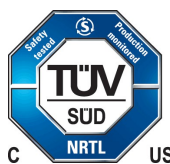
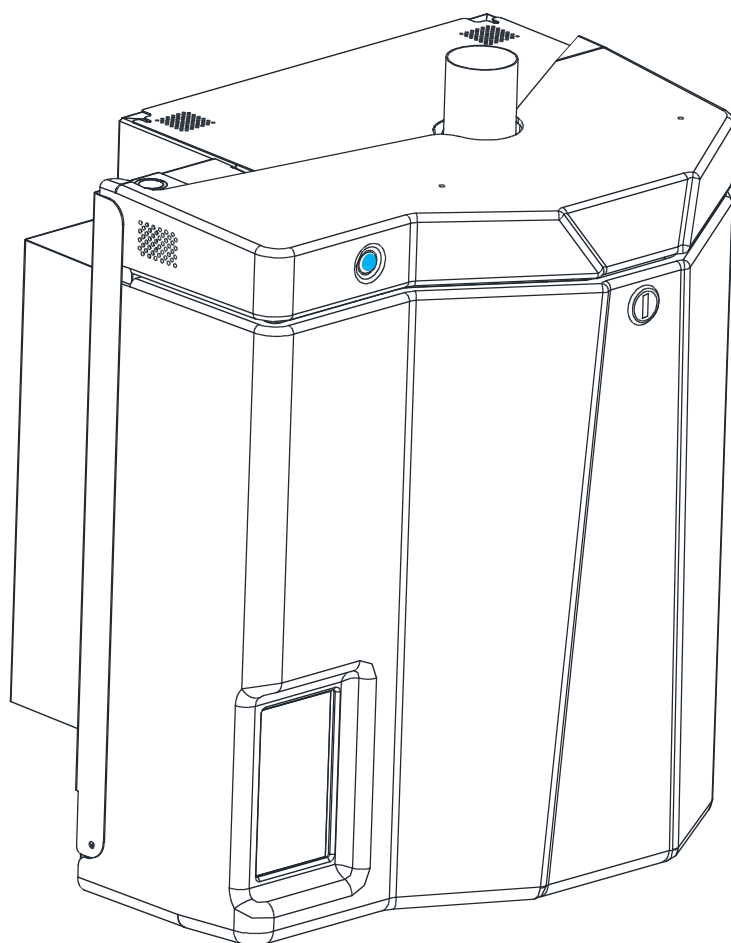




IER

ELECTRIC RESISTIVE STEAM HUMIDIFIER



Installation and Operation Manual

Please read and save this manual

©steamOvap technologies inc, 1490 Mazurette, Montreal, Qc, H4N 1H2, Canada
Tel.: 1-844-357-4477 • www.steamOvap.com

Rev.: 210601

Introduction

Foreword

Thank you for purchasing IER steamOvap electric steam Humidifier.

If you have questions or comments please contact us:

www.steamOvap.com

info@steamOvap.com

1-844-357-4477

Intended use

IER electric steam humidifier is intended exclusively to produce steam 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 **IER** electric steam humidifier is empty from water, if not proceed same way as for a standard drain for service.

Disconnect **IER** electric steam humidifier from power supply, electrical control signal, water main supply, Steam line, and drain. **IER** electric steam humidifier can then be removed from the wall or stand.

IER electric steam 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.

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Other Manuals and information that can help you:

- Modbus tables for IER
- BACnet PICS for IER
- IER service manual

Please visit our website: steamOvap.com for the latest revision of all manuals & instructions

You can also visit our Youtube® channel: [youtube/steamovap](https://www.youtube.com/channel/UC...) and watch our 2 minutes IER service/cleaning video.

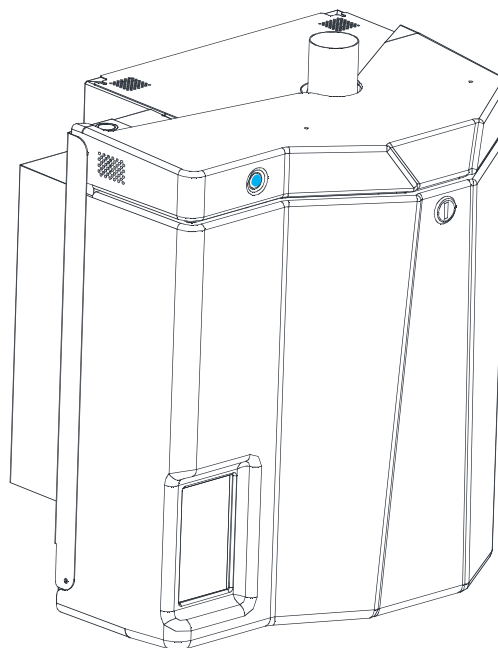


Figure 1, IER one module

Information contained in this manual is subject to change without notice.
To obtain the latest technical information visit our website at steamOvap.com

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 connection 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 connection as well as steam lines and condensate returns lines 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.



Risk of malfunction. Steam lines should not have any restriction or blockage that may cause a burst of pressure in the steam line.

Others



Risk of flooding. In order to avoid any risk of flooding **steamOvap** recommends a Hi limit humidity switch installed in the air duct downstream of the steam distribution ramp.

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 steam outlet(s).

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 IER electric steam humidifier

1. IER electric steam humidifier
2. Water supply hose
3. Collar(s) to secure steam hose on steam outlet of IER
4. 3in [80mm] long drain connection sleeve 1-1/4in [DN32] Diam.
5. This IOM

Depending on other accessories ordered

6. Steam ramp(s)
7. Steam hose
8. Condensate hose
9. RH% sensors for duct or room, or Humidistat
10. HI Limit RH% switch, model DHL
11. Air flow switch, model DAP

IER name plate


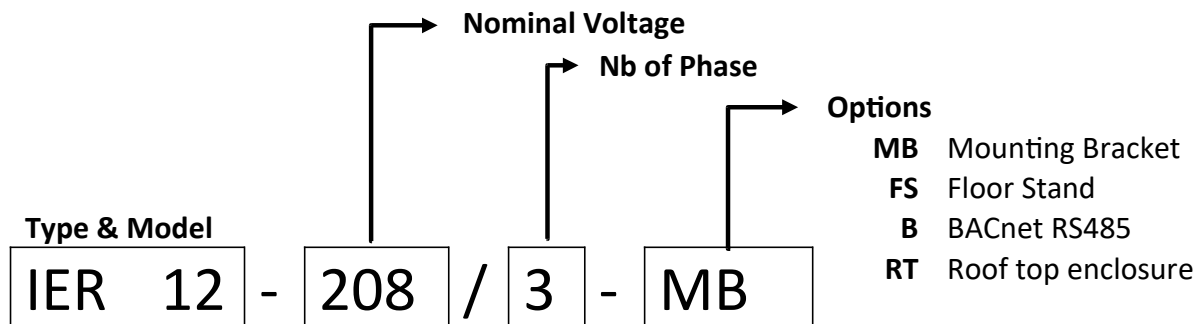
steamOvap technologies inc.			
Electric resistive steam humidifier			
MODEL	IER12-208/3		
S/N	YY-DDDXXX		
POWER	11.7kW	VOLTAGE	208Vac
CURRENT	32.4A	NB OF PHASE	3ph
		FREQUENCY	50/60Hz
		www.steamOvap.com	

Figure 2, IER name plate

IER Overview

Model designation and options codification



IER electrical rating

Model	Steam Capacity	Power (kW) / Current (A)					
		120Vac/1p	240Vac/1p		-	-	-
IER-02	6.3lb/h [2.8kg/h]	2.1kW 17.5A	2.1kW 8.75A		-	-	-
Model	Steam Capacity	208Vac/1p	240Vac/1p	208Vac/3p	380Vac/3p	480Vac/3p	600Vac/3p
IER-04	10lb/h [4.5kg/h]	3.3kW 16.0A	3.3kW 13.9A	3.3kW 9.3A	3.3kW 4.8A	3.3kW 4.0A	3.3kW 3.2A
IER-05	15lb/h [6.8kg/h]	5.0kW 24.0A	5.0kW 20.8A	5.0kW 13.9A	5.0kW 7.2A	5.0kW 6.0A	5.0kW 4.8A
IER-09	24lb/h [11.4kg/h]	8.3kW 39.9A	8.3kW 34.6A	8.3kW 23.0A	8.3kW 12.0A	8.3kW 10.0A	8.3kW 8.0A
IER-12	35lb/h [15.9kg/h]	-	11.5kW 47.9A	11.7kW 32.4A	11.7kW 16.8A	11.7kW 14.0A	11.7kW 11.2A
IER-17	50lb/h [22.7kg/h]	-	-	16.7kW 46.3A	16.7kW 24.1A	16.7kW 20.0A	16.7kW 16.0A
IER-22	65lb/h [29.5kg/h]	-	-	-	21.7kW 31.3A	21.7kW 26.1A	21.7kW 20.8A
IER-24	70lb/h [31.8kg/h]	-	-	23.4kW 64.8A	-	-	-
IER-31	93lb/h [42.3kg/h]	-	-	-	31.0kW 44.7A	31.0kW 37.3A	31.0kW 29.8A
IER-34	100lb/h [45.4kg/h]	-	-	33.4kW 92.6A	-	-	-
IER-44	130lb/h [59.1kg/h]	-	-	-	43.3kW 62.5A	43.3kW 52.1A	43.3kW 41.7A
IER-62	185lb/h [84.1kg/h]	-	-	-	61.7kW 89.1A	61.7kW 74.2A	61.7kW 59.3A

IER Dimensions & weight

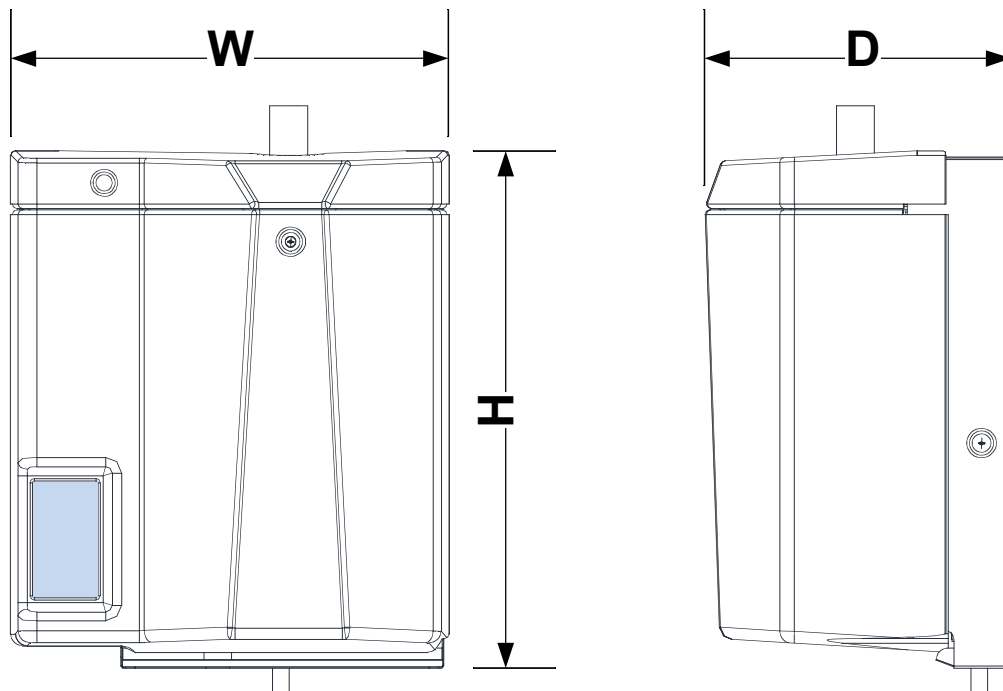


Figure 3, IER Dimensions, single module

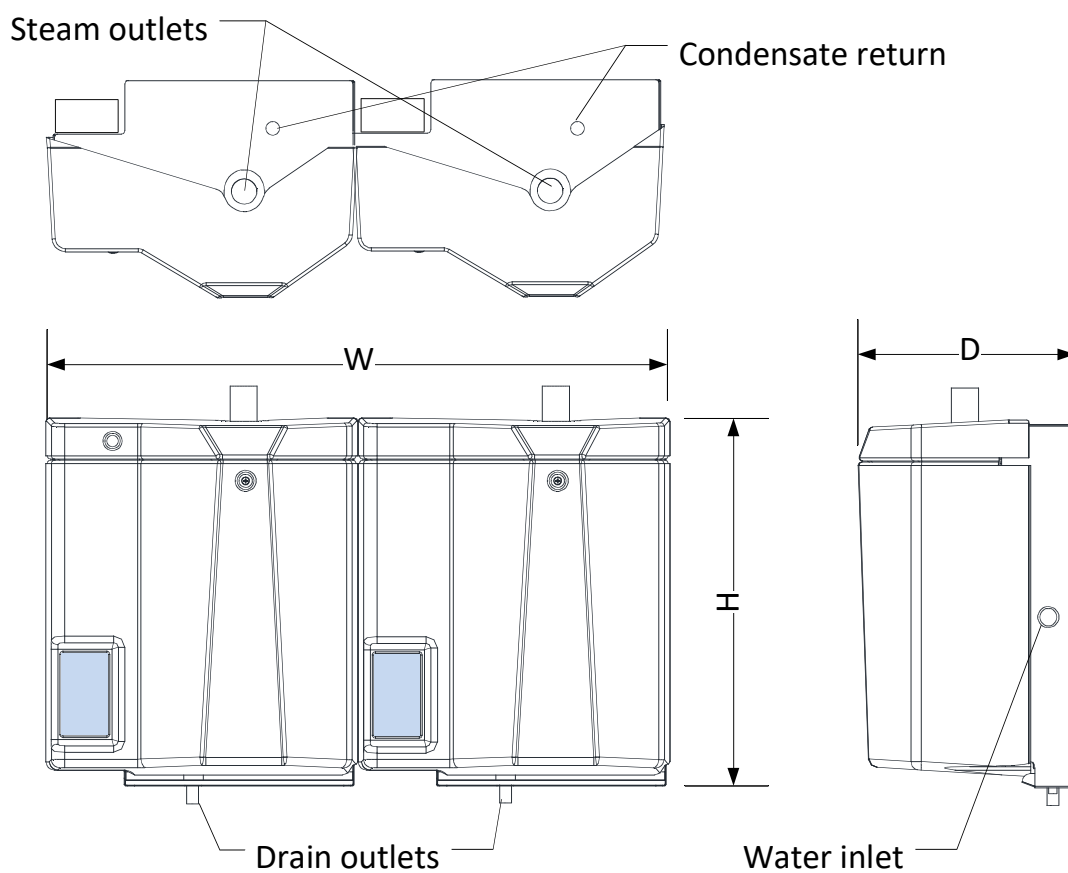


Figure 4, IER Dimensions, two modules, model IER24, 34, 44 & 62

OVERVIEW

Model	Steam Capacity	Nb Cyl + size	Nb Steam Outlet + Ø	Dimensions			Net weight
				W	H	D	
IER02	6.3lb/h [2.8kg/h]	1x small	1x 1-1/2in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]	45lb [21kg]
IER04	10lb/h [4.5kg/h]	1x small	1x 1-1/2in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]	45lb [21kg]
IER05	15lb/h [6.8kg/h]	1x small	1x 1-1/2in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]	45lb [21kg]
IER09	24lb/h [11.4kg/h]	1x small	1x 1-1/2in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]	45lb [21kg]
IER12	35lb/h [15.9kg/h]	1x medium	1x 2in [DN50]	23in [585mm]	27in [686mm]	17in [432mm]	68lb [31kg]
IER17	50lb/h [22.7kg/h]	1x medium	1x 2in [DN50]	23in [585mm]	27in [686mm]	17in [432mm]	68lb [31kg]
IER22	65lb/h [29.5kg/h]	1x medium	1x 2in [DN50]	23in [585mm]	27in [686mm]	17in [432mm]	68lb [31kg]
IER24	70lb/h [31.8kg/h]	2x medium	2x 2in [DN50]	42in [1067mm]	27in [686mm]	17in [432mm]	136lb [62kg]
IER31	93lb/h [42.3kg/h]	1x medium	1x 2 1/2in [DN65]	23in [585mm]	27in [686mm]	17in [432mm]	68lb [31kg]
IER34	100lb/h [45.4kg/h]	2x medium	2x 2in [DN50]	42in [1067mm]	27in [686mm]	17in [432mm]	136lb [62kg]
IER44	130lb/h [59.1kg/h]	2x medium	2x 2in [DN50]	42in [1067mm]	27in [686mm]	17in [432mm]	136lb [62kg]
IER62	185lb/h [84.1kg/h]	2x medium	2x 2-1/2in [DN65]	42in [1067mm]	27in [686mm]	17in [432mm]	136lb [62kg]

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.

Typical installation with steam ramp

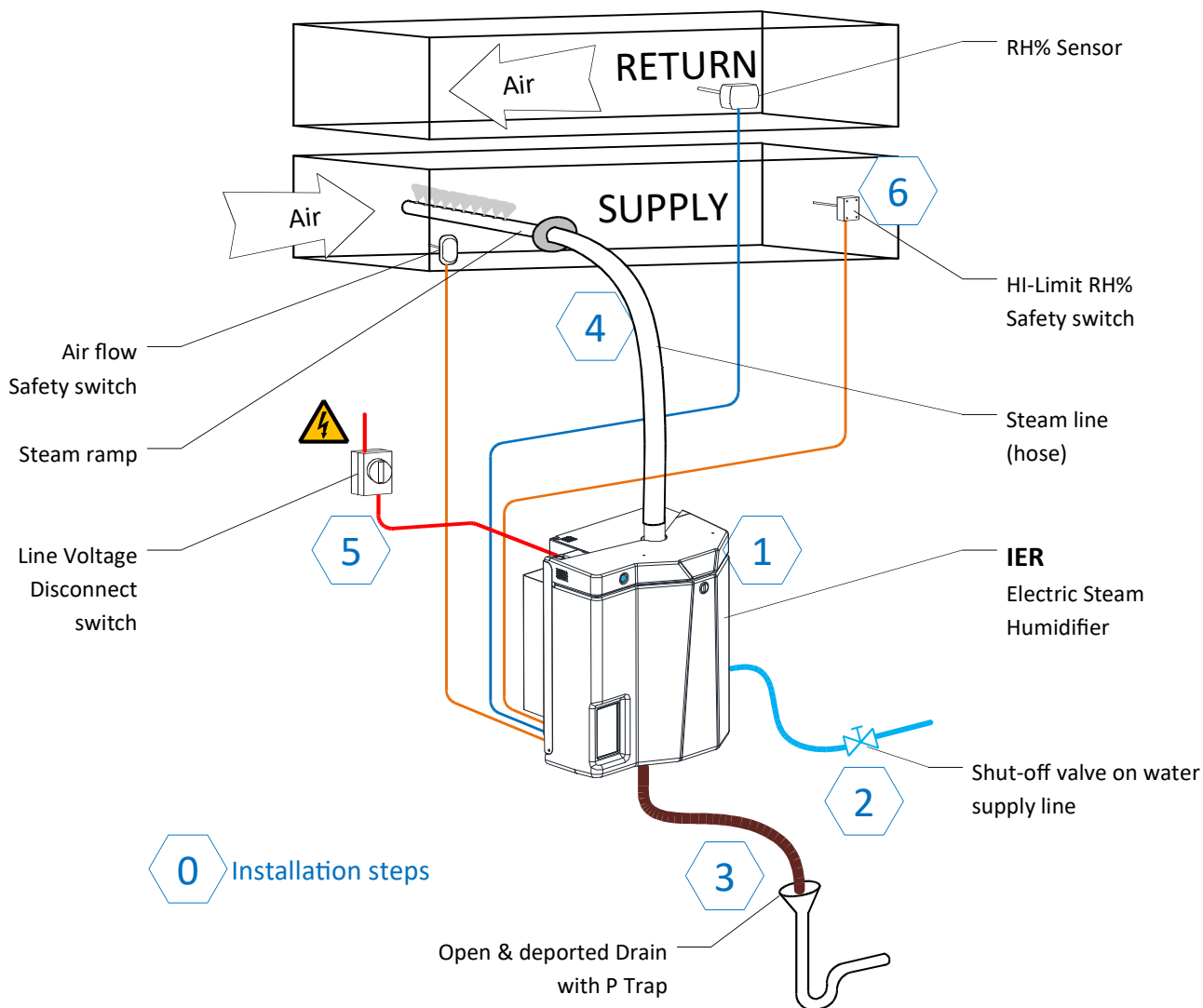


Figure 5, installation overview with steam distribution in duct

Installation steps :

1. Positioning & mounting of IER electric steam humidifier
2. Water supply installation
3. Drain installation
4. Steam line installation for duct humidification or Direct humidification in room
5. Power supply installation
6. Safety & RH% control installation

Typical installation with SB- space blower

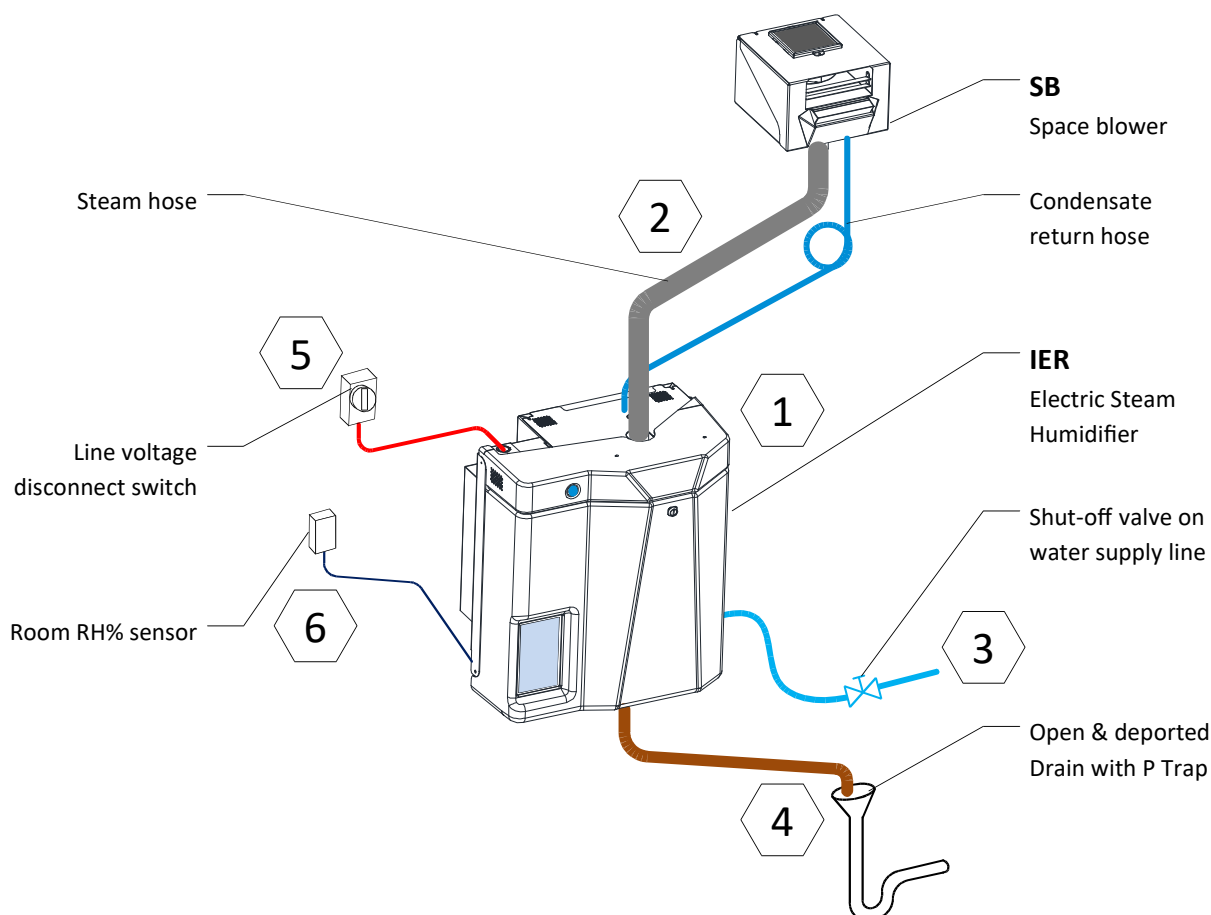


Figure 6, IER with remote Space blower typical installation

Typical installation steps :

1. Positioning & mounting of IER electric steam humidifier
Space blower installation (only if remote)
2. Steam & condensate return hose or piping
3. Water supply installation
4. Drain installation
5. Power supply installation
6. RH% control installation

Installation – step 1

IER Positioning & Mounting

General guidelines for positioning

IER electric steam humidifier should be positioned so that:

- Length of the steam line (or hose) is as short as possible,
- In case steam hose is used, the bend radius of 12in (300mm) is ensured
- Humidifier is easily accessible for service



CAUTION. Risk of malfunction due to vibration. Do Not mount IER electric steam humidifier directly on ventilation duct.

CAUTION. Risk of flooding. Ensure that the local where IER electric steam humidifier 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.

IER steam humidifier should be installed in a well-ventilated and dry environment.

If local is subject to below freezing point temperature, activation of ant freezing function of the IER steam humidifier is required.

For outdoor installation please contact your **steamOvap** representative to order and install special **RT** outdoor enclosure for IER.

IER maximum ambient conditions:

Temperature: 41°F to 113°F [+5 to +45°C]

Relative Humidity: 90%RH max (non condensing)

Ingress Protection for IER standard enclosure: IP30

Clearances

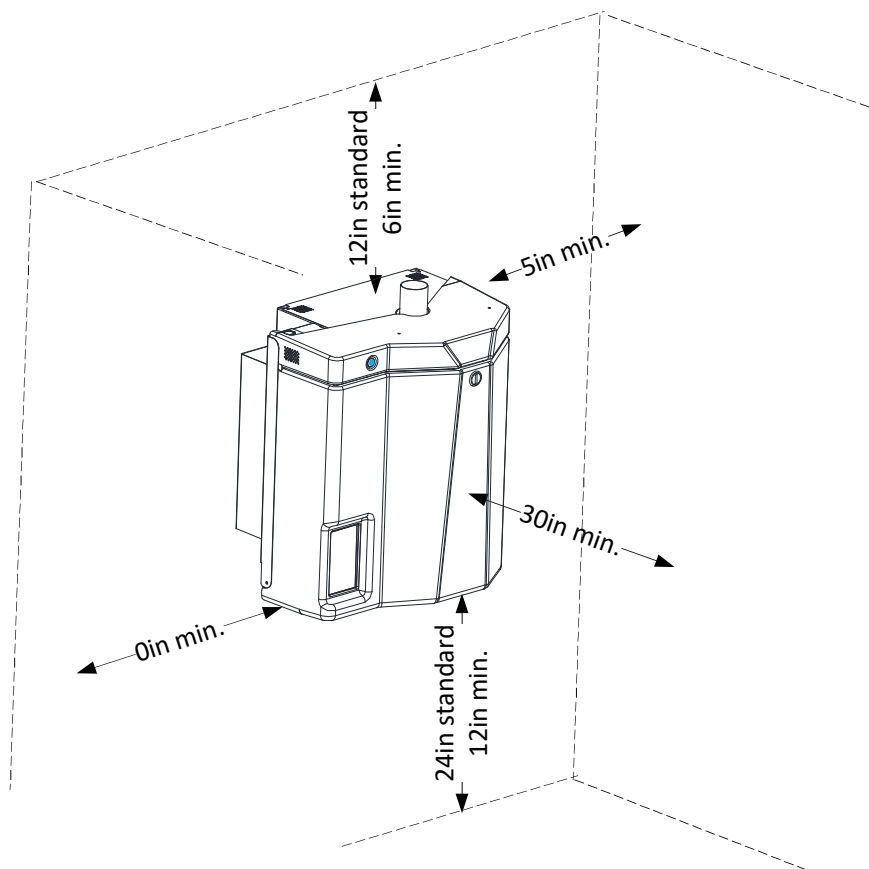


Figure 7, minimum clearances

Clearance guidelines

There is no minimum clearance on both side of the **IER** humidifier, however it is a good practice to allow a clearance of 4 to 8 in [100 to 200mm] for ease of installation and service

Allow a minimum clearance of 24in [610mm] with floor to allow for proper drain slope and drain pipe column.

Front clearance of 30in [762mm] is required for access to the **IER** humidifier.

Top clearance is required of 12in [304mm] for access and ease of steam line connection.

Clearances for IER with space blower

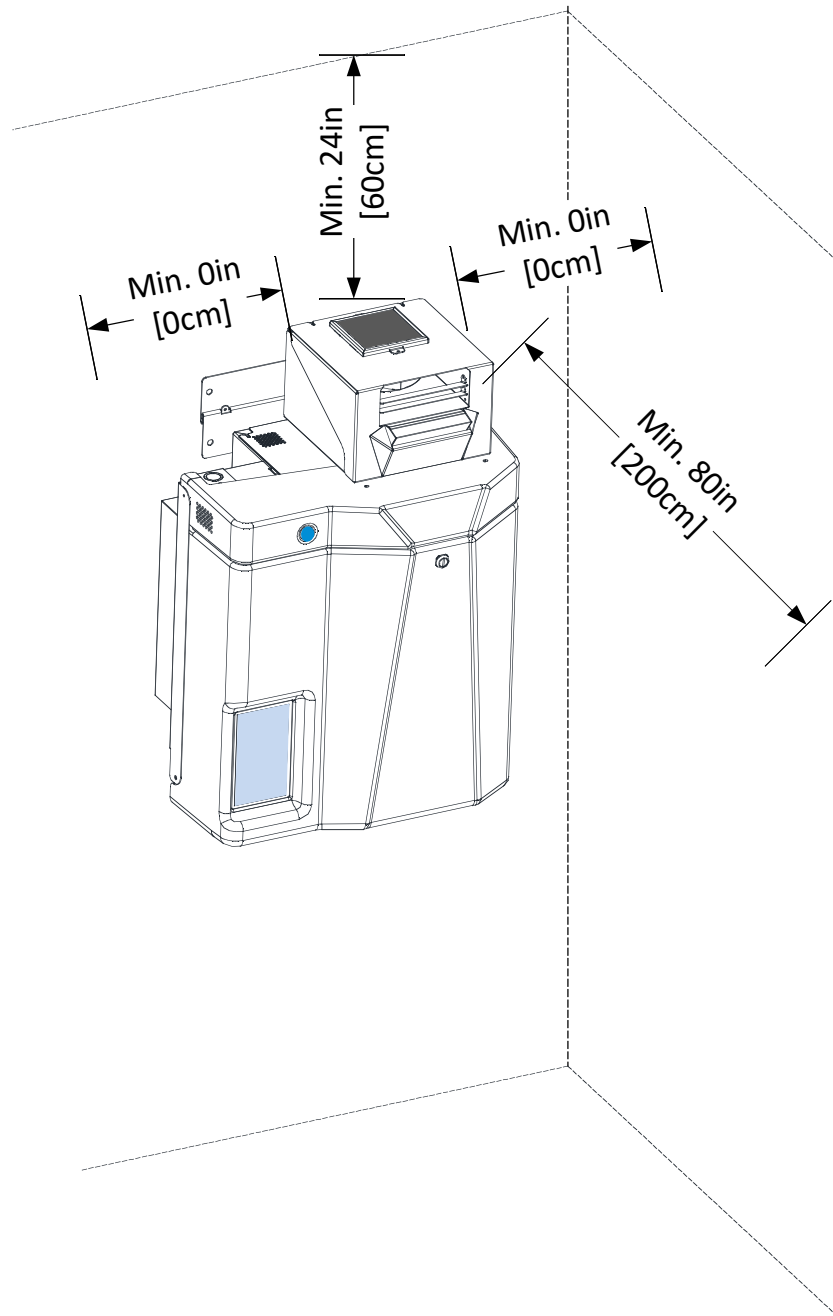


Figure 8, minimum clearances for SB

Clearance guidelines

There is no minimum clearance on both side of the SB- space blower, but it is a good practice to have a clearance of 4 to 8 in [100 to 200mm] for ease of installation and service.

Front clearance of 80in [2000mm] is required for steam absorption.

A 24in [600mm] top clearance above SB – space blower is required for access and for steam absorption to avoid any condensing on the ceiling.

Mounting holes positions & weights

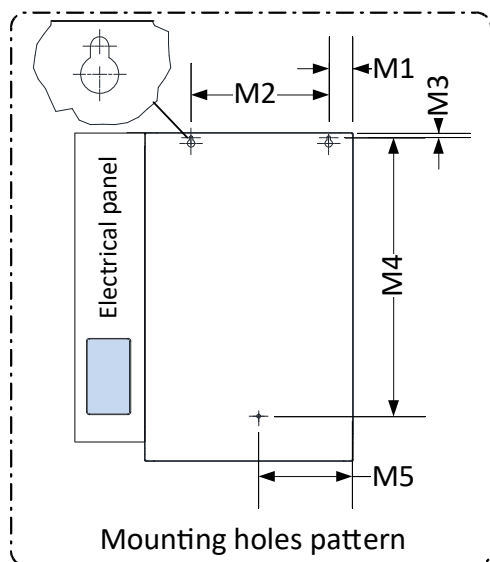


Figure 9, mounting holes single module
(IER 04 to 31)

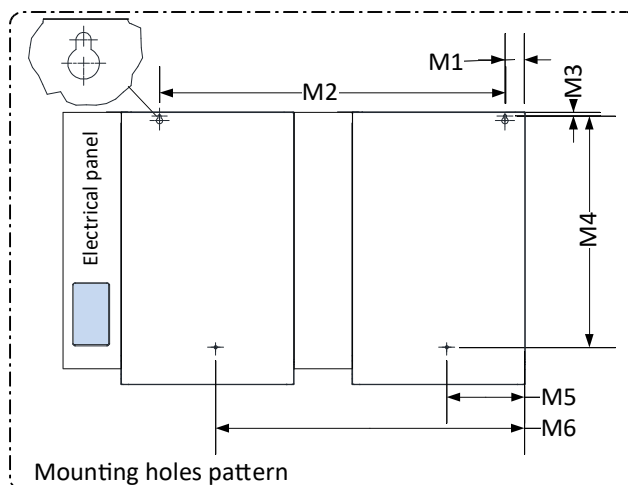


Figure 10, mounting holes double module
(IER24, 34, 44 & 62)

Model	Mounting holes positions (in) [mm]					
	M1	M2	M3	M4	M5	M6
IER02 to 09	2 [51]	8 [203]	½ [13]	19.25 [489]	6 [152]	-
IER12 to 31	2 [51]	11.25 [286]	½ [13]	23.5 [597]	7.8 [197]	-
IER24, 34, 44 & 62	2 [51]	34.3 [871]	½ [13]	23.5 [597]	7.8 [197]	30.7 [782]

Weight

Model	Nb Cyl + size	Net Weight	Oper. Weight
IER02	1x small	45lb [21kg]	74lb [34kg]
IER04	1x small		
IER05	1x small		
IER09	1x small		
IER12	1x medium	68lb [31kg]	118lb [54kg]
IER17	1x medium		
IER22	1x medium		
IER31	1x medium		
IER24	2x medium	136lb [62kg]	236lb [107kg]
IER34	2x medium		
IER44	2x medium		
IER62	2x medium		

General guidelines for Mounting



CAUTION. Risk of malfunction. IER electric steam humidifier must be levelled in X & Z axis.

Installation on wall (without mounting bracket)

1. Verify that wall structure and strength is appropriate to support the operating weight of the IER electric steam humidifier.
In case, the wall is not solid enough to support operating weight of **IER** electric steam humidifier, install humidifier on the floor stand (**FS** option is available to your steamOvap representative).
2. Mark the wall or support according to the above holes location, and drill 4 holes to the wall or support as per the size of anchors and/or screws.
3. Use anchors of sufficient size (at least 1/4in [6mm]). Insert those anchors and the 2 top screws, ensure that the screw heads extends 1/4in [6mm] from the wall, so that the **IER** electric steam humidifier will be able to be hung on those 2 screws.
4. With front cover removed, hung the **IER** electric steam humidifier onto the 2 top screws. Insert the bottom screw through the back plate of the humidifier and into the anchors in the wall.
Ensure that the humidifier is properly levelled.
Tighten the 3 screws. Re verify the level in the 2 direction X and Z axis.
5. Re-install the front cover to the humidifier.
6. Optional Mounting bracket (option **MB**) is available to your steamOvap representative in order to ease up wall mounting process.

Installation on wall (with mounting bracket – option MB)

1. Optional Mounting bracket (option **MB**) is available to your steamOvap representative in order to ease up wall mounting process.
2. Verify that wall structure and strength is appropriate to support the operating weight of the IER electric steam humidifier.
In case, the wall is not solid enough to support operating weight of **IER** electric steam humidifier, install it on a floor stand (**FS** option is available to your steamOvap representative).
3. Mark the wall or support according to the mounting bracket holes location, Drill holes to the wall or support to attach the bracket to the wall as per the size of anchors and/or screws.

Distance between the 2 holes in mounting bracket is 15in [381mm]

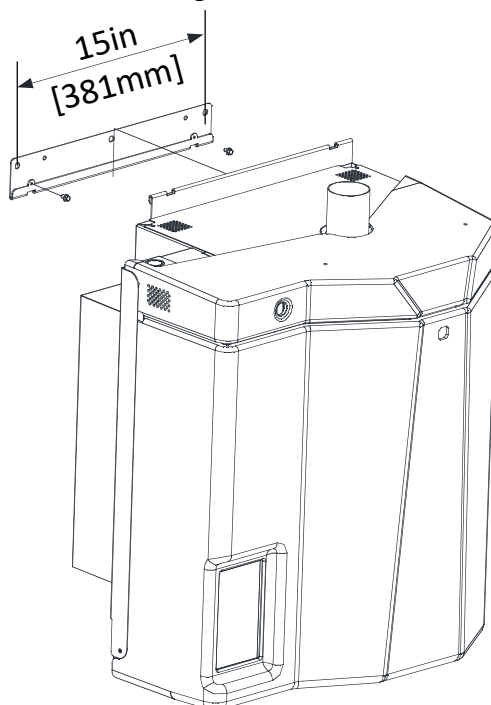


Figure 11, Installation with Mounting bracket

4. Use anchors of sufficient size (at least 1/4in [6mm]). Install the mounting bracket to the wall or support.
Ensure that the mounting bracket is properly levelled.
5. With front cover removed, hung the IER electric steam humidifier onto the mounting bracket.
6. Install the 2 supplied screws to avoid the IER humidifier to move up from the mounting bracket.
7. Re-install the front cover to the humidifier.

Installation on Floor Stand (option FS)

1. Ensure that the floor structure and strength is appropriate to support the operating weight of the **IER** electric steam humidifier.
2. Attach the floor stand to the floor or structure to avoid any movement of the **IER** electric steam humidifier.
You can use bolt or screws to attach this one to surrounding structure or to the floor.
3. Install Humidifier (with front cover removed) on the floor stand and secure it with supplied bolts.
4. Re-install the front cover to the humidifier.

Installation – step 2

Water supply installation

Water supply specification & quality:

Water supply pressure: 15 to 80PSI [1 to 5bar]

Water supply temperature: 37 to 105°F [3 to 40°C]

IER electric steam humidifier can accept a wide range of water quality.

Untreated water will lead to scale deposits that will need to be regularly removed from steam chamber.

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.

Water supply conductivity: 1 to 1500µS/cm

Water supply hardness: 0 to 16grains/gallon [0 to 15°gH][268mg CaCO₃/l]

Water supply PH: 6.5 to 7.5

Water supply chloride content: 0 to 50ppm

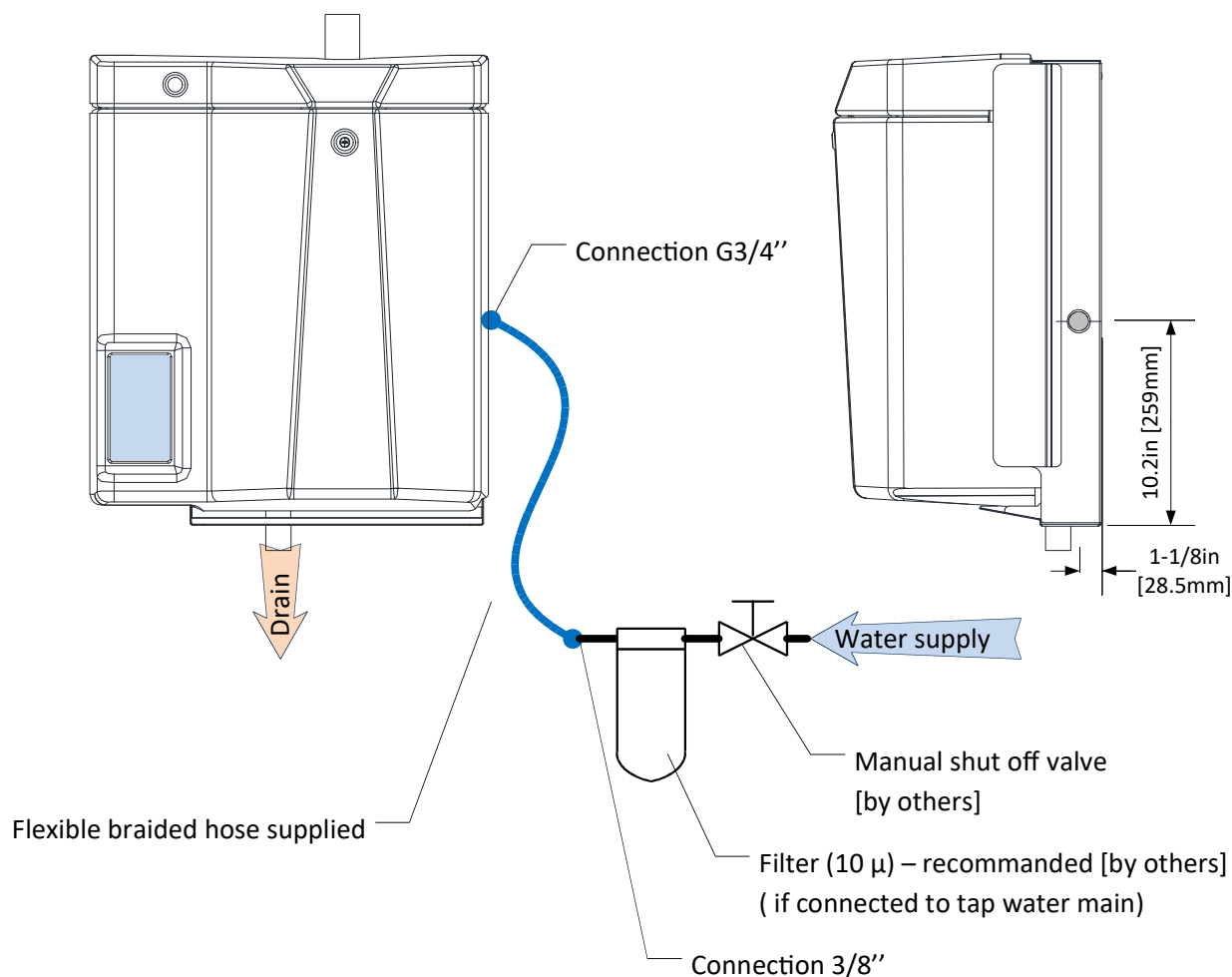


Figure 12, water supply connection

INSTALLATION

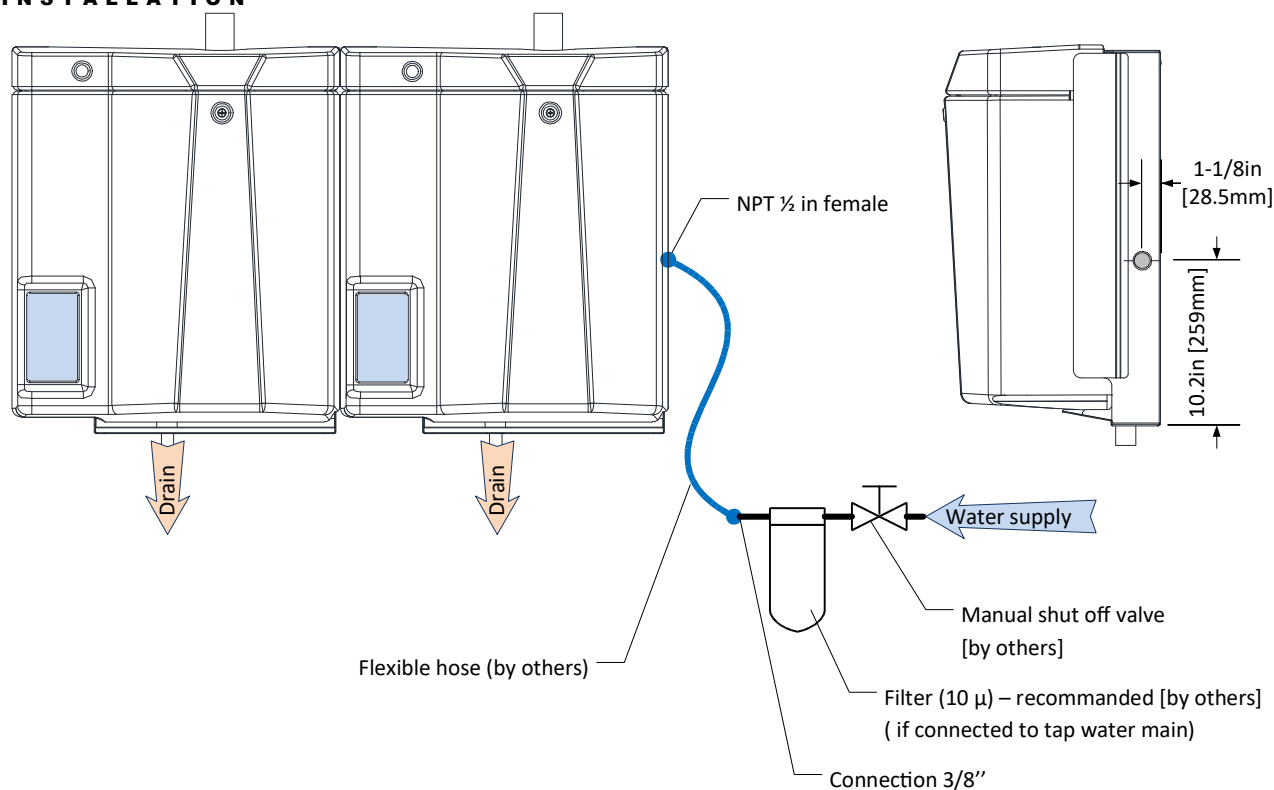


Figure 13, water supply connection, model IER24, 34, 44 & 62

Water supply connection:

1. Install a manual shut off valve (supplied by others) on the water main line.
2. If IER humidifier is supplied with tap water it is recommended to install a 10 μ sediment filter (supplied by others) on the line.
Alternatively **steamOvap** can provide a 2 stages pre-filter 5 + 1 μ PP filter as extra protection and filtration (model WF-51).
3. A flexible braided hose is supplied for an easy and secure connection to the humidifier water supply inlet.
This flexible braided hose will ease of the installation and act as shock absorber and protection for the internal water fill valve.

Installation – step 3

Drain installation

Water drained specification:

Drained water maximum temperature: 140°F [60°C] (when supplied with cold water supply)

Drained water flow rate: 6.6 GPM [25 l/min]

Drain outlet dimension: **IER04 to IER31:** (1x)1-1/4in [32mm]

IER24, IER34, IER44 & IER62: (2x)1-1/4in [32mm]

Drain volume for full cylinder drain: **IER04 to 09:** 5.5Gal [21L]

IER12, IER17, IER22, IER31: 12Gal [46L]

IER24, 34, 44 & 62: 24Gal [86.5L]

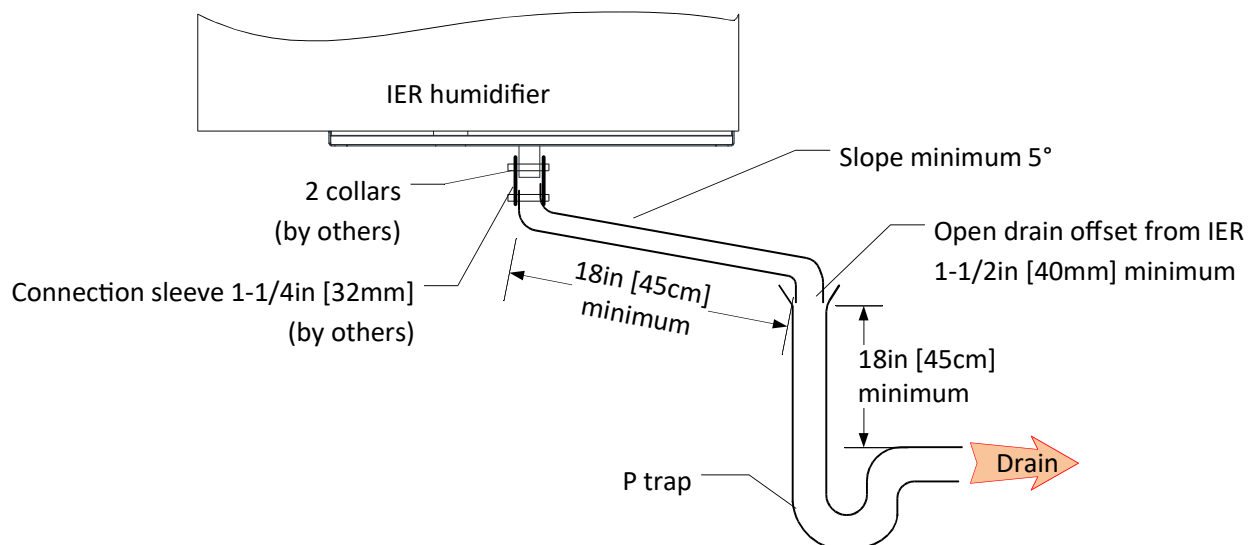


Figure 14, water drain connection (single module)

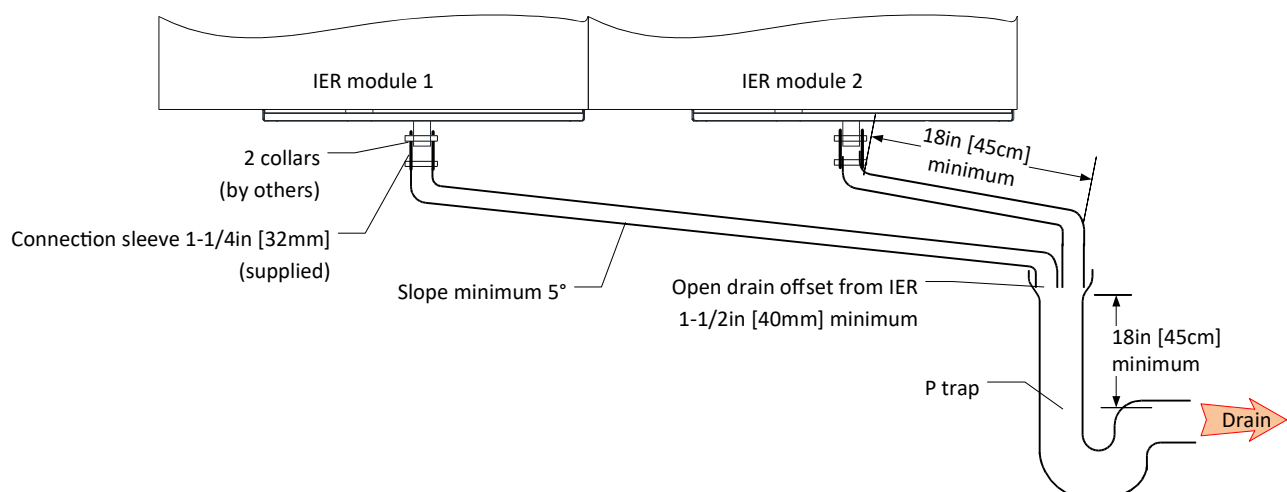


Figure 15, water drain connection, 2 modules, model IER24, 34, 44 & 62



Risk of overflow.

- ✓ A minimum slope angle of **5 degree of the drain hose or pipe and a minimum length of 24in [60cm]** must be provided between IER's module drain outlet and building's open drain inlet.
- ✓ Do not reduce diameter of the drain line. Drain line between IER's module drain outlet and building's open drain inlet must be **1-1/4in [DN32] diameter minimum**
- ✓ **18in [45cm] minimum vertical run** before P trap or obstruction must be provided.
- ✓ Do not install P-trap directly (or any other obstruction) at the IER's drain outlet.

Installation steps :

Important note: There is one drain outlet per IER module.

So there are 2 drain outlets for models IER24, IER34, IER44 and IER62.

1. Ensure that an Open drain with a P-trap is installed offset from the IER humidifier.

Main building drain diameter should be

- 1-1/2in [DN40] for single module IER
- 2in [DN50] for two modules IER (model IER24, IER34, IER44 or IER62)

in case such drain diameter is not available (i.e. in old building), increase the diameter or height of vertical run before to enter the main building drain.

Refer to information of full cylinder volume above for volume calculation.

2. Drain line can be made either with flexible hose or hard pipe.

Supplied connection sleeve 1-1/4 [32mm] allow for ease of connection to IER's module drain outlet to the drain pipe, and secure it with the supplied 2 collars.

- ✓ Drain line must be slopped - 5° minimum slope from IER module to building's open drain inlet.
- ✓ Do not reduce 1-1/4in [DN32] diameter at any point of the drain line
- ✓ Avoid short 90° elbow
- ✓ a minimum 18in [45cm] vertical run pipe must be provided upstream any P-trap or any other obstruction.

Installation – step 4

Steam distribution installation

SR models for horizontal in duct humidification

SRS(X)(E) - steam ramp with slope

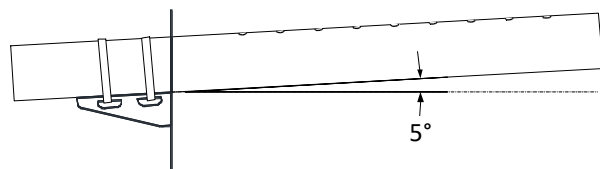


Figure 16, SRS(X)(E)

Main feature:

Easiest to install.

Not recommended when large quantity of condensate is produced (in case of long steam line run or large duct with low air temperature).

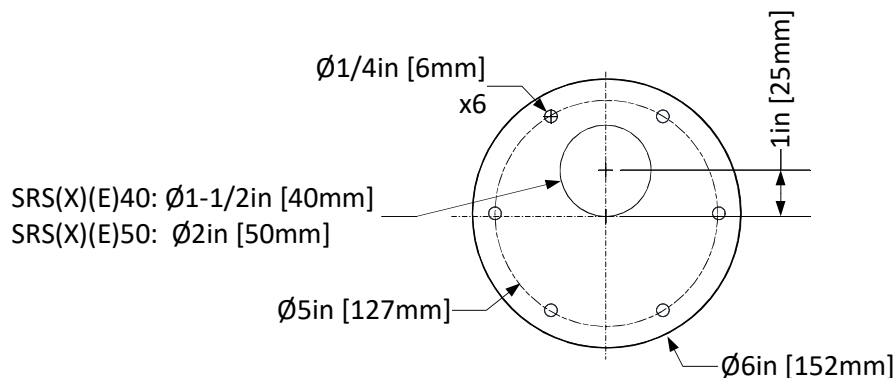


Figure 17, SRS (X) (E) cover plate dimension

SRC(X)(E) - steam ramp with condensate return

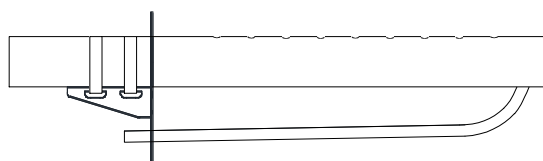


Figure 18, SRC

Main feature:

Avoid any possible trouble due to condensate flow against the steam flow inside steam pipe or hose.

A condensate line must be installed and connected to drain or returned to humidifier

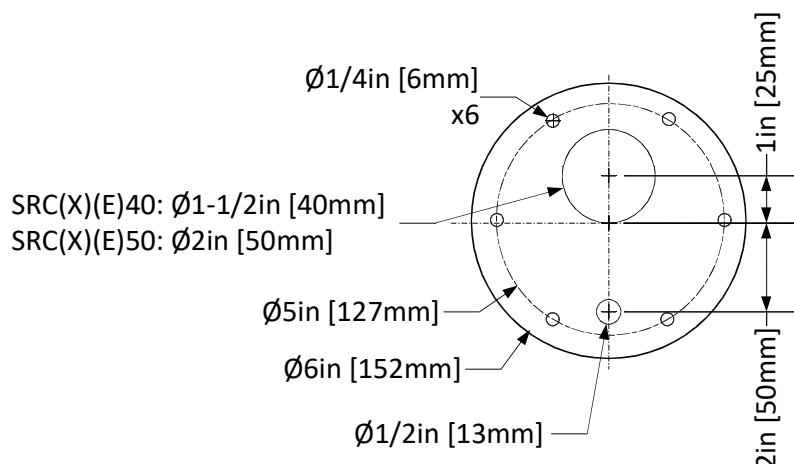


Figure 19 – SRC (X) (E) cover plate dimension

Option E – High efficiency

Option E denotes steam ramp with thermal insulation. It is available on any steam ramp model, SR or SO.

Insulation material is rated ASTM E84 (equivalent to UL723), safe for direct contact with flame and 500°F [260°C] continuous operating temperature.

SRS or SRC

One row of nozzle

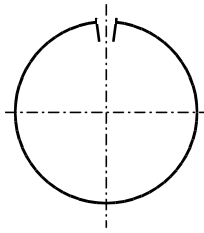


Figure 20, SRS or SRC

SRSX or SRCX

Two rows of nozzles

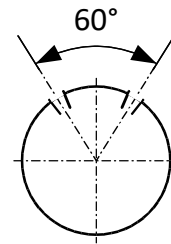


Figure 21, SRSX or SRCX

SR models for Vertical duct - Option -V

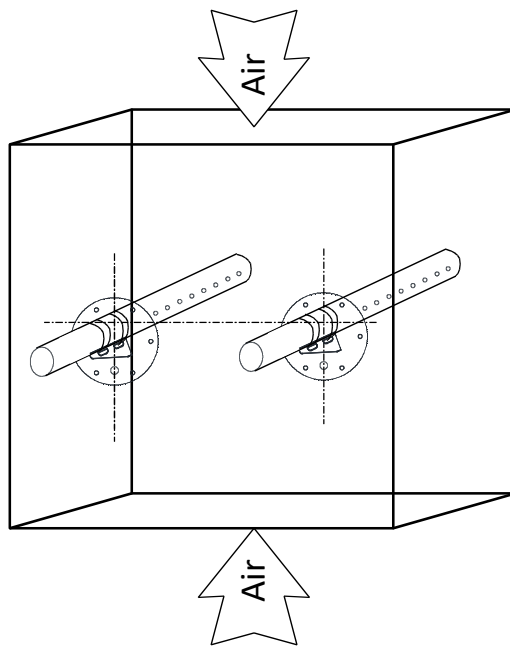


Figure 22, SRS -V on vertical air flow duct

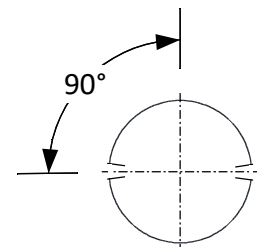


Figure 23, SRS or C-V section

SR models for round duct - Option -R

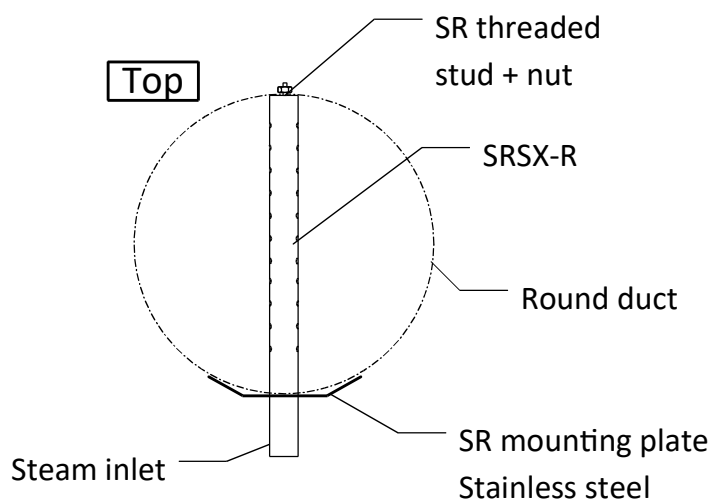


Figure 24, SRS -R on round duct

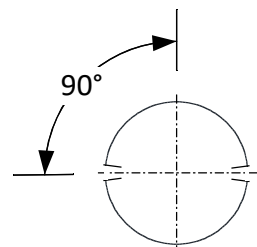


Figure 25, SRSX-R section

Minimum distances for SRS & SRSX

Horizontal duct

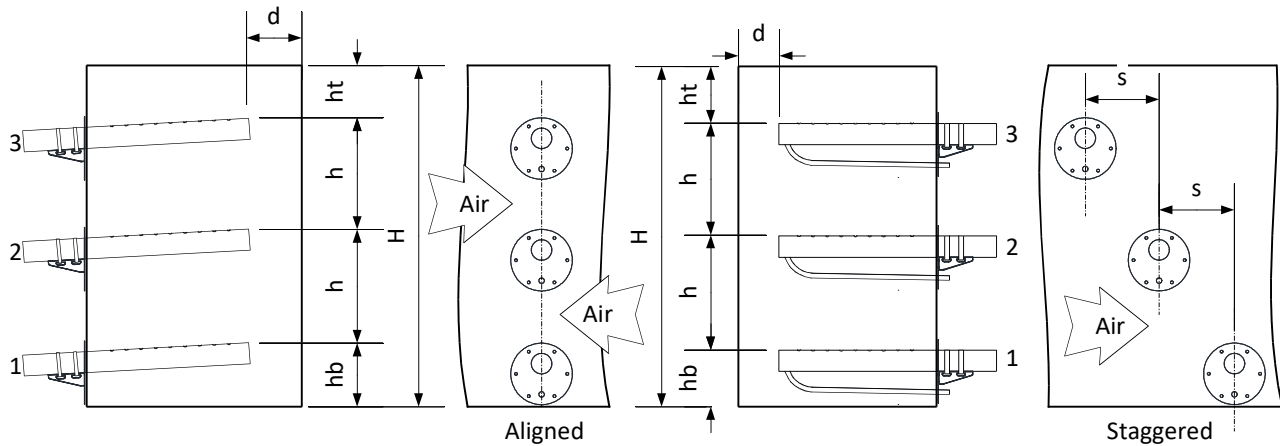


Figure 26, minimum distance SR in horizontal duct

Here are some guidelines to avoid condensing on the duct surface or on SR steam ramps

- **ht(min)**
For **SRS** : Minimum height distance between end of top ramp (#3) and top of the duct.
 $ht(\min) = 4.5\text{in} [115\text{mm}]$
For **SRC**: Minimum height distance between end of top ramp (#3) and top of the duct.
 $ht(\min) = 5\text{in} [115\text{mm}]$
- **d(min)** Minimum depth distance between top ramp and side wall of the duct.
 $d(\min) = ht(\min) = 4.5\text{in} [115\text{mm}]$
- **hb(min)** Minimum height with bottom of duct
There is no minimum height distance required for the bottom ramp (#1) and the bottom of the duct. However we recommend a minimum: $hb(\min)=4\text{in} [100\text{mm}]$
- **h(min)** Height in between ramps (h) should be equal / even.
 $h=H-(ht+hb)/(\text{nb of ramps}-1),$

If ramps are aligned

$h(\min) = 8\text{in} [200\text{mm}]$

Air flow can be in any direction

If ramps are staggered

$h(\min) = 4.5\text{in} [115\text{mm}]$

Important: the air flow direction should be as indicated on above drawing.

s(min) minimum distance between ramps

$s(\min) = 4\text{in} [100\text{mm}]$

Vertical duct

Same logic of spacing should be applied when **SR** steam ramps are installed in a vertical duct

"d" in vertical duct is equivalent to "ht" or "hb" in horizontal duct

"s" in vertical duct is equivalent to "h" in horizontal duct configuration

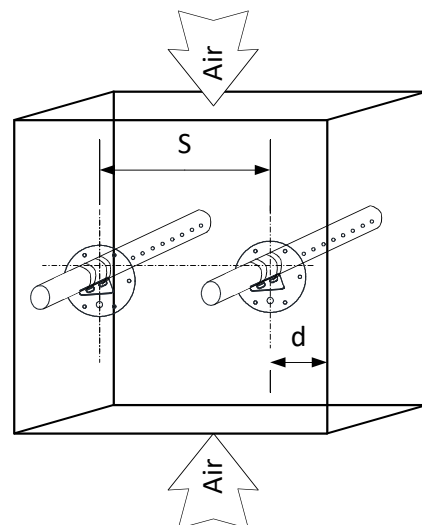


Figure 27, minimum distance in vertical duct

SOS or SOE – steamOsorb, multi-ramp steam grid

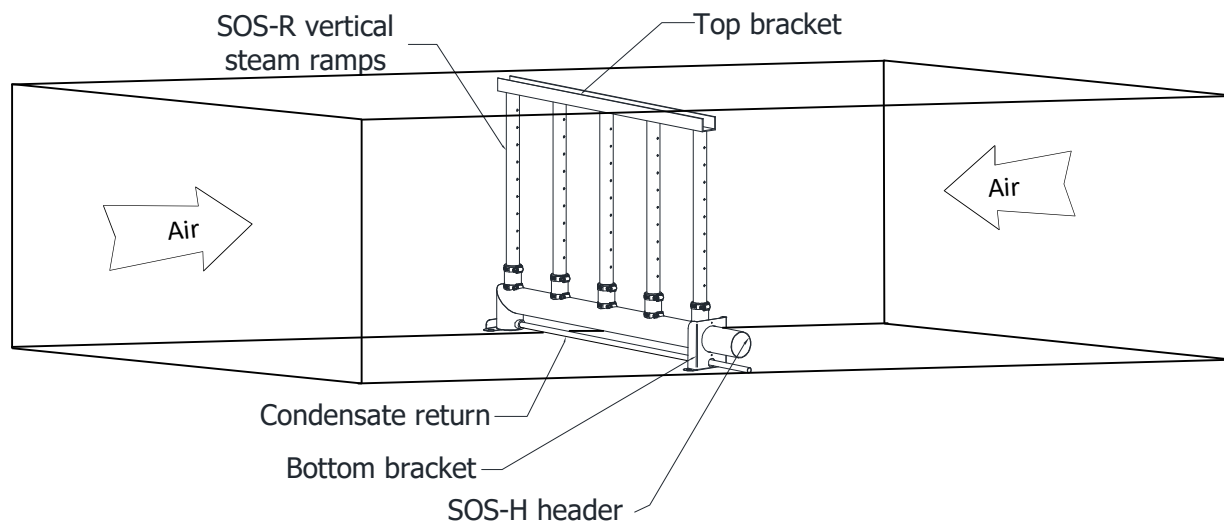


Figure 28, steamOsorb (SOS or SOE) multiramp installation

Main features:

Made to measure to fit inside ventilation duct; header diameter will adapt to maximum capacity; quantity of vertical ramps and quantity of nozzle will depend on max capacity and non wetting distance.

SO with option FF or FI

Frame with flanges or Frame for insertion

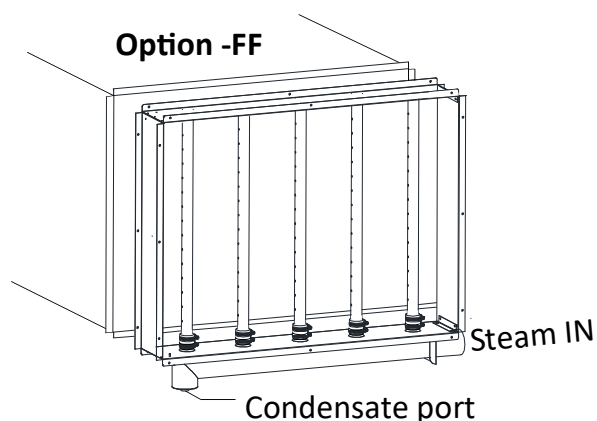


Figure 29, Option -FF Frame with flanges

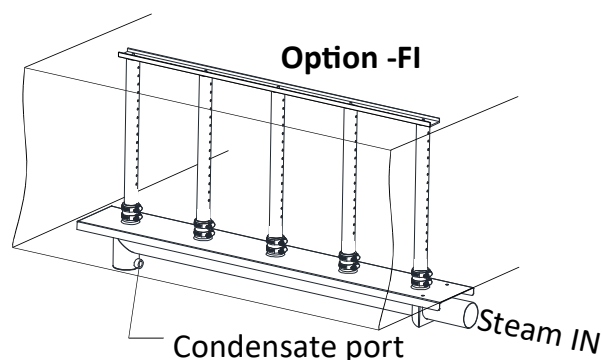


Figure 30, Option -FI Frame for Insertion

SO for Vertical duct

Option -V

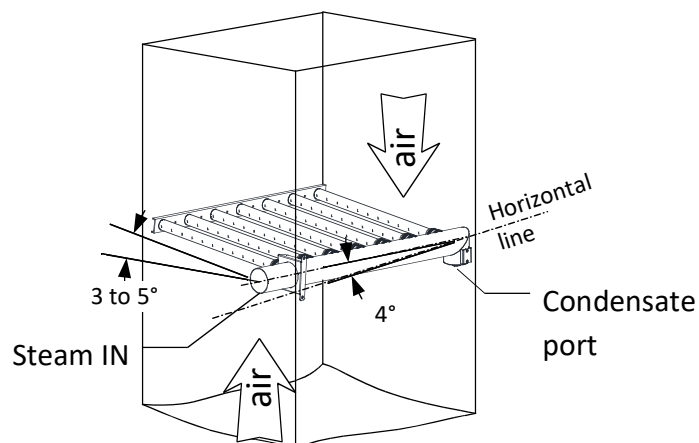


Figure 31, steamOsorb (SOS or SOE) for vertical air flow duct

Steam line installation

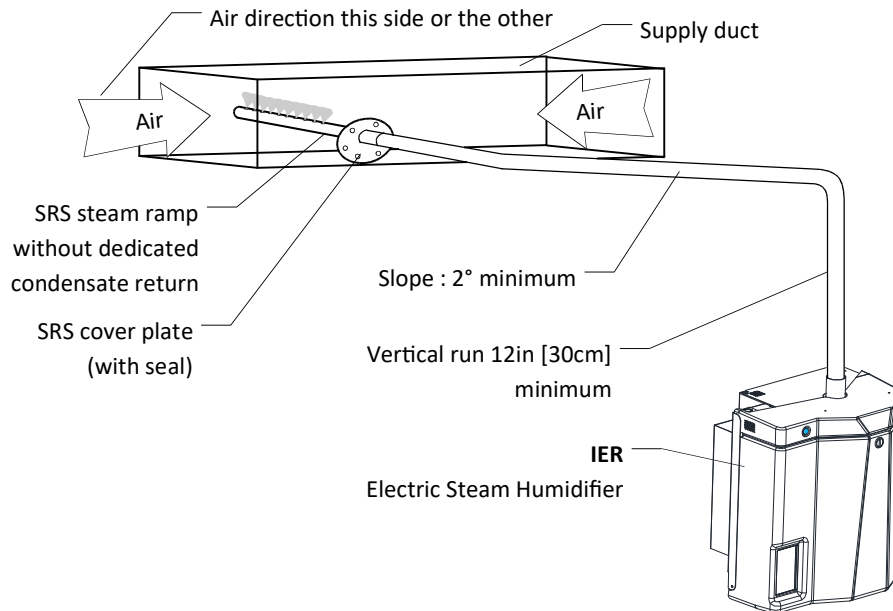


Figure 32, Typical SRS & SRSX installation – no condensate return line

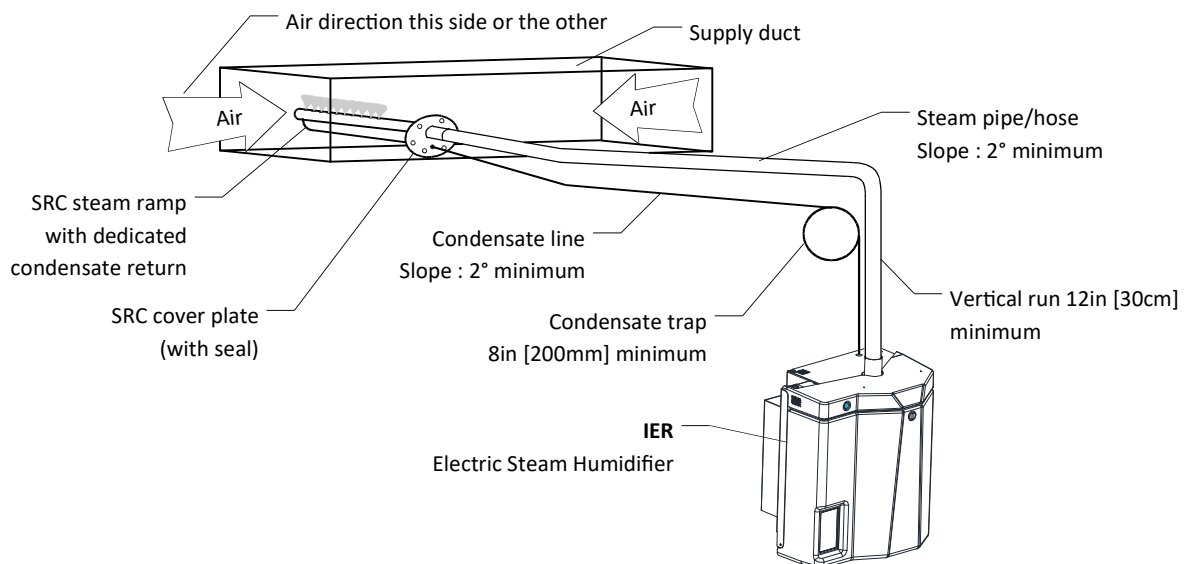


Figure 33, Typical SRC, SRCX or SO installation – with condensate return line to IER

Long steam line installation

Make sure to install condensate trap(s) at each of the steam line low point(s)

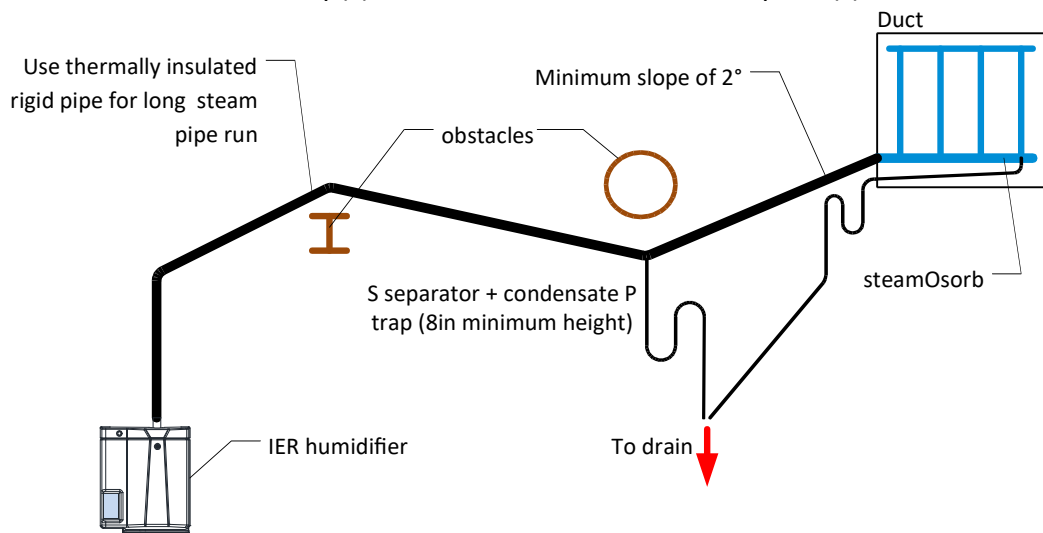


Figure 34, Long steam line run

Guideline for steam line :

There is no maximum length for steam line, however plan for the following steam losses depending on material used and length :

Losses (lb/h/ft) [kg/h/m]	Hose		Rigid pipe (stainless steel or copper)				
Diam	1-1/2in [DN40]	2in [DN50]	1-1/2in [DN40]	2in [DN50]	3in [DN80]	4in [DN100]	5in [DN125]
Non insulated	0.16 [0.23]	0.22 [0.33]	0.12 [0.18]	0.15 [0.22]	0.21 [0.31]	0.27 [0.40]	0.31 [0.46]
With thermal insulation (2in [50mm] thick)			0.03 [0.045]	0.03 [0.045]	0.04 [0.06]	0.04 [0.06]	0.05 [0.075]

steamOvap recommends the use of rigid pipe (stainless steel or copper) for steam line longer than 10ft [3m].

When using flexible steam hose, ensure that the hose is maintained and attached in order to avoid any kink or sagging.



Caution: Risk of malfunction. Steam lines should not have any restriction or blockage that may cause a burst of pressure in the steam line.

Do not reduce diameter of the steam line from humidifier steam outlet to steam distribution ramp(s).

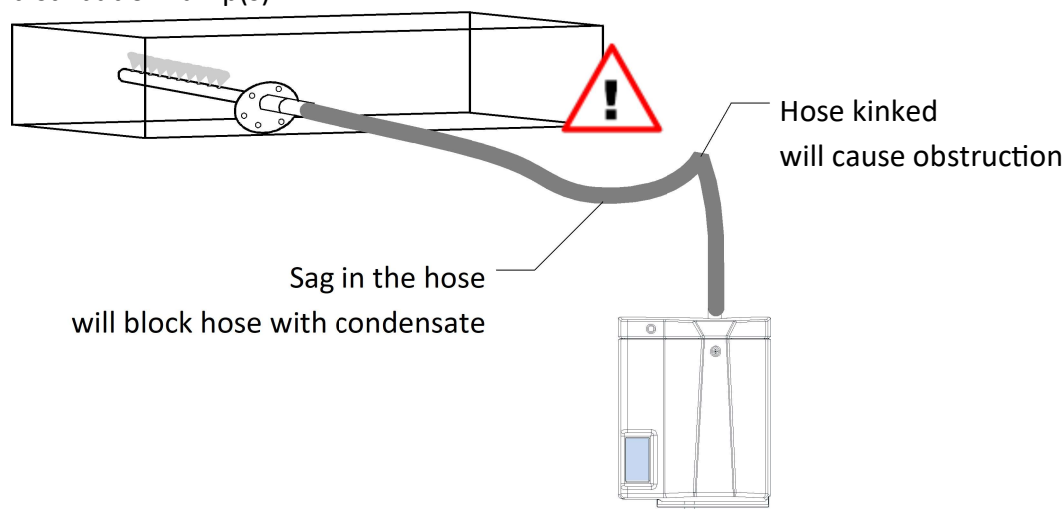


Figure 35, Kink or hose sagging will cause damage & malfunction

Installation steps :

1. Positioning & mounting of **SR** steam ramp or **SO** steamOsorb multi-ramp steam grid to the ventilation duct wall by using metal screw
2. Install steam hose or rigid steam pipe between the **IER** steam humidifier and the steam ramp.

Note: when using rigid steam pipe (stainless steel or copper) it is a good practice to install small lengths of steam hose in between steam ramp(s), **IER** humidifier and rigid pipe for ease of installation and service.

Allow for a 2° minimum slope.

3. Secure all steam line connections with hose clamps
4. For **SRC**, **SRCX**, **SOS** or **SOE** install a condensate hose in between steam ramp and **IER** humidifier or direct the condensate return hose to a building drain inlet (if more convenient).

Provide a condensate trap of 8in [200mm] minimum

Condensate return hose or rigid pipe must be installed so that a slope of 2° minimum is ensured.

5. Secure all condensate return line connections with hose clamps

SO or SR lower than IER humidifier steam outlet

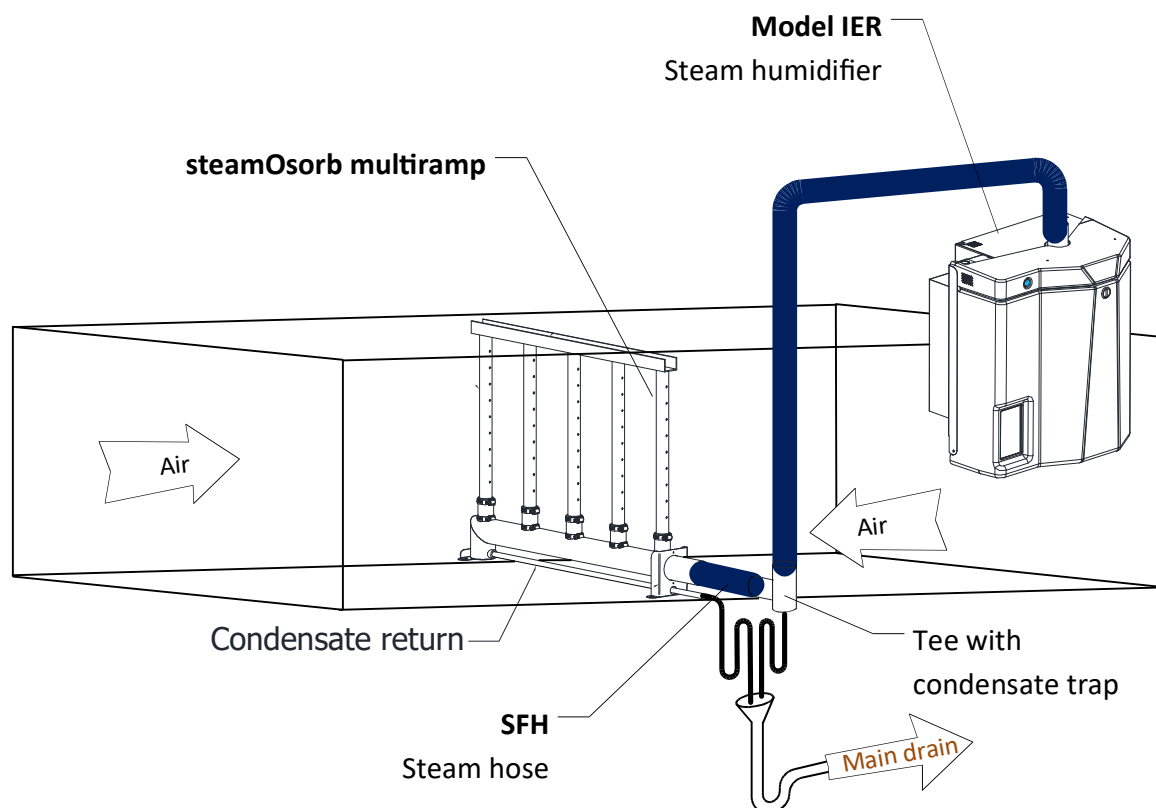


Figure 36, steamOsorb multiramp install lower than IER

When **SR** steam ramp or **SO** steamOsorb multiramp is installed lower than the **IER** humidifier steam outlet, a tee with condensate port must be installed at the lowest point of the steam line. Condensate should be evacuated through a trap. The height of the condensate trap should be equal to duct static pressure in in.w.c. + 2 in.

Remote Space Blower

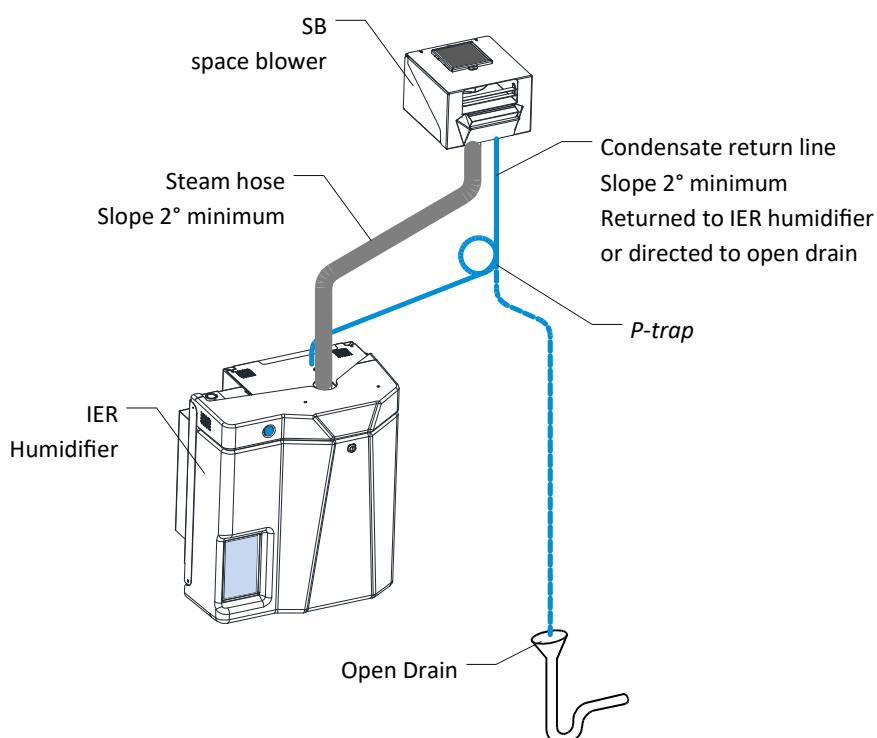


Figure 37, Steam & condensate line for Remote SB

Refer to SB- Space blower IOM for installation guidelines

Installation – step 5

Power supply installation

Electrical Warning



Risk of electric shock.

Disconnect power supply before installation or service.

Power supply connection must be done by a trained and qualified electrician.

Any work related to power supply installation of this humidifier must comply with local code and regulation regarding safety and prevention of accidents.

General guidelines for power supply installation

Power supply wiring conductors must be copper only and rated for 105 °C.

Refer to the above current rated to determine the appropriate wire sizes as well as conduit size and fused disconnect requirements.

The earth must be made by solid metal to metal connections.

Ground wire should be same size as power wiring.

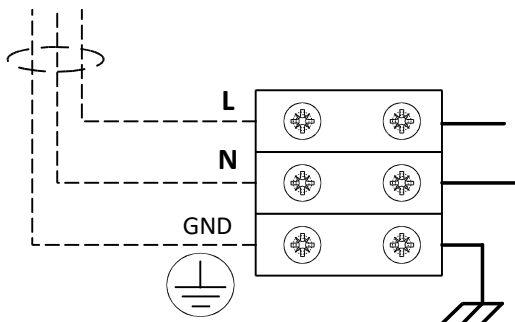


Figure 38, 1 phase power supply connection

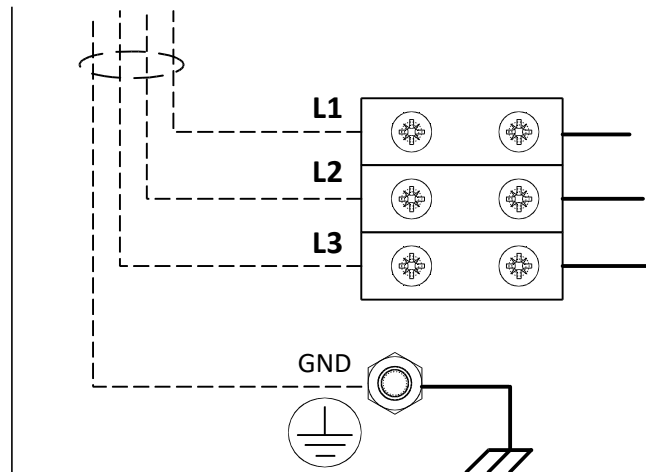


Figure 39, 3 phases power supply connection

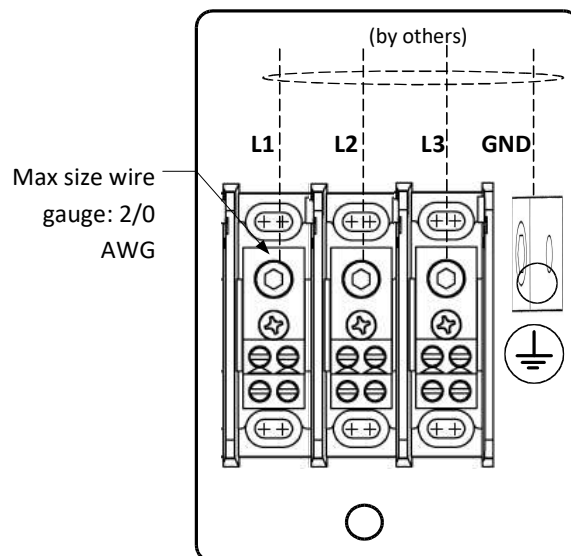


Figure 40, 3 phase power supply connection for IER24-208/3; IER34-208/3 and IER31-480/3

IER electrical rating

Model	Steam Capacity	Power (kW) / Current (A)					
		120Vac/1p	240Vac/1p		-	-	-
IER-02	6.3lb/h [2.8kg/h]	2.1kW 17.5A	2.1kW 8.75A		-	-	-
Model	Steam Capacity	208Vac/1p	240Vac/1p	208Vac/3p	380Vac/3p	480Vac/3p	600Vac/3p
IER-04	10lb/h [4.5kg/h]	3.3kW 16.0A	3.3kW 13.9A	3.3kW 9.3A	3.3kW 4.8A	3.3kW 4.0A	3.3kW 3.2A
IER-05	15lb/h [6.8kg/h]	5.0kW 24.0A	5.0kW 20.8A	5.0kW 13.9A	5.0kW 7.2A	5.0kW 6.0A	5.0kW 4.8A
IER-09	24lb/h [11.4kg/h]	8.3kW 39.9A	8.3kW 34.6A	8.3kW 23.0A	8.3kW 12.0A	8.3kW 10.0A	8.3kW 8.0A
IER-12	35lb/h [15.9kg/h]	-	11.5kW 47.9A	11.7kW 32.4A	11.7kW 16.8A	11.7kW 14.0A	11.7kW 11.2A
IER-17	50lb/h [22.7kg/h]	-	-	16.7kW 46.3A	16.7kW 24.1A	16.7kW 20.0A	16.7kW 16.0A
IER-22	65lb/h [29.5kg/h]	-	-	-	21.7kW 31.3A	21.7kW 26.1A	21.7kW 20.8A
IER-24	70lb/h [31.8kg/h]	-	-	23.4kW 64.8A	-	-	-
IER-31	93lb/h [42.3kg/h]	-	-	-	31.0kW 44.7A	31.0kW 37.3A	31.0kW 29.8A
IER-34	100lb/h [45.4kg/h]	-	-	33.4kW 92.6A	-	-	-
IER-44	130lb/h [59.1kg/h]	-	-	-	43.3kW 62.5A	43.3kW 52.1A	43.3kW 41.7A
IER-62	185lb/h [84.1kg/h]	-	-	-	61.7kW 89.1A	61.7kW 74.2A	61.7kW 59.3A

Installation steps :

1. Connect supply lines (L1, L2, L3 and GND or L, N and GND) to the corresponding terminals in the **IER** electrical compartment.
Connect the earth conductor with a lug and secure it to the GND threaded stud..
2. The supply wiring is to be fed into the unit via the clamp strap on the top of the unit.
3. Ensure that an all pole disconnecting device with a minimum contact clearance of 3 mm and a fuse protection (supplied by others) is installed on the power supply line.
4. This disconnecting device should be installed in proximity of the **IER** steam humidifier (within 3 feet [1 m]) and must be easily accessible.

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 (model DAP) 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.
 - A high limit humidistat (model DHL) shall be installed downstream of the steam ramp so that it can prevent any over humidity (condensing) occurrence. High limit humidistat is usually provided by an on-off switch its set point should be 85%RH minimum. High limit humidistat should be placed at least at a distance equivalent to five times the absorption distance. If the absorption distance is not known, locate it at least 9 feet [3m] downstream of the steam ramp.
- For system that needs very accurate RH% control a RH% sensor can replace or supplement the On/Off Hi Limit humidistat in this case the **IER** humidifier will not only modulate the steam production based on the control; signal demand but also on this proportional Hi-Limit signal.
- 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 **IER** steam humidifier is fully modulating.

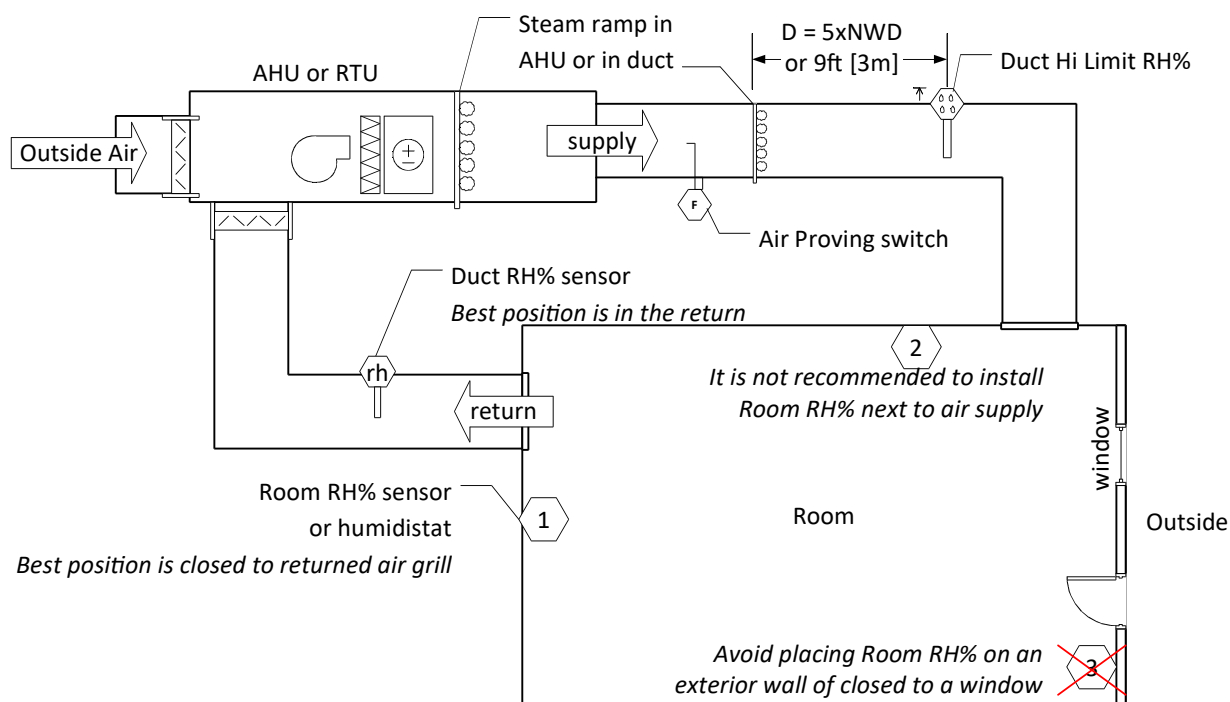


Figure 41, Controls placement recommendations

If Duct RH% sensor is used, it should be placed in return air duct

If Room RH% or humidistat is used, it should not be placed on an exterior wall, or next to supply air grill. Best position is closed to returned air grill.

Air proving switch should not be placed next of a fan or a plate that can vibrate, this would lead to wrong readings or early failure.

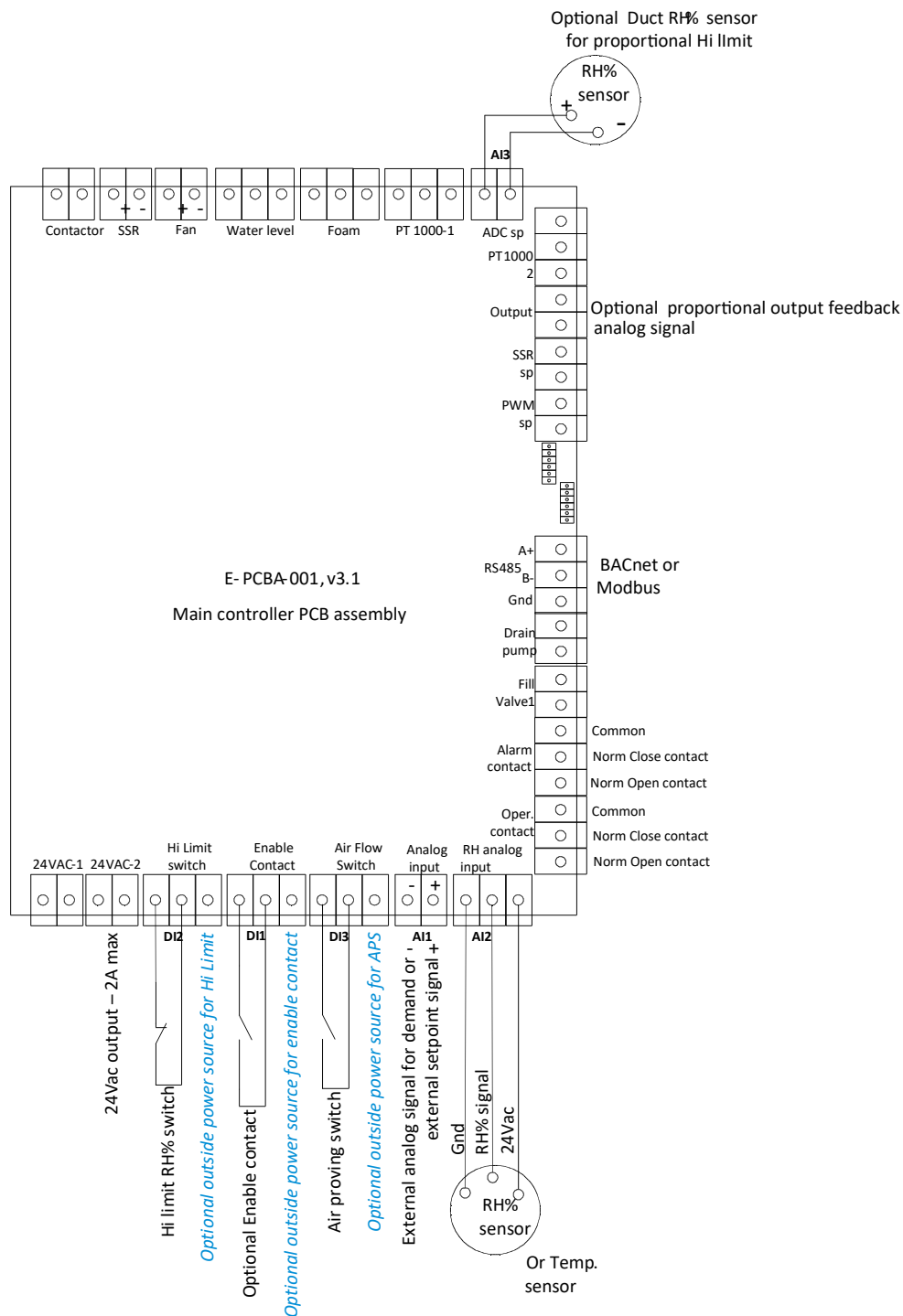


Figure 42, Control connections

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
Remote BAS control	Modbus (supplied standard) – refer to Modbus tables BACnet MS/TP (optional) – refer to BACnet PICS

Installation steps :

1. Ensure that the safety contact for Air proving switch and Hi limit humidistat are connected to the terminals 4 and 5.
2. Connect the applicable controls according to the above wiring diagram
3. Selection of control signal is done through set-up screens once the IER 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 malfunction. Steam lines should not have any restriction or blockage that may cause a burst of pressure in the steam line.

Risk of flooding. In order to avoid any risk of flooding steamOvap recommends a Hi limit humidity switch installation in the air duct downstream of the steam distribution ramp.

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 steam outlet(s).

Check list

- **Mounting**
 - Check mounting to verify that the **IER** is level and securely supported before filling with water.
- **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.
- **Drain**
 - Verify that all drain piping has been completed as recommended and that an open drain deported from **IER** is provided.
- **Steam**
 - Verify that all steam piping has been completed as recommended and that a slope of minimum 2° is provided.
 - Ensure that there is no sag or kink or any possible obstruction in the steam line, and condensate line.
- **Power supply**
 - Verify that power supply wires have been connected to main terminal and ensure that all wires are safely tightened. Ensure that an all pole disconnecting device with fuses is installed and easily accessible.
- **Control circuit**
 - Verify that safety controls such as air proving switch and Hi limit humidistat have 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 **IER** steam Humidifier.

Configuration & Operation

Dashboard screen

Dashboard screen is also the main/home screen

IER by steamOvap

Dashboard Overview Control setting Humidifier setting Factory

Demand %

Output %

Activity log

	Type	Name	value	Last occurrence
1	IER State	Alarms	Steam on	Mon Sep 21 18:30:13 2020
2	Alarms	Hi Rh% in duct detected	Ok	Mon Sep 21 18:30:13 2020
3	IER State	Steam on	Alarms	Mon Sep 21 18:30:07 2020
4	Alarms	Hi Rh% in duct detected	Active	Mon Sep 21 18:30:07 2020
5	IER State	Stand by	Steam on	Mon Sep 21 18:29:40 2020

Edit

Steam generator

1st generator

Output W

IER05-400/3 6kg/h

Demand & output in lb/h or %

Edit button allows to configure Activity log

Output in power (Watt)

Figure 43, Dashboard screen

Status icon

Overview screen

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

Drain for service

Generator 1 Start

First generator	
IER State	Steam on
Water temperature	100 C
Water level	86 %
Room humidity	28 %
Enclosure Temperature	NA
Output	38%
Hours (last service)	0h

	Source	Range
Control	RH% demand	0-10Vdc
Setpoint	Internal (RH%/Temp)	0-10Vdc
Hi lim	On/Off demand	NA

IER05-400/3 6kg/h

Drain for service is initiated when start button is pushed

This section gives all info on internal sensors reading and humidifier operation

Summary information on control connected to humidifier

Figure 44, overview screen

Icon status

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



IER is OK and in operation or stand by.



critical alarm will stop operation of IER, if latched will need manual reset by service technician, otherwise it will auto reset when abnormal condition is over.



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



Communication between board computer and Main controller is altered.



Service is required.

IER states

The different possible states of the IER are:

- STANDBY_STATE,
IER is disable (see status of enable button in Control setting / control config).
- ARMED_STATE,
IER is ready to operate, waiting for humidity demand
- STEAM_ON_STATE,
IER is producing steam
- DRAINCYCLE_STATE,
IER is draining the cylinder
- ADD_WATER_STATE,
IER is adding water in the cylinder (while producing steam or not)
- PRE_HEAT_STATE,
If Preheat function is enable, the IER is heating water in the cylinder.
- ALARMS_STATE,
IER is on Alarm of level 1, a manual reset is required, go to Humidifier settings / Reset alarm.
- SERVICE_STATE,
User has ordered a drain for service, in this case **IER** will drain the cylinder, refill with fresh water in case the temperature inside cylinder is above 140°F [60°C] (if cooling function is enabled), and drain again.

Control Setting screen

Control setting screen allows user typically a control engineer to set signal and parameters to control the **IER** humidifier.

Access to this screen can be restricted with pass-code. In this case password is 3549

Pop up to enter password

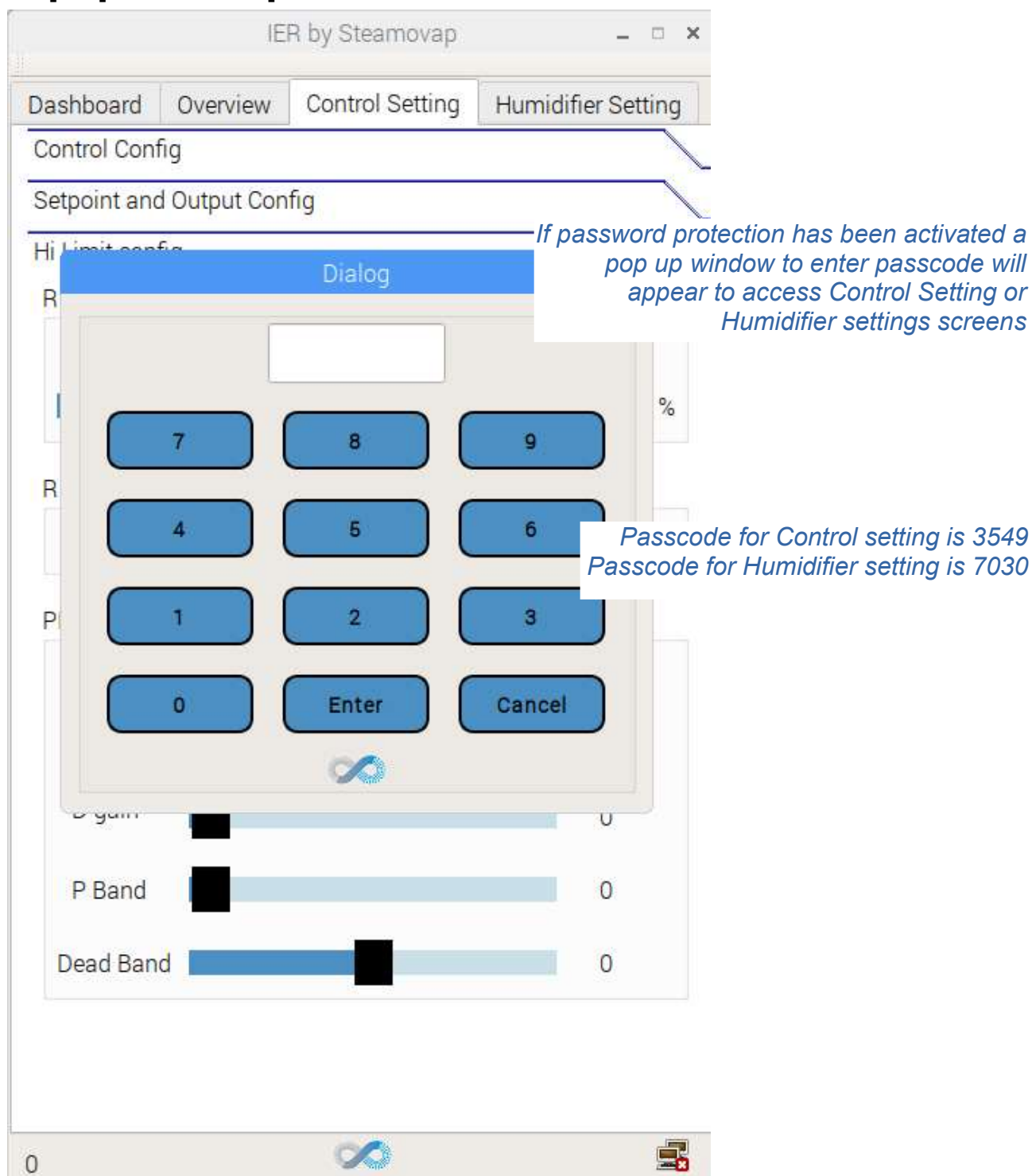


Figure 45, password screen

Control setting / control config

Control Setting menu is subdivided in 4 screens:

- Control Config
- Set point & output Config.
- Hi Limit Config.
- Scheduler

IER by steamOvap

Dashboard Overview Control setting Humidifier set

Control Config.

Control source

RH% demand

Analog demand signal range

0-10Vdc

RH%/Temp. signal range

0-10Vdc

PID Configuration

P gain 29

I gain

D gain

P Band 0

Dead band 1

Humidifier Enable 0 ON

Setpoint and output Config.

Hi lim Config.

Scheduler

IER05-400/3 6kg/h

Select the control source from :
RH% demand
External dmd
RH% of Temp sensor
Remote

Select range for signal

Or select RH% (or Temp.) sensor signal range

If applicable, set the PID

Recommended (default) setting is :
P gain : 60
I gain : 25
D gain : 20
P Band : 0
Dead band : 0

You can put humidifier Off or On with Enable switch

Figure 46, Control setting/control config screen

Control setting / setpoint & output config

IER by steamOvap

Dashboard

Overview

Control setting

Humidifier setting

Factory

Control Config.

Setpoint and output Config.

Setpoint source

Internal

45 %

Setpoint signal range

0-10Vdc

Output signal range

0-10Vdc

Output capacity reduction

100 %

Disinfection Setpoint (Temp)

0 C

Disinfection Time

Hi lim Config.

Scheduler

IER05-400/3 6kg/h

Select the setpoint source from :
Internal
External
Remote

If internal, set the Setpoint with cursor

Or, if external, set the Setpoint signal range from
0-10vdc,
2-10Vdc,
4-20mA

Set output signal range (if used) from
0-10vdc,
2-10Vdc,
4-20mA

Steam output reduction,
If 5% = steam output reduced to 5% of total capacity

If disinfection mode has been selected, set disinfection temperature & time here

Figure 47, Control setting/set point config screen

Control setting / Hi Limit config

IER by steamOvap

Dashboard Overview **Control setting** Humidifier setting Factory

Control Config.

Setpoint and output Config.

Hi lim Config.

RH% Hi limit source

On/Off demand

0 %

RH% Hi limit signal range

0-10Vdc

PID Configuration

P gain 0

I gain 0

D gain

P Band

Dead band

Scheduler

IER05-400/3 6kg/h

Select RH% Hi Limit source from :
On/Off demand
External analog demand
Both

If internal, set the Setpoint with cursor

Or, if external, set the RH% Hi limit signal range from
0-10Vdc,
2-10Vdc,
4-20mA

If applicable, set the PID

Recommended (default) setting is :
P gain : 60
I gain : 25
D gain : 20
P Band : 0
Dead band : 0

Figure 48, Control setting/Hi Limit config screen

Control setting / Scheduler

IER by steamOvap

Dashboard Overview **Control setting** Humidifier setting Factory

Control Config.

Setpoint and output Config.

Hi lim Config.

Scheduler

System date and time

Mon Sep 21 18:32:38 2020

Event

	Date	Time	Action	value
1	Tue Sep 22 2020	11:00:00	Setpoint change	62

Add

Delete

IER05-400/3 6kg/h

Information on current Date & time of the internal clock

Scheduler can program events based on date and time

*Event types are :
On or Off
Setpoint change
Drain cycle
Service*

Event can be set for one or reccuring occurrences

If reccuring a frequency based on day and/or time should be set.

Figure 49, Control setting/Scheduler

Humidifier setting screen

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

Humidifier Setting menu is subdivided in 5 screens:

- Humidifier setting 1
- Humidifier setting 2
- BMS setting
- Main setting
- System information

Humidifier setting / setting 1

IER by steamOvap

Dashboard Overview Control setting **Humidifier setting** Factory

Humidifier setting 1

Reset alarms

Generator 1 *Reset alarm allows to reset latched alarms*

Drain frequency *Drain frequency is to reduce mineral concentration in boiling water*

You can disable this function (if RO or pure water is used) **ON**

Auto dilution *See our guideline below, if tap (city) water is used*

12 h

Inactivity drain *Inactivity drain is to flush cylinder when no demand*

You can disable this function **ON**

72 h *If On, set the time with no demand before flushing cylinder*

Drain cooling *Drain cooling is to reduce temperature of wasted water when draining*

ON

Service frequency *Service freq. Is the operation time period before to call for cleaning.*

610 h

Service auto off *If service Auto off is ON the humidifier will shut down when service is due*

ON

Drain frequency guideline when tap (city) water is used

In order to avoid foaming, water contained in cylinder needs to be deconcentrated from time to time from its minerals dissolved content (TDS).

- Traditional way is to drain most of water from cylinder at a fixed freq. Time.
- If cursor is set on "Autodilution" (full left) EcoEnerSmart (patented) function is activated : humidifier will flush a small amount of water and bring equivalent of new water more frequently; saving energy & water. Autodilution frequency will auto-adapt in case foam will be detected.

Figure 50, Humidifier setting/setting 1 screen

Humidifier setting / setting 2

IER by steamOvap

Dashboard Overview Control setting Humidifier setting Factory

Humidifier setting 1

Humidifier setting 2

Antifreeze option protection

Antifreeze function will keep water inside cylinder warm when no demand

☐ OFF

Activate Anti-freeze protection in case humidifier is installed in location with risk of freezing.

Water temp sensor calibration

+0 C

External fan (s)

☒ ON ☐ OFF

0 s

Activate Fan and set Off delay when a Space blower is connected

Water pre-heat

☐ OFF

0 C

Water pre-heat will reduce time delay to produce steam when there is a RH% demand

Higher water temperature is set, smaller is the delay

BMS setting

Main setting

System Informations

IER05-400/3 6kg/h

Figure 51, Humidifier setting/setting 2 screen

Humidifier setting / BMS setting

IER by steamOvap

Dashboard Overview Control setting **Humidifier setting** Factory

Humidifier setting 1

Humidifier setting 2

BMS setting *When BMS Override is ON, full control of the humidifier is remote through Modbus or BACnet connection*

BMS override

☐ OFF

BMS setting

Edit

Edit button allows to set the BMS protocol & connexion settings as indicated in BMS overview table below

BMS overview

Settings	
BMS type	BACnet MSTP
MODbus slave Add.	1
MODbus parity	0
MODbus baudrate	38400
BACnet MAC	2
BACnet instance	2

Main setting

System Informations

IER05-400/3 6kg/h

Figure 52, Humidifier setting/BMS setting

Humidifier setting / BMS setting

IER by steamOvap

Dashboard Overview Control setting **Humidifier setting** Factory

Humidifier setting 1

Humidifier setting 2

BMS setting

Main setting

Control setting password *Activate passcode protection for Control setting menu*

OFF

Humidifier setting password *Activate passcode protection for Humidifier setting menu*

OFF

System date and time *Edit and set the internal clock date & time*

Mon Sep 21 18:32:48 2020 Edit

Units

Temperature Celsius

Demand output %

Language selection

English

System Informations

IER05-400/3 6kg/h

Select units from Celsius or Fahrenheit

Select units from % or lb/h or kg/h

Select language from English, French, Swedish, Spanish

Figure 53, Humidifier setting/Main setting

Humidifier setting / System information

IER by steamOvap

Dashboard Overview Control setting **Humidifier setting** Factory

Humidifier setting 1

Humidifier setting 2

BMS setting

Main setting

System Informations

Software version info SN:7777777

User Interface	3.12	IER software version	3.14
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Device Firmware Update *Allows for firmware update*

Caution : Do not use this function without our technical support **Update**

File Manager *Allows for events and data trending exportation*

Eject USB **Import**

Reset System *Allows to reset all settings to default (factory values)*

Caution : Do not use this function without technical support from steamOvap support team or representative **Reset**

IER05-400/3 6kg/h

Figure 54, 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 IER, if latched will need manual reset by service technician.



Alarm level 2, non-critical alarm will not stop operation of IER, 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
High temperature Switch	1 latched	Hi limit safety switch located on top of the cylinder is open
Water level sensor def	1	Water level sensor is defective
Water level sensor error	1	Water level detected is abnormal
Water level too high	1	Water level is higher than expected
Water level too low	2	Water level is lower than expected
Water Temp. Sensor def	1 latched	Water temperature sensor is defective
Water Temp. Sensor error	1	Water temperature measured is abnormal
Foam detected	1	Foam is detected in the cylinder latched in case of repetition
Water inlet Low Flow	2	Fill or refill of cylinder is longer than expected
Water Feed Error	1	No water is supplied
Drain pump error	1	Drain pump is not able to empty cylinder
Unit not heating	2	IER not heating water
Electric supply	2	Low power
No control Connected	2	No signal received
Communication Status	2	Loss of communication between board computer and Main controller

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.

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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