **slope angle** of 5 degree of the drain hose to the open drain.
3. Main drain and overflow drain port should be connected separately to avoid risk of flooding in case of obstruction of the main drain.
4. Make sure the water waste detector is installed on the main drain port and that is levelled.

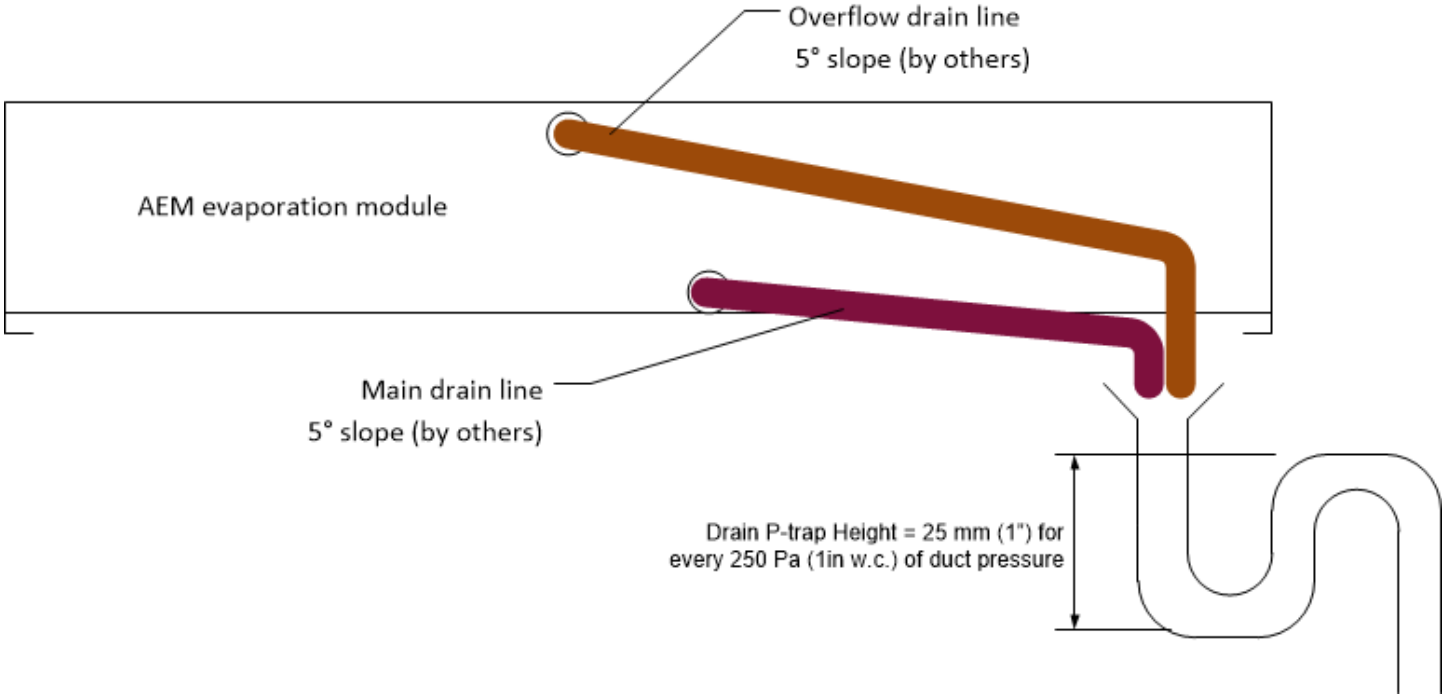


Figure 8 –Drain lines installation

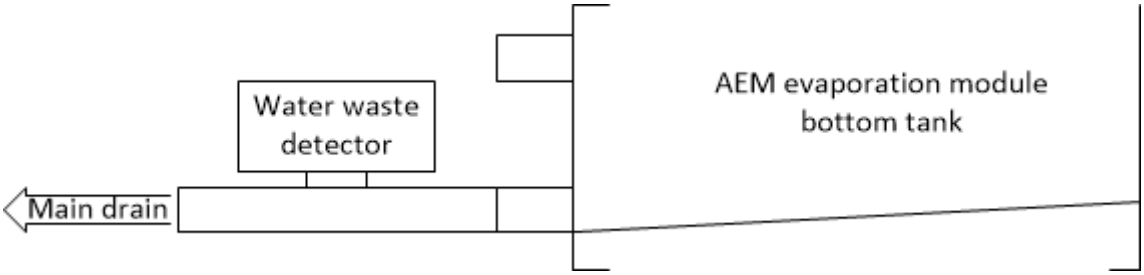


Figure 9 –Water waste detector on main drain

Drain manifold for two modules

In case two evaporation modules are installed side by side, the water waste detector will be common for the two modules

Make sure to install the drain manifold supplied and direct the drain manifold on right or left side of the AHU/Duct.

Top view

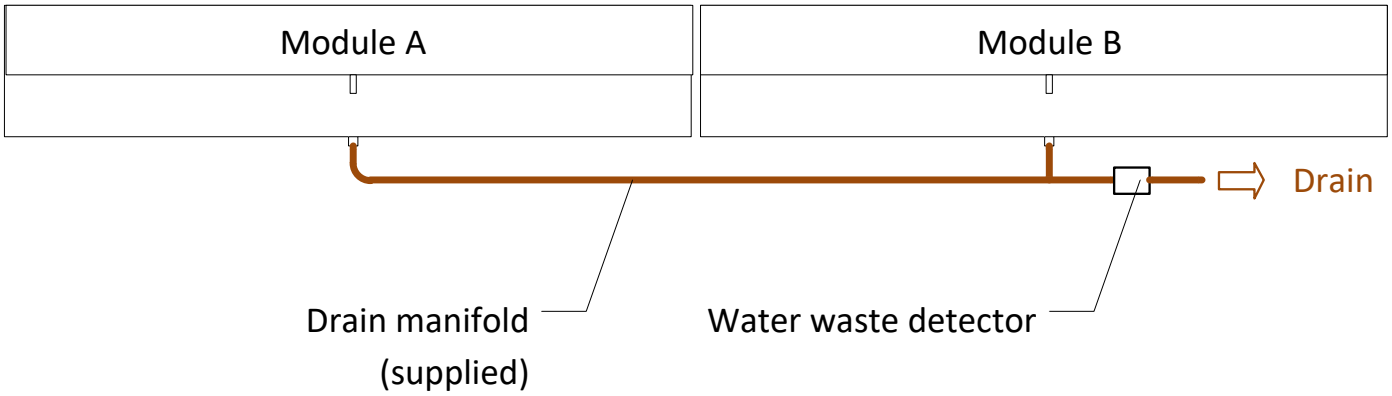


Figure 10 –Drain manifold for two modules

Installation – step 4
Power supply installation

Electrical Warning

Risk of electric shock.
Disconnect power supply before installation or service.

Any work related to power supply installation of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.
AEM electronic controller is supplied with a standard 120Vac 1ph power cord and outlet
Current drawn is 0.3A whatever the size of the AEM humidifier.

Installation – step 6
Control installation

General guidelines for control installation

It is a good practice to install the following safety controls:

- An air proving switch (APS) in the same duct as the humidifier's steam ramp so that it can prevent humidifier from producing steam in case there is no air flow.
- An enable dry contact can also be wired to switch the humidifier ON or OFF, this enable contact can be used either as a third safety control or as a way to control the humidifier ON and OFF, although AEM humidifier is fully modulating.

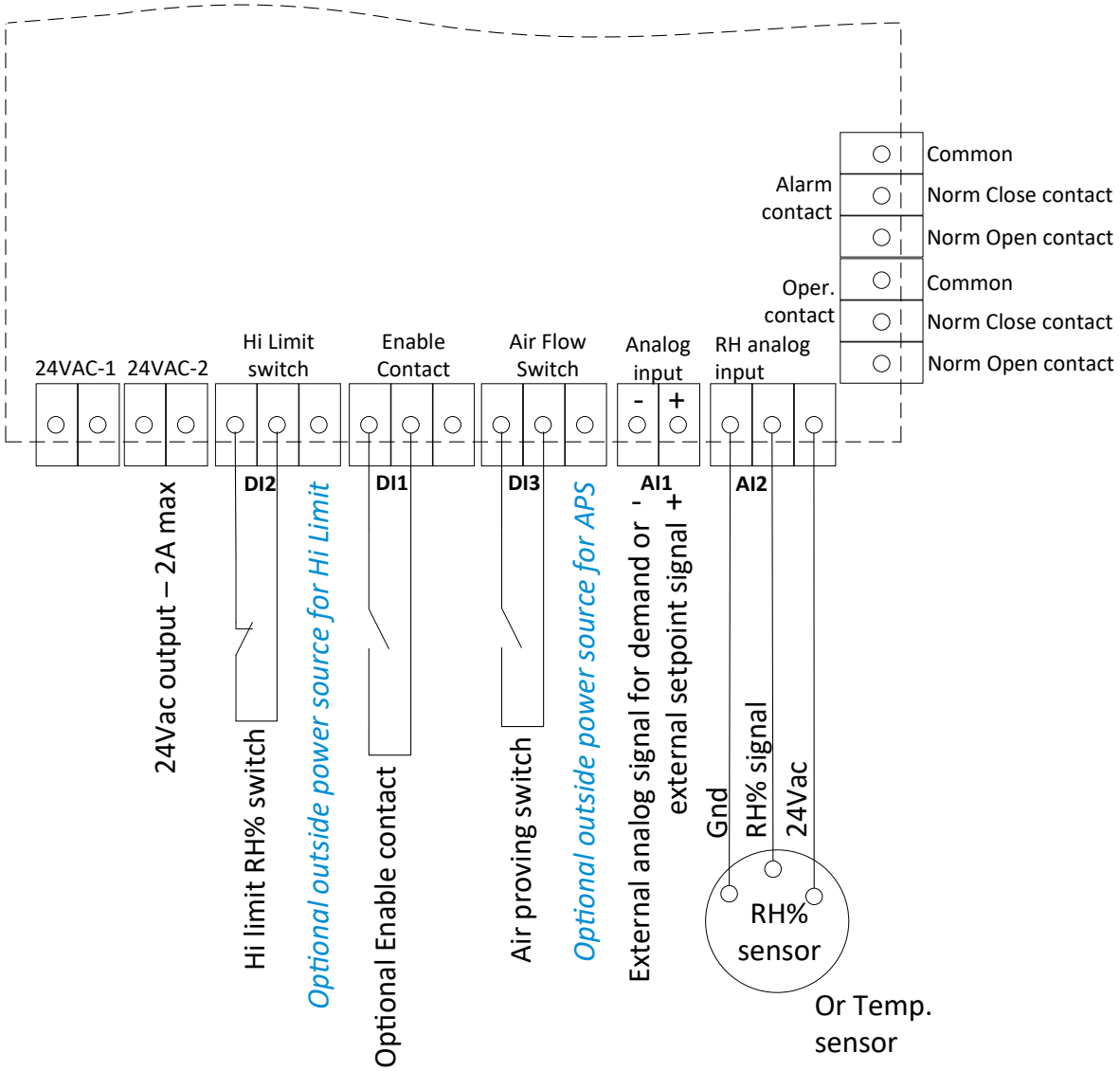


Figure 11 –Control diagram

Admissible control signal

Control	Admissible signals
External analog signal for demand	0-10Vdc, 2-10Vdc, 4-20mA
On-Off external signal	Dry contact
Proportional RH% or temperature sensor	0-10Vdc, 2-10Vdc, 4-20mA

Control signal is selectable in the control setting sub menu of the user interface.

Operation ON contacts (norm. open & norm. close) as well as alarm contacts (norm. open & norm. close) can be connected to get remote operation status of the humidifier.
A proportional feedback signal (0-10Vdc, 0-5Vdc, 1-5Vdc, 2-10Vdc or 4-20mA) is also available.

Installation steps :

1. Connect the applicable controls according to the above wiring diagram
2. Selection of control signal is done through set-up screens once the AEM will be powered.

Verification before start-up

Warning

For safety and warranty reasons, Installation and service of this humidifier should be carried out by trained and qualified personnel.
Any work related to installation and service of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

Risk of electric shock.
Disconnect power supply before verification.

Risk of flooding. In order to avoid any risk of flooding steamOvap recommends connection to overflow drain connection.
Risk of freezing. Plan an anti-freeze system in case of installation in a location that would be exposed to outside conditions and susceptible of freezing.
Risk of malfunction. Do not block air flow to evaporation media. This would create air velocity increase on other exposed part of the evaporation and cause water carry-over through the AEM evaporation module and down stream.

Hygiene

AEM humidifier has been designed to reduce as far as possible the risk of Legionnaires' disease and other similar conditions, but it is important that users are aware of their responsibilities in reducing the risk of Legionellosis, such as:

- **AEM** humidifier must be connected to a clean, potable mains water supply. It is the responsibility of the user to ensure that the water system complies with local regulations.
  The use of mains water fed tanks and reservoirs is only permitted as part of a managed water treatment system.
- Carry out a risk assessment of the water system, and implement an appropriate monitoring and control.
- Avoid water temperatures which favour the growth of Legionella, typically above 20°C [68°F].
- Avoid water stagnation in water supply piping.
- Clean and disinfect the system in accordance with Health & Safety guidance and instructions.

Check list

Mounting

- Check mounting to verify that the AEM evaporation module is levelled and securely supported before filling with water.
- Ensure that evaporation media is properly installed and the there are no air gap around the module.
- Check that there is no accumulated dust on the evaporation media and on all surface. If this is the case make sure to clean them off before to put in service.
- Verify that the AEM electronic controller is installed outside the duct or AHU.

Water supply

- Verify that all piping connections have been completed as recommended and that water pressure is available.
- Once water shut off valve is open, verify for any possible leaks.
- If water supply lines have been closed for a long period, disconnect the line to the AEM water valve box and purge the line.

Drain

- Verify that all drain piping has been completed as recommended and that an open drain deported from AEM evaporation module is provided.

Power supply

- Verify that power supply wires have been connected

Control circuit

- Verify that safety controls such as air proving switch has been connected.
- Verify that a control signal demand or RH% sensor is connected to the control terminals.

Once all above verification has been completed and found satisfactory you can powered up the AEM humidifier.

Configuration & Operation

Dashboard screen

Dashboard screen is also the main/home screen

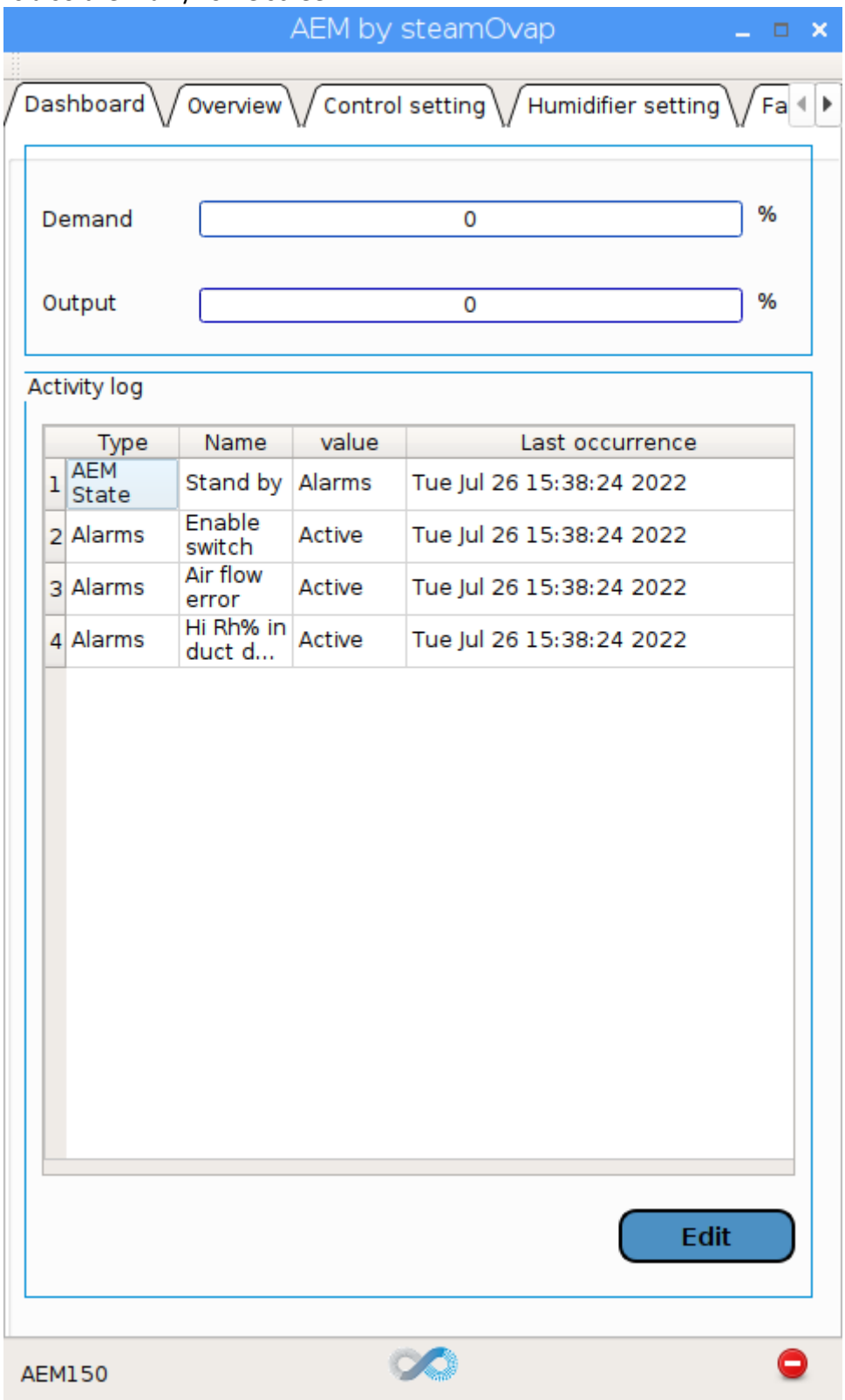


Figure 12 – Dashboard screen

Overview screen

Overview screen gives all information on internal sensors and control settings and allow ordering a drain for service

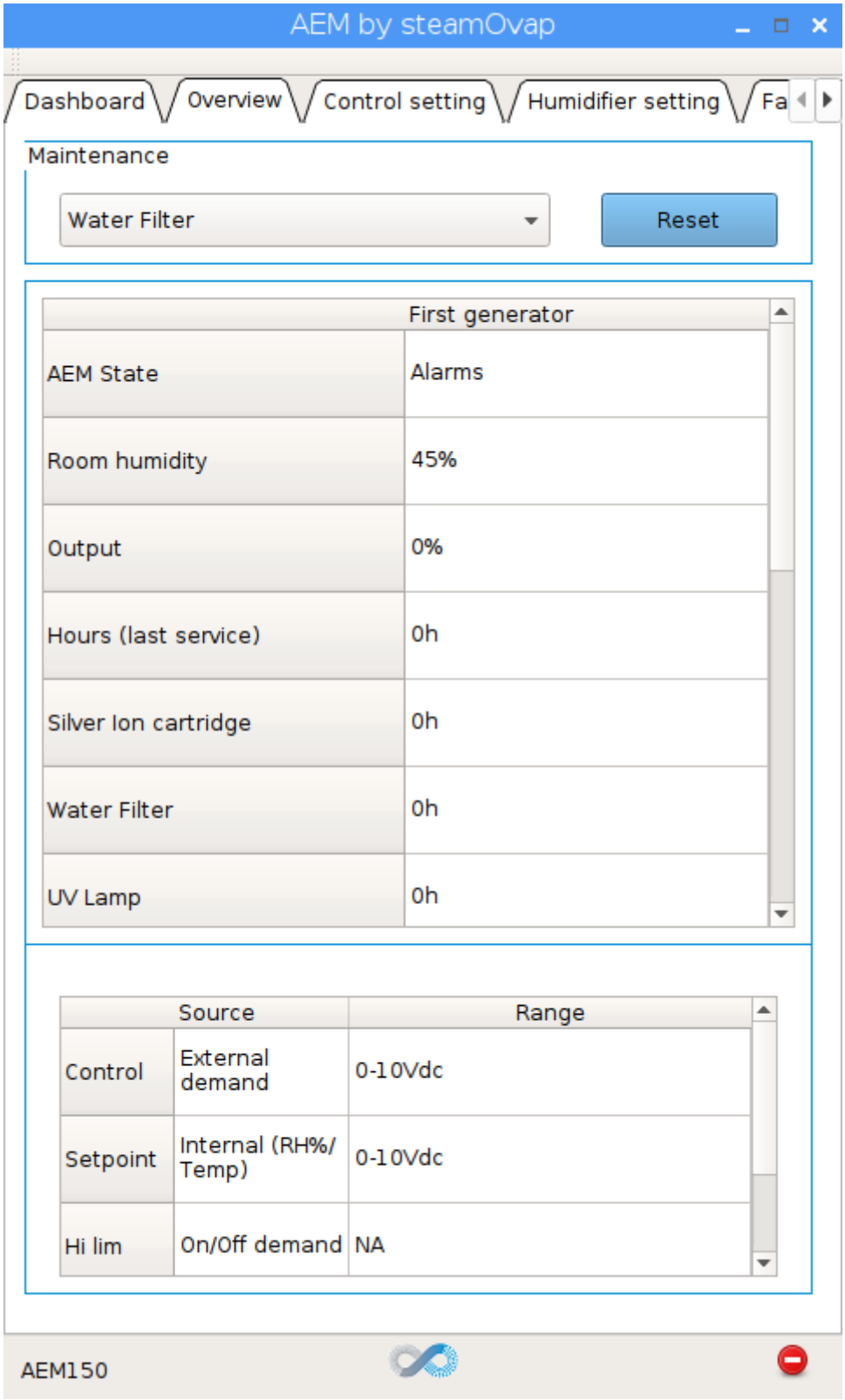


Figure 13 – – overview screen

Icon status

An icon status located at the right hand side in the footer of the screen indicate the status of the AEM humidifier

 AEM is OK and in operation or stand by.

 Alarm level 1, needs service technician reset if latched.

 Alarm level 2, auto reset as soon as default is over.

 Communication between board computer and Main controller is altered.

 Service is required.

AEM states

The different possible states of the AEM are:

- STANDBY_STATE,
  AEM is disable (see status of enable button in Control setting / control config).
- ARMED_STATE,
  AEM is ready to operate, waiting for humidity demand
- WETTING MEDIA_STATE,
  AEM is adding water on the media
- EVAPORATIVE_STATE,
  Media is fully wet
- ALARMS_STATE,
  AEM is on Alarm of level 1, a manual reset is required, go to Humidifier settings / Reset alarm.

Control Setting screen

Control setting screen allows user (control engineer) to set signal and parameters to control the AEM humidifier.
Access to this screen can be restricted with password. In this case password is 3549

Pop up to enter password

Pop Up for password entry

Access password are:

- Control setting : 3549
- Humidifier setting : 7030

Note: Touch the screen one time to activate it before to enter code then click on Enter.

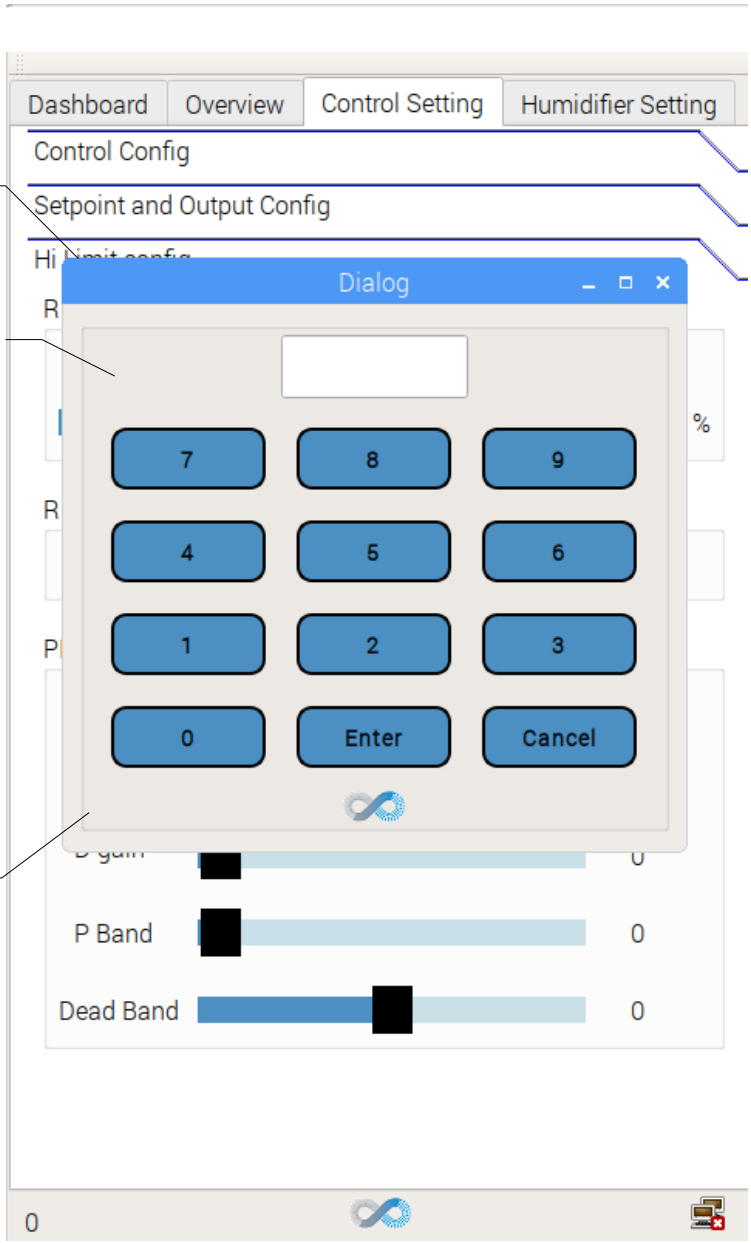


Figure 14 – password screen

Control setting / control config

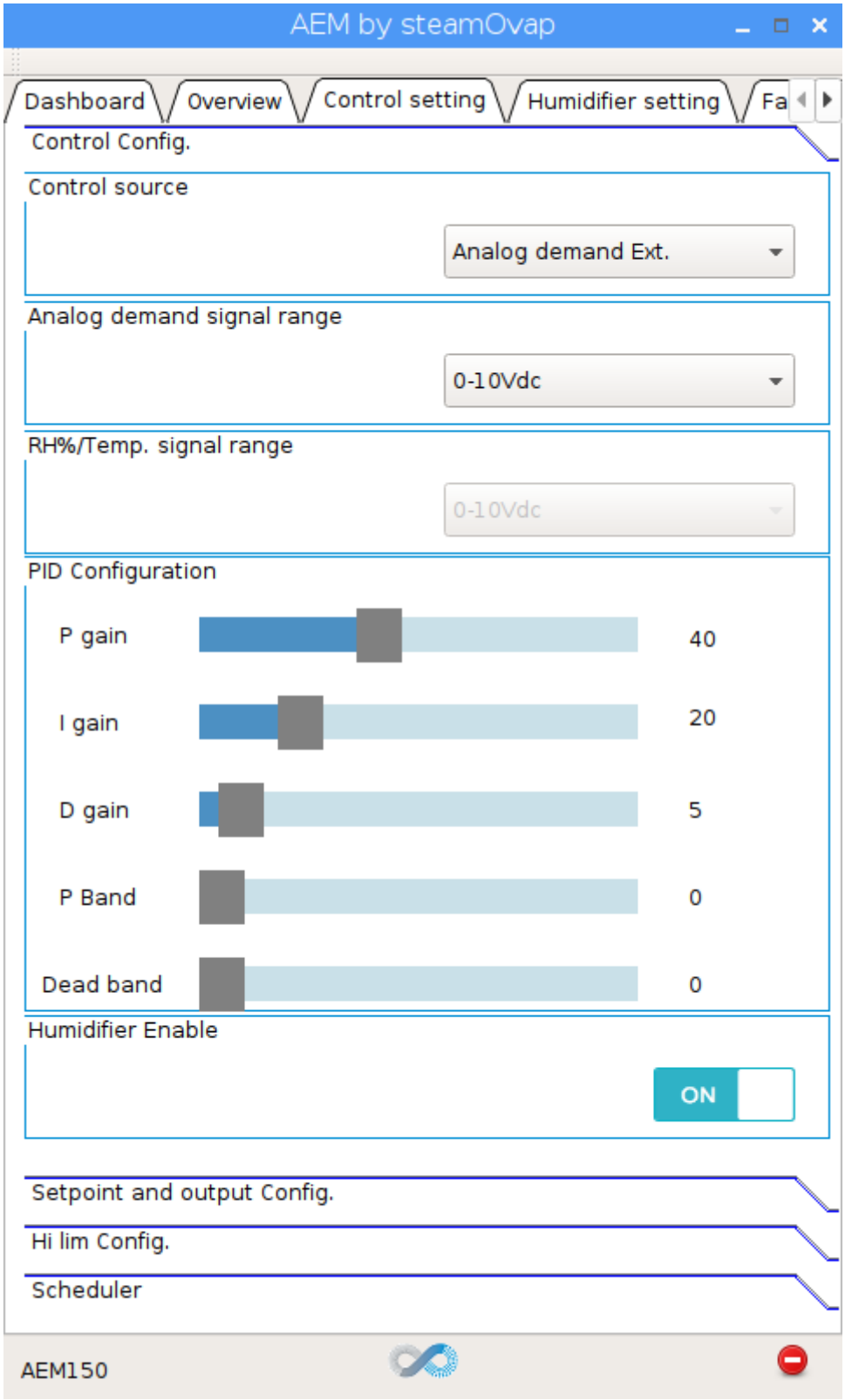


Figure 15– Control setting/control config screen

Control setting / setpoint & output config

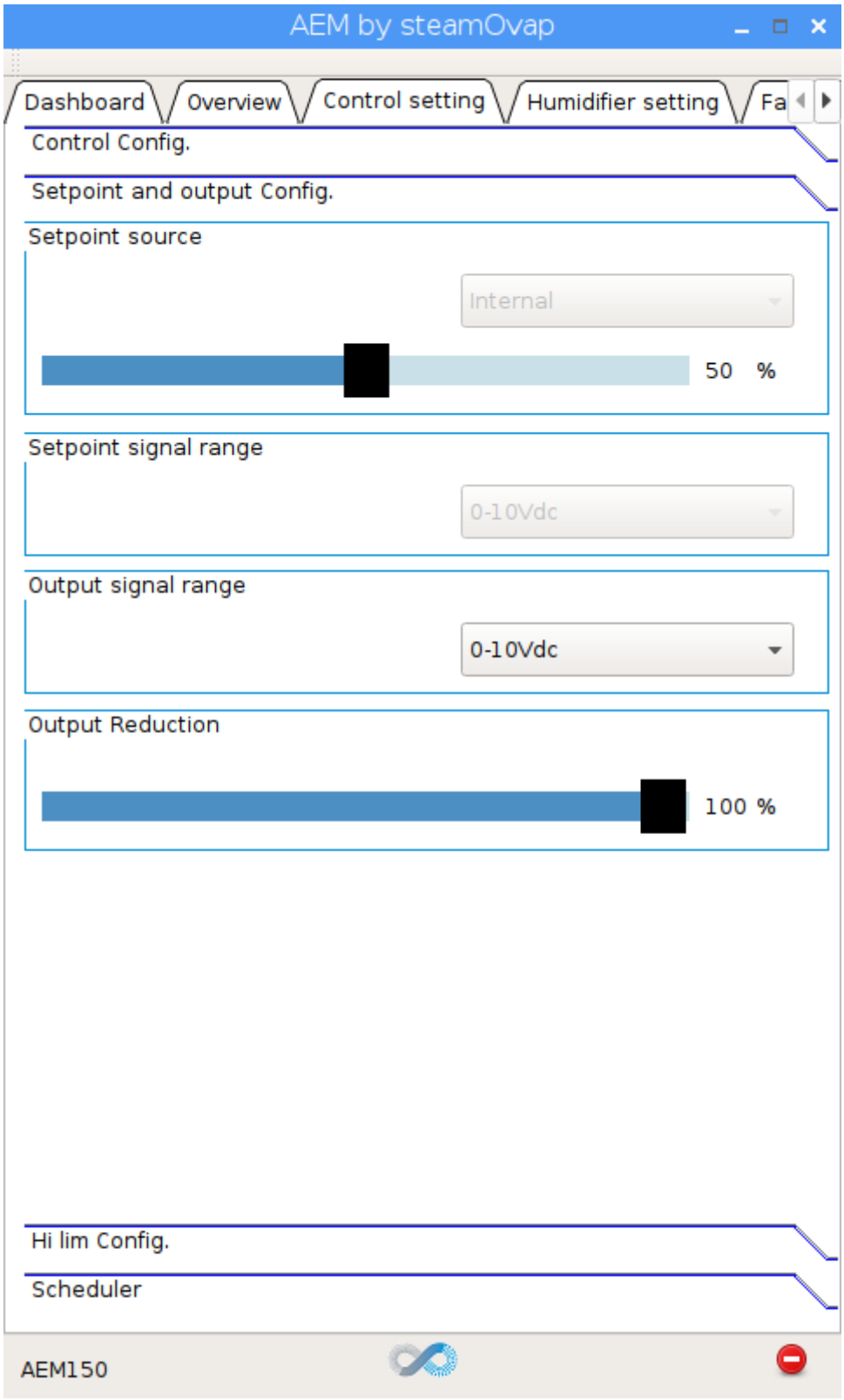


Figure 16 – Control setting/setpoint config screen

Control setting / Hi Limit config

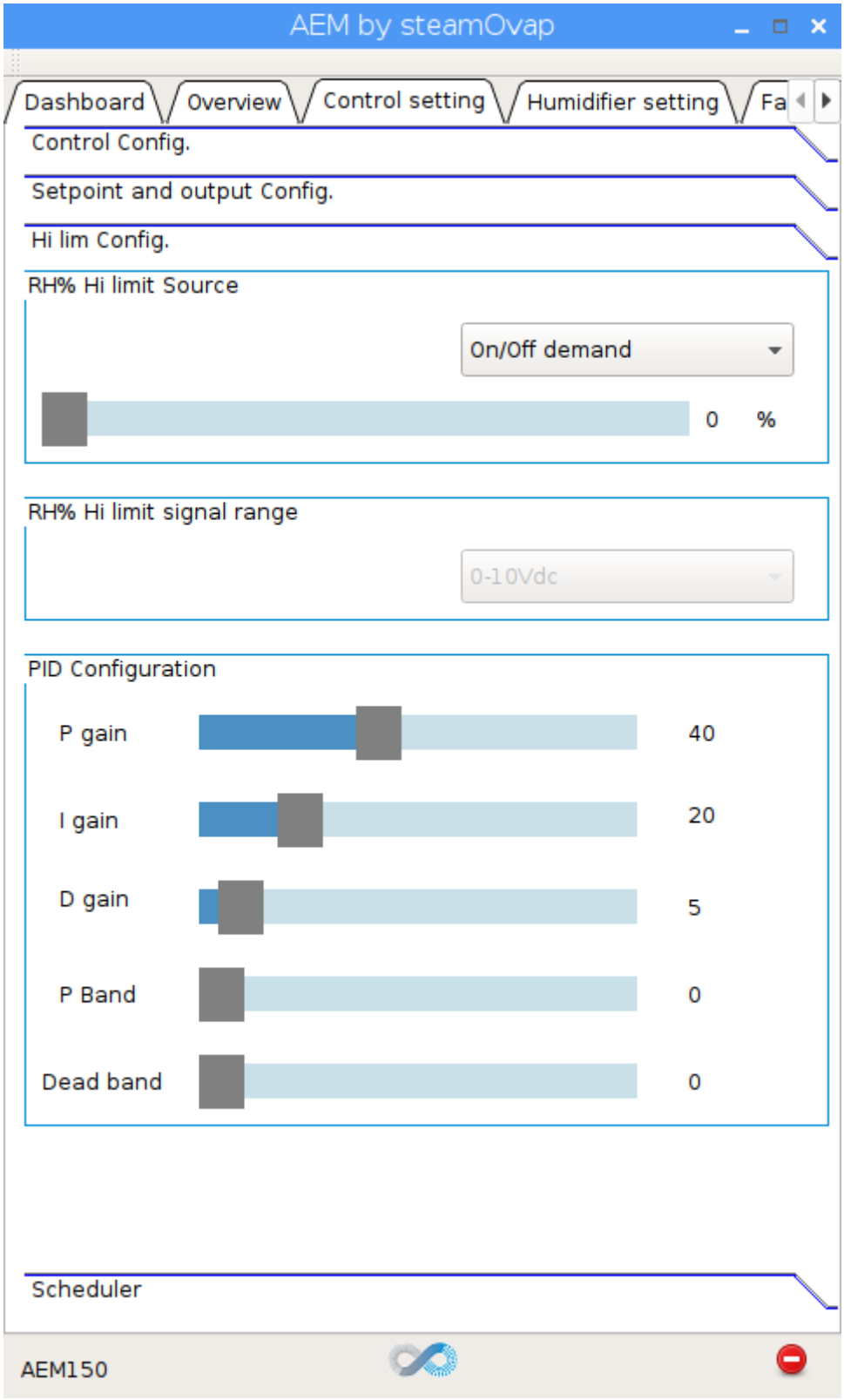


Figure 17– Control setting/Hi Limit config screen

Control setting / Scheduler

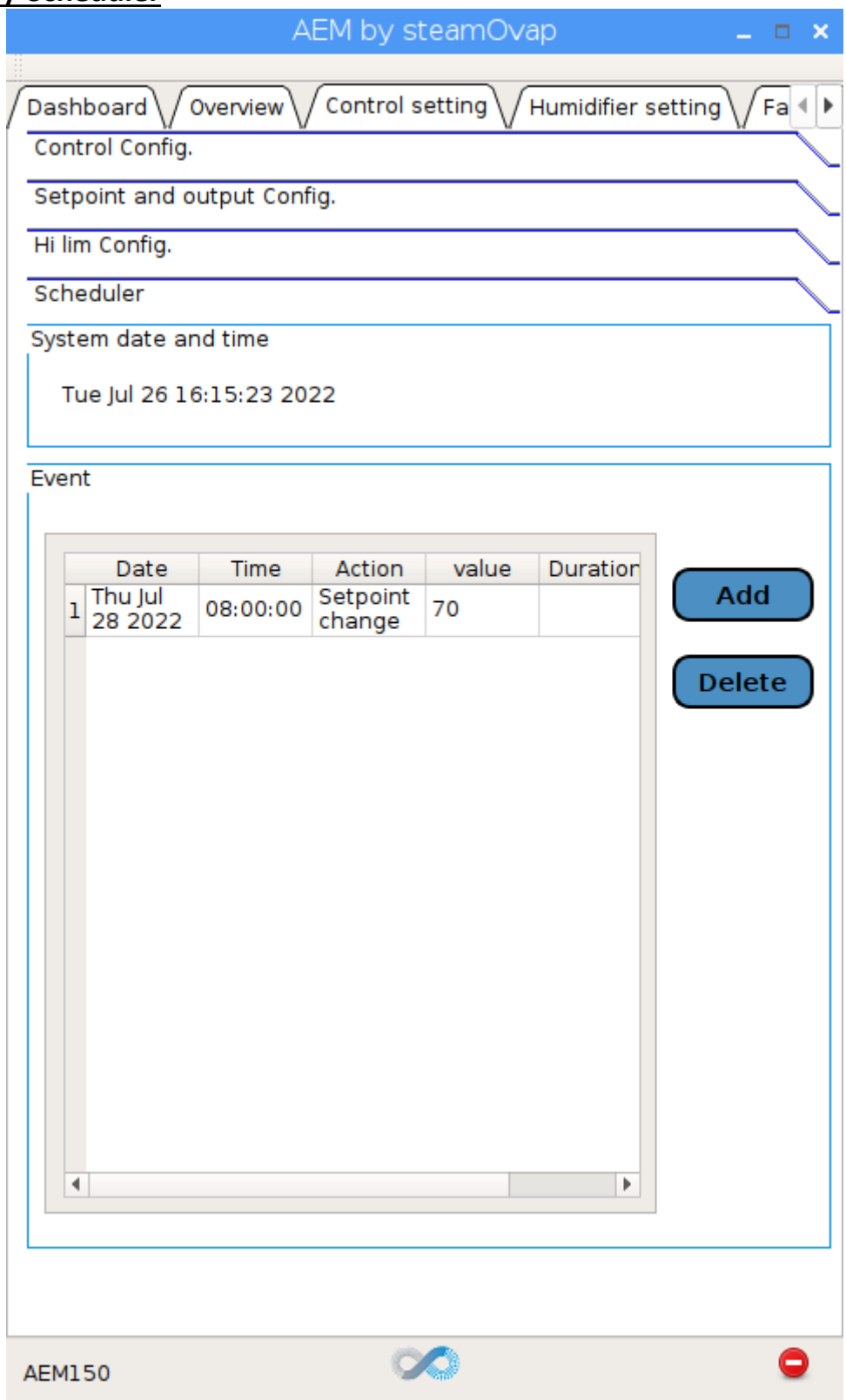


Figure 18 – Humidifier setting/setting 1 screen

Humidifier setting screen

Humidifier setting screen allows user (mechanical contractor) to set humidifier parameters. Access to this screen can be restricted with password. In this case password is 7030

Humidifier setting / setting 1

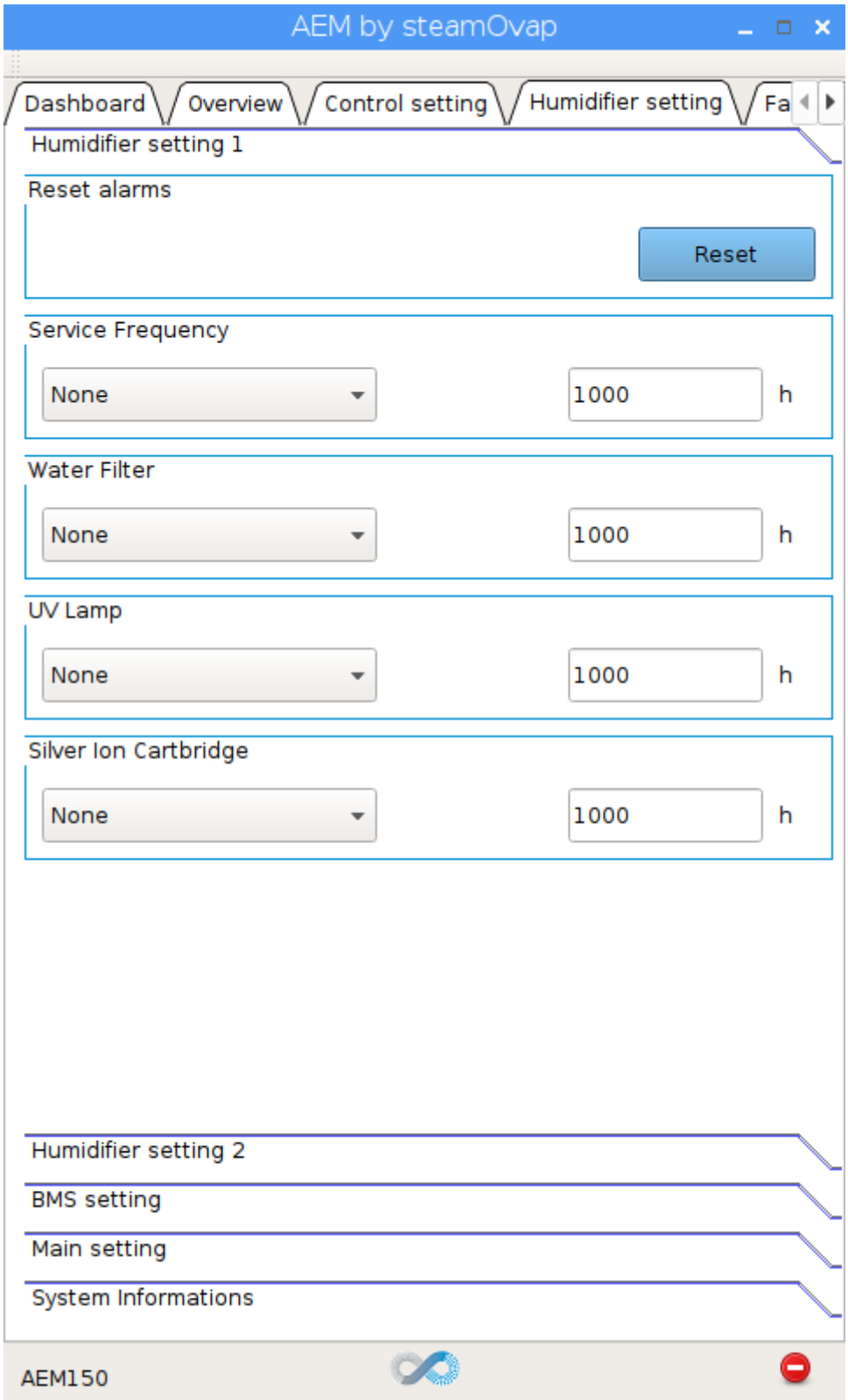


Figure 19 – Humidifier setting/setting 1 screen

Humidifier setting / setting 2

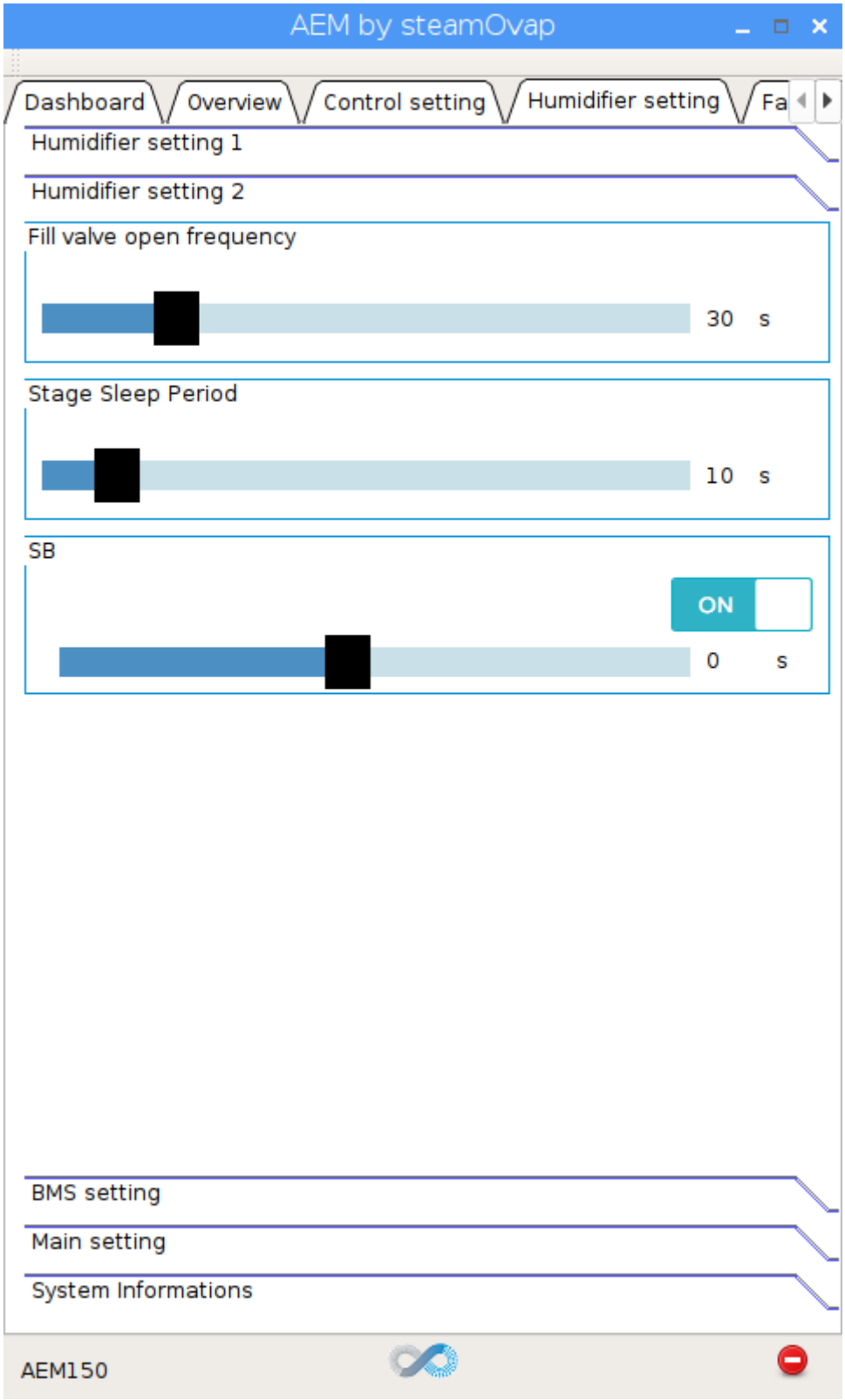


Figure 20– Humidifier setting/setting 2 screen

Humidifier setting / BMS setting

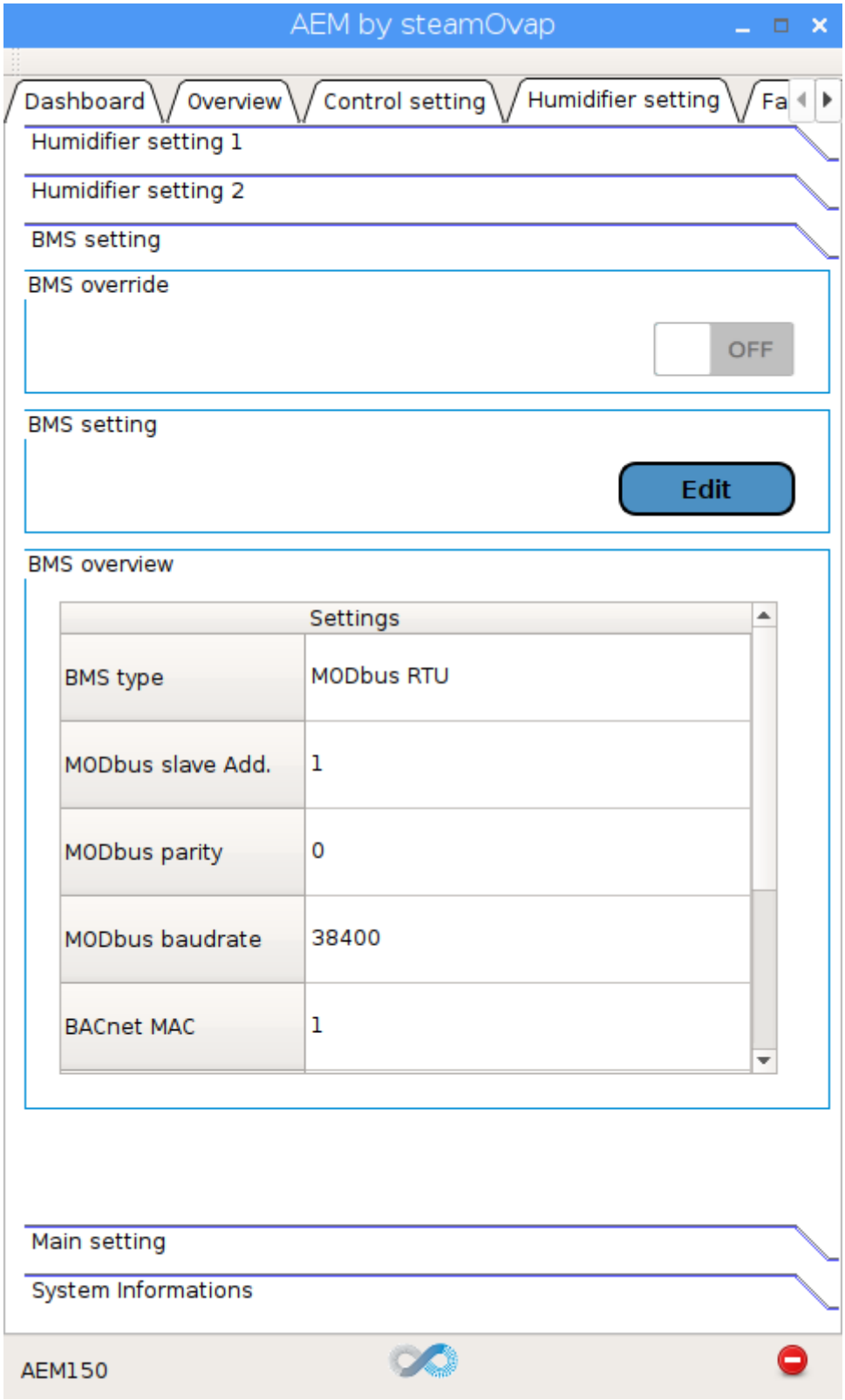


Figure 21– Humidifier setting/BMS setting

Humidifier setting / Main setting

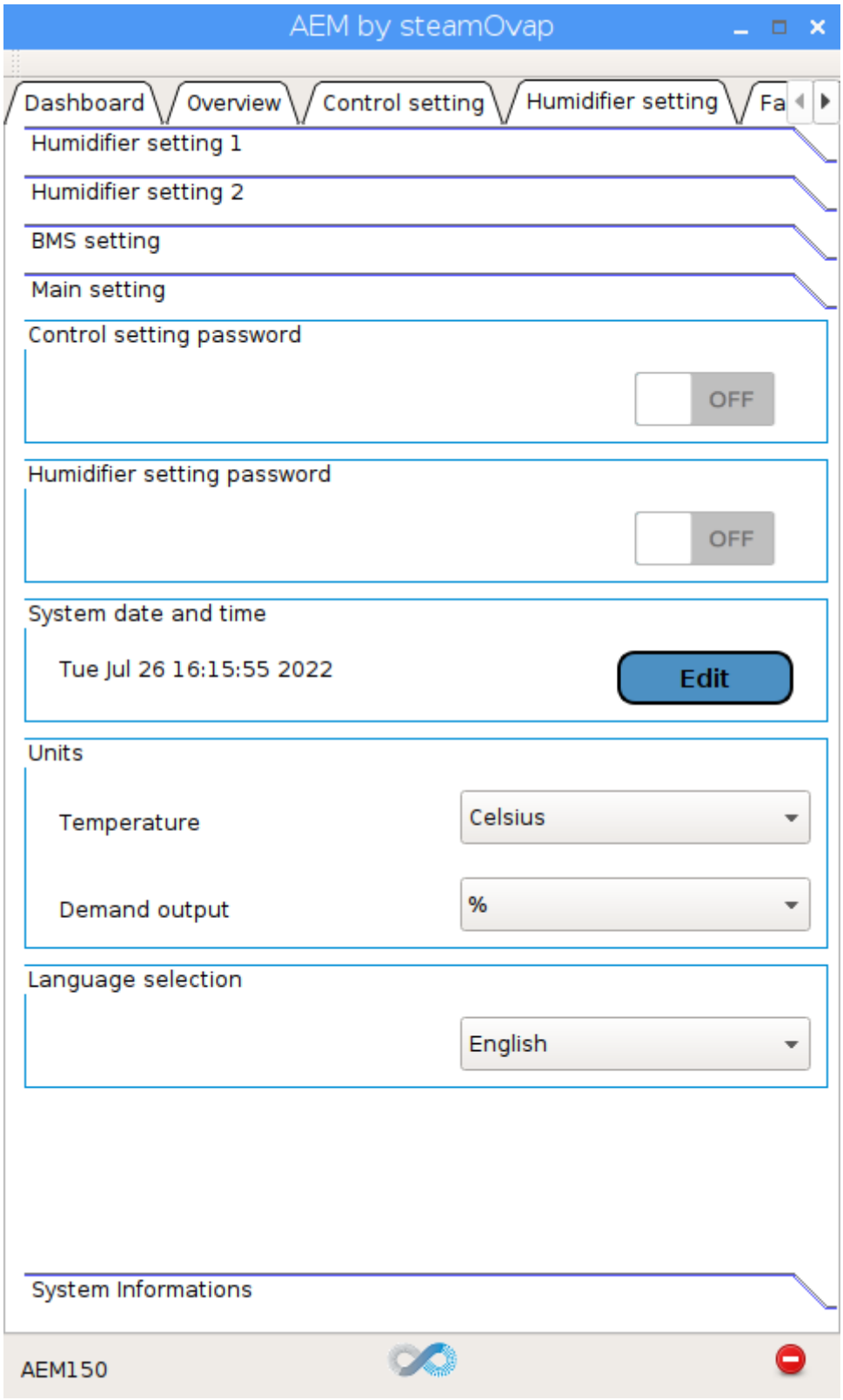


Figure 22 – Humidifier setting/Main settings

Humidifier setting / System information

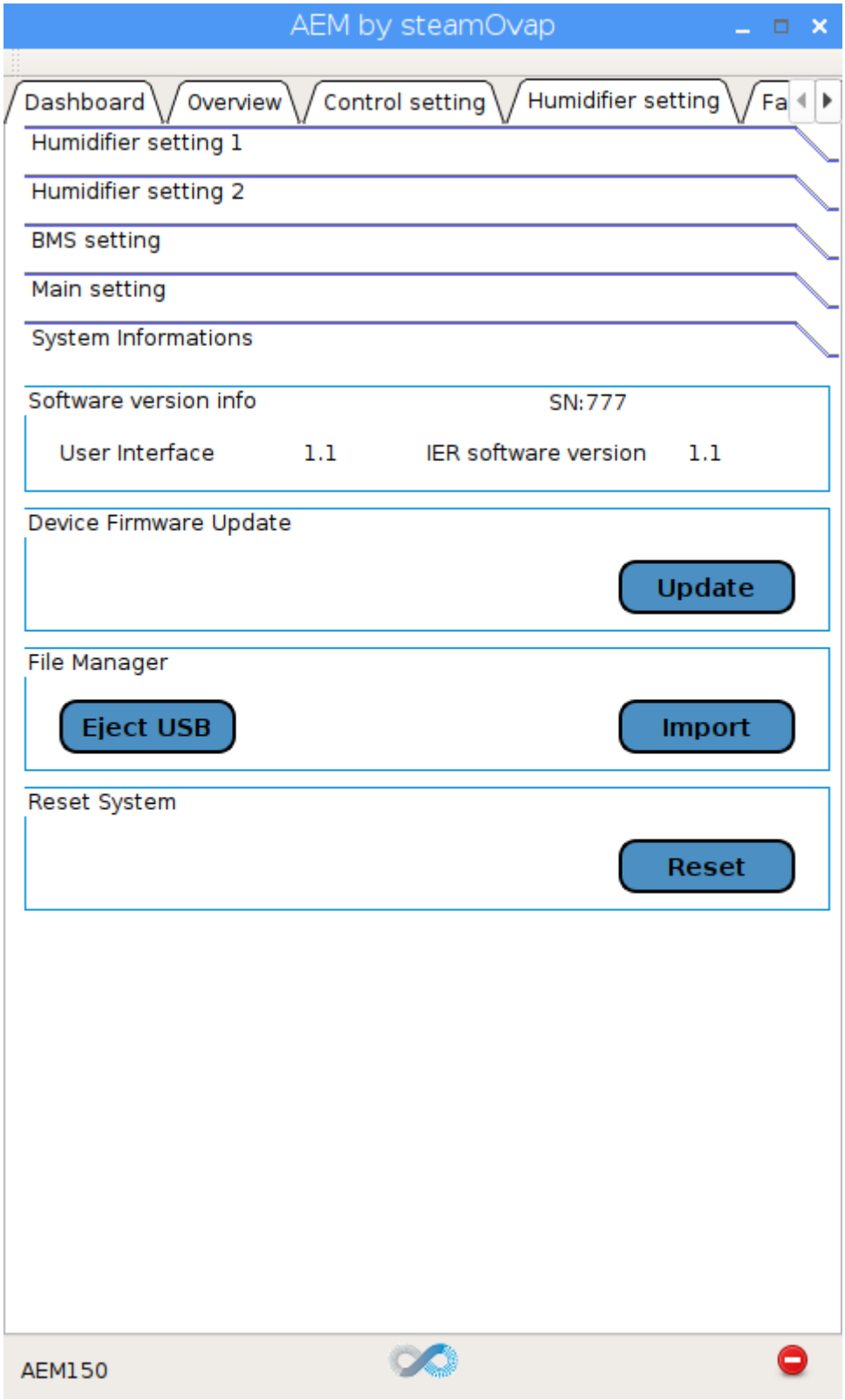


Figure 23 – Humidifier setting/System information

List of alarms

In case of alarm, the status icon located at the right hand side in the bottom footer of the screen can be either:

 Alarm level 1, critical alarm will stop operation of AEM, if latched will need manual reset by service technician.

 Alarm level 2, non-critical alarm will not stop operation of AEM, auto reset as soon as default is over.

Alarm	Level	Description
Service needed	2	Servicing the cylinder is required latched if set as is by installer
Air Flow error	1	No air flow in the duct
Hi Rh% in duct detected	1	A duct Hi limit RH% sensor or switch is installed and has detected High humidity.
Enable Switch	1	Enable switch is off
Excess water wasted	2	Excess water is detected at the main drain port
Water Feed Error	1	No water is supplied
Electric supply	2	Low power
No control Connected	2	No signal received
Communication Status	2	Loss of communication between board computer and Main controller

Service

Risk of electric shock.
Disconnect power supply before service.
For safety and warranty reasons, Installation and service of this humidifier should be carried out by trained and qualified personnel.
Any work related service of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

Service frequency

Service frequency should be determined at start-up. This will depend on the application, the water quality and system usage.
Default is 200 hrs operation.

Off season

If the AEM humidifier is turned off for prolonged periods, water stagnation might occur and microbial contamination result in the water supply pipes, therefore the system, including any storage tanks or vessels should be drained and left dry.
Before putting the AEM humidifier back into service, a full risk assessment should be done to ensure safe operation, with particular attention paid to water supply quality.
The water pipe-work supplying the AEM humidifier should be purged carefully, avoiding the creation of aerosols by splashing, and a water sample should be taken to ensure cleanliness.

Hygiene

Your attention is drawn to the local Health & Safety local regulation and guide on the control of Legionellosis in water systems. If inadequately maintained, water systems, of which any humidifier is a part, can support the growth of micro-organisms, including the bacterium that causes Legionnaires' disease.
SteamOvap has considered all aspects of this humidifier to reduce as far as possible the risk of Legionnaires' disease and other similar conditions, but it is important that users are aware of their responsibilities in reducing the risk of Legionellosis.
To prevent the growth of Legionella, users are required to:

1. Carry out a risk assessment of the water system, and implement an appropriate control.
2. Avoid water temperatures which favour the growth of Legionella. Typically above 20°C [68°F]
3. Avoid water stagnation.
4. Clean and disinfect the system in accordance with the Health & Safety local guide and instructions in this manual.
5. AEM humidifier must be connected to a clean, potable mains water supply and it is recommended that the supply pipework is chlorinated. It is the responsibility of the user to ensure that the water system complies with local regulations, particularly those for the control of Legionella microbes. The use of mains water fed tanks and reservoirs is only permitted as part of a managed water treatment system.

At start-up and at regular intervals thereafter, test for possible water contamination. Take samples from the water supply to the AEM humidifier and from the AEM drain port. Check for biofilm.

1. If the microbial count from the main drain port exceeds 103cfu/ml, the system should be turned off, any biofilm scrubbed clean and then disinfected using a 50 ppm chlorine solution for one hour before being put back into use.
2. If the microbial count in the water supply to the AEM evaporation module exceeds 103 cfu/ml, this suggests contamination of the water system within the building. The system should be turned off and you should seek specialist advice on cleaning your water supply.
3. If the water temperature anywhere in the system regularly exceeds 20°C, (68°F) increase the frequency of water sampling. The frequency may be reduced if successive tests show a consistent level below 103 cfu/ml.

Cleaning & disinfection

Before commencing cleaning and disinfection:
It is recommended to proceed to cleaning and disinfection of the AEM humidifier as well as water supply system before first start-up and on a regular basis.
Cleaning and disinfection solution should be 100% biodegradable, non-toxic and environmentally friendly such as hydrogen peroxide and may be left to dissolve and naturally flush after cleaning.
If possible, disinfection should be carried out when the building is unoccupied, with air flow off.
Evaporation module humidifier must be regularly cleaned and maintained, to prevent contamination especially in industrial environments.
All surfaces requiring disinfection or cleaning must be in contact with the appropriate concentration of disinfection solution for at least one hour. The method statement for disinfection may need to be adapted depending on the layout of the humidifier pipe-work, for example, where system pipe-work splits into 'H or U' shape, ensure that disinfection solution reaches all pipe-work end-of-lines. Additional procedures will be required for supply water system pipe-work or water treatment systems prior to the humidifier.

Service

Service of the AEM humidifier mainly consists in verification and cleaning or replacement of the below elements:

Elements to be verified or replaced	**Verification**	**Replacement**
Water filter cartridge 1µ	No	Replaced after 2000h
Antibacterial water filter cartridge	No	Replaced after 2000h
Water supply hoses	Verify cleanliness & clean if required	No only if damaged
Water distribution header	Verify cleanliness & clean if required	No only if damaged
Evaporation module bottom tank	Verify cleanliness & clean if required	No only if damaged
Evaporation media	Verify cleanliness & clean if required Remove scale (lime) by soaking it for several hours in white vinegar and rinse with water.	Yes If clogged by scale
Check overall installation for leaks and damage	Repair in can of leak	No

Warranty

steamOvap technologies inc. (hereinafter referred to as **steamOvap**), warrant for a period of 3 years after installation, that steamOvap manufactured and assembled products are free from defects in material and workmanship; provided that a start-up report with no default has been done and signed by the authorized **steamOvap** local representative. Otherwise the warranty period is reduced to 18 months.

This warranty does not include evaporation media which life expectancy is directly dependent on water quality.

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

No liability whatsoever shall be attached to **steamOvap** until said products have been paid for in full and then said liability shall be limited to the original purchase price for the product. Any further warranty must be in writing, signed by an officer of **steamOvap**.

steamOvap makes no warranty and assumes no liability unless the equipment is installed in strict accordance with installation manual in effect at the date of purchase and by qualified and trained personnel and in accordance to local codes and regulations.

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

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

In case of litigation or dispute arising, all parties agree that the exclusive venue for any litigation shall be vested with a court of competent jurisdiction located in the Judicial District of Montreal, Quebec, Canada.

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To obtain the latest technical information visit our website at www.steamOvap.com