



## IER - ELECTRIC RESISTIVE STEAM HUMIDIFIER

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### Submittal

<b>Date:</b>	<i>30-11-2020</i>
<b>Revision:</b>	<i>1.0</i>
<b>Project name:</b>	<i>Generic</i>
<b>Engineer name:</b>	
<b>Engineering firm:</b>	
<b>steamOvap agent:</b>	
<b>Purchase Order No:</b>	
<b>Purchase Order Date:</b>	
<b>Date required:</b>	
<b>Comments:</b>	

# Description



## Description & Intended use

IER electric steam humidifier is an electric steam generator that uses water immersed resistive heating elements to produce pure and sterile steam at atmospheric pressure that is distributed in air handling unit or ventilation duct, or directly into space.

IER humidifier can be supplied with tap or treated water such as reverse osmosis water or deionized water without alteration or additional required option.

When tap water is used, the scale will come off the heating elements by the natural contraction and expansion of the tube heaters having a coil shape. Scale pieces then accumulate at the bottom of the cylinder without the risk of clogging the drain outlet.

Regular maintenance consists in opening and removing the cylinder and cleaning the accumulated scale off. It is a simple, safe and proven technology and solution that requires no consumable and uses no unreliable plastic component.

IER electric steam humidifier is intended exclusively to produce steam from water at atmospheric pressure for air humidification.

## Main features

- Very accurate +/-1% and constant steam production whatever water condition.
- Fully modulating humidifier.
- Drain water automatically cooled down at 140°F [60°C].
- Pre-heating function for quick reaction upon demand.
- Steam production reduction option.
- Permanent stainless steel cylinder with thermal insulation.
- Easy and quick regular maintenance with no tool required.
- Log of events and alarms easy to export.
- Modbus RTU remote communication
- Optional remote communication BACnet MSTP and Modbus RS485
- Three year warranty (when installation is commissioned by steamOvap authorized service representative)
- Certified as per UL998 safety standard for North America by TUV-SUD

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# Project detail

Data		Zone 1	Zone 2		
System/AHU tag					
Humidifier tag					
Duct dim. WxH (in)					
Entering Cond.	DB (°F)				
	RH (%)				
Leaving Cond.	DB (°F)				
	RH (%)				
Air volume (CFM)					
Face velocity					
Required/calculated capacity (lb/h)					
Humidifier	Model				
	Capacity				
Electrical data	Power (kW)				
	Voltage				
	Amp				
Control	Ctrl signal				
	Fback signal				
	Remote ctrl				
Water supply					
Steam distribution					

# Specifications

## Section 23 84 13 – Humidifiers

### Part 1 - General

#### 1.1 SUMMARY

.1 Section includes:

- .1 Materials and installation for direct steam injection, packaged electrode steam generating, steam-to-steam, electric self-contained humidifiers and accessories.

#### 1.2 RELATED SECTIONS

- .1 Section 01 33 00 – Submittal Procedures.  
.2 Section 01 35 29.06 – Health and Safety Requirements  
.3 Section 01 45 00 – Quality Control.  
.4 Section 01 74 21 – Construction/Demolition Waste Management and Disposal  
.5 Section 01 78 00 – Closeout Submittals.  
.6 Section 01 91 13 – General Commissioning (Cx) Requirements.  
.7 Section 23 31 13.01 – Metal Ducts – Low Pressure to 500 Pa.

#### 1.3 REFERENCES

- .1 Air-Conditioning and Refrigeration Institute (ARI) ARI 640, Performance Rating of Commercial and Industrial Humidifiers

#### 1.4 SUBMITTALS

- .1 Submittals in accordance with Section 01 33 00 - Submittal Procedures.  
.2 Product data:  
.1 Submit manufacturer's printed product literature, specifications and datasheet for heating, ventilation and air conditioning distribution piping and ductwork.  
.3 Shop drawings:  
.1 Submit shop drawings to indicate project layout, dimensions, and extent of humidification system.  
.4 Test Reports: submit certified test reports from approved independent testing laboratories indicating compliance with specifications for specified performance characteristics and physical properties.  
.5 Certificates: submit certificates signed by manufacturer certifying that materials comply with specified performance characteristics and physical properties.  
.6 Instructions: submit manufacturer's installation instructions.  
.7 Manufacturer's field reports specified.  
.8 Closeout submittals: submit maintenance and engineering data for incorporation into manual specified in Section 01 78 00 - Closeout Submittals.

#### 1.5 QUALITY ASSURANCE

- .1 Pre-Installation Meetings:  
.1 Convene pre-installation meeting one week prior to beginning work of this Section and on-site installations.  
.1 Verify project requirements.  
.2 Review installation and substrate conditions.  
.3 Co-ordination with other building subtrades.  
.4 Review manufacturer's installation instructions and warranty requirements.  
.2 Health and Safety:

## **I E R S U B M I T T A L**

- .1 Do construction occupational health and safety in accordance with Section 01 35 29.06 - Health and Safety Requirements.

### **1.6 DELIVERY STORAGE AND HANDLING**

#### **.1 Waste Management and Disposal:**

- .1 Separate waste materials for reuse and recycling in accordance with Section 01 74 21 - Construction/Demolition Waste Management and Disposal.
- .2 Remove from site and dispose of packaging materials at appropriate recycling facilities.
- .3 Collect and separate for disposal, paper, plastic, polystyrene, corrugated cardboard, packaging material in appropriate on-site bins for recycling in accordance with Waste Management Plan (WMP).
- .4 Separate for reuse and recycling and place in designated containers steel, metal, plastic waste in accordance with Waste Management Plan (WMP).
- .5 Divert unused metal materials from landfill to metal recycling facility as approved by Owner's Representative.

### **1.7 MAINTENANCE**

#### **.1 Extra materials:**

- .1 Provide maintenance materials in accordance with Section 01 78 00 – Closeout Submittals.
- .2 Furnish list of individual manufacturer's recommended spare parts for equipment, addresses of suppliers, and list of specialized tools necessary for adjusting, repairing or replacing, for inclusion into operating manual.
- .3 Provide following: one complete set of renewable evaporator media.

## **PART2 - PRODUCTS**

### **2.1 Electric self-contained humidifier**

- .1 The humidifier shall be certified as per UL998 by a Nationally Recognized Laboratory (NRTL).
- .2 Boiling chamber, cover and fittings constructed from series 300 stainless steel.
- .3 Boiling chamber provided with thermal insulation. Thermal insulation shall not be able to lose thermal properties when in contact with water.
- .4 Immersion heaters INCOLOY alloy-sheathed resistance type.
- .5 Humidifier to have the following safety protection features:
  - .1 Hi-limit temperature switch
  - .2 Electronic continuous water level sensor.
  - .3 Evaporation rate control algorithm.
  - .4 Conductive foam detection sensor.
- .6 Humidifier shall be able to be supplied with tap or treated water such as softened or reverse osmosis (RO) or deionised (DI) water without alteration or add-on option.
- .7 Removal of boiling chamber cylinder for regular maintenance shall be done quick release latch giving full access to heating elements and allowing for cleaning and removal of scale without the use of tooling.
- .8 Humidifier to provide full modulation using integrated SCR control.
- .9 Humidifier shall include an automatic wasted water drain cooling device ensuring a maximum water drained temperature of 140°F (60°C).
- .10 Humidifier control and user interface to be provided by 7in touch screen and microprocessor with real time operating system allowing access to Overview

## **I E R S U B M I T T A L**

and Service screen and to restricted access configuration sub-menu for control and communication set-up and humidifier set-up.

### **.11 Accessories**

- .1 Air flow proving switch.
- .2 High limit switch humidistat.
- .3 Electronic RH% sensor for duct or space.
- .4 Modbus, or BACnet IP or MSTP remote communication to Building Management System (BMS).
- .5 Stand metal frame for floor installation.
- .6 Bracket to ease of wall installation
- .7 IP65, equivalent to NEMA 4 type outdoor enclosure.

## **PART3 EXECUTION**

### **3.1 MANUFACTURER'S INSTRUCTIONS**

- .1 Compliance: comply with manufacturer's written recommendations or specifications, including product technical bulletins, handling, storage and installation instructions, and datasheet.

### **3.2 INSTALLATION**

- .1 Install in accordance with manufacturer's instructions.
- .2 Humidifier and evaporator media to be new and clean when project is accepted.
- .3 Install humidistat in accessible location.
- .4 Water service overflow drain: as indicated and to manufacturers' recommendation.
- .5 Install access doors or panels in adjacent ducting.
- .6 When installing in ducting, provide waterproof duct up and downstream in accordance with Section 23 31 13.01: Metal Ducts – Low Pressure to 500 Pa.
- .7 Install capped drain connection at low point in duct.

### **3.3 FIELD QUALITY CONTROL**

#### **.1 Manufacturer's Field Services:**

- .1 Have manufacturer's representative of products, supplied under this Section, review work involved in the handling, installation/application, protection and cleaning, of its products and submit written reports, in acceptable format, to verify compliance of work with Contract.
- .2 Manufacturer's Field Services: provide manufacturer's field services consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.
- .3 Schedule site visits, to review work, at stages listed:
  - .1 After delivery and storage of products, and when preparatory work, or other work, on which the work of this Section depends, is complete but before installation begins.
  - .2 Twice during progress of work at 25% and 60% complete.
  - .3 Upon completion of the work, after cleaning is carried out.
- .4 Obtain reports, within three (3) working days of review, and submit, immediately, to Owner's Representative.

#### **.2 Performance Verification (PV):**

- .1 General: in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements: General Requirements, supplemented as specified.

## **I E R S U B M I T T A L**

- .2 Timing:
  - .1 After TAB of ducted air systems.
  - .2 At same time as PV of related air handling units.
- .3 Start-up:
  - .1 General: in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements: General Requirements, supplemented as specified.
  - .2 Verify:
    - .1 Steam lines are sloped to ensure steam condensate is drained away from the humidifier.
    - .2 Vapour lines and manifolds are sloped to ensure condensate is drained away from the duct system.
    - .3 Visually check distribution manifold to ensure:
      - .1 Even distribution of vapour.
      - .2 Freedom from water deposits.
  - .4 Commissioning Reports:
    - .1 General: in accordance with Section 01 91 13 - General Commissioning (Cx) Requirements: reports, supplemented as specified. Include:
      - .1 PV results on approved PV Report Forms.
      - .2 Product Information Report Forms.

### **3.4 DEMONSTRATION**

- .1 Training: in accordance with Section 01 91 13- General Commissioning (Cx) Requirements: Training of O&M Personnel.

### **3.5 CLEANING**

- .1 Perform cleaning operations as specified in Section 01 74 11 – Cleaning and in accordance with manufacturer's recommendations.
- .2 Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

**END OF SECTION**



# Product designation

## IER name plate

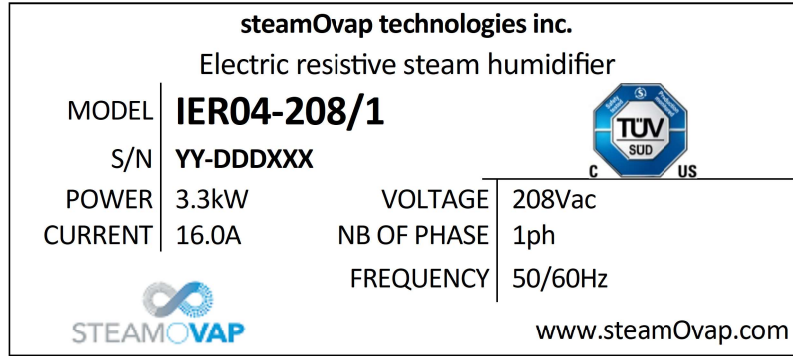
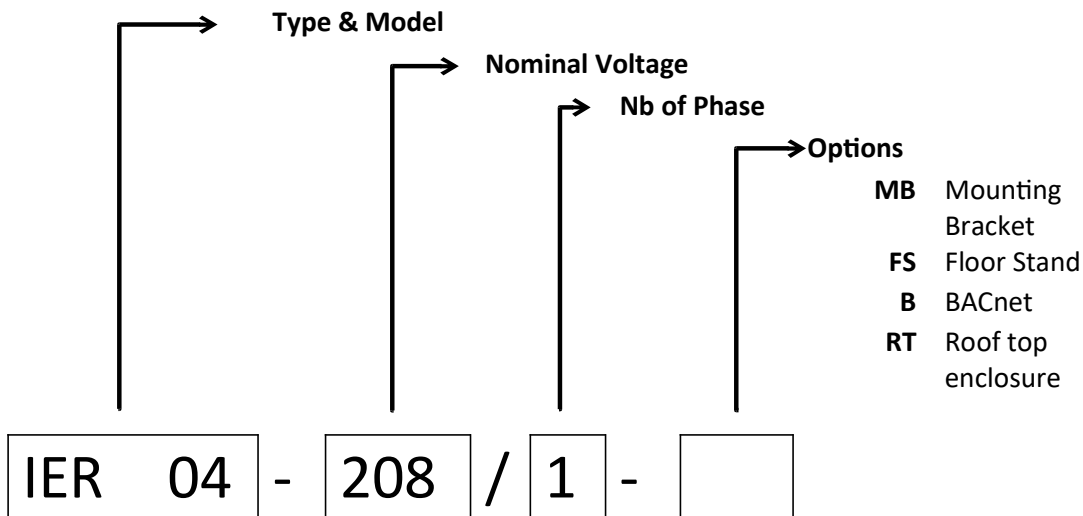


Figure 1 – IER Name plate

## Model designation and options codification



# Electrical rating

Model	Steam Capacity	Power	Current				
			208Vac/1p	240Vac/1p	208Vac/3p	480Vac/3p	600Vac/3p
IER-04	10lb/h [4.5kg/h]	3.3kW	16.0A	13.9A	9.3A	4.0A	3.2A
IER-05	15lb/h [6.8kg/h]	5.0kW	24.0A	20.8A	13.9A	6.0A	4.8A
IER-09	24lb/h [11.4kg/h]	8.3kW	40.1A	34.7A	23.1A	10.0A	8.0A
IER-12	35lb/h [15.9kg/h]	11.7kW	-	44.2A	32.4A	14.0A	11.2A
IER-17	50lb/h [22.7kg/h]	16.7kW	-	-	46.3A	20.0A	16.0
IER-22	65lb/h [29.5kg/h]	21.7kW	-	-	-	26.1A	20.8A
IER-31	93lb/h [42.3kg/h]	31.0kW	-	-	-	37.3A	29.8A
IER-44	130lb/h [59.1kg/h]	43.3kW	-	-	-	52.1A	41.7A
IER-62	185lb/h [84.1kg/h]	61.7kW	-	-	-	74.2A	59.3A

# Dimensions & weight

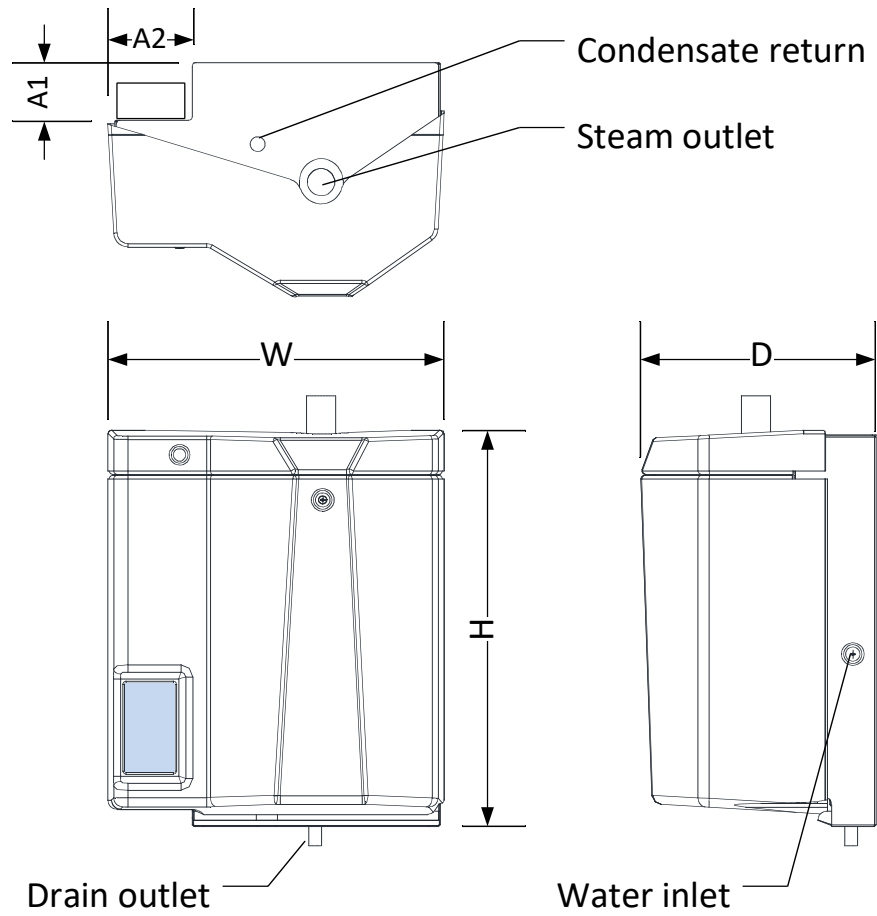


Figure 2 – IER dimensions, IER04 to IER31

**IER SUBMITTAL**

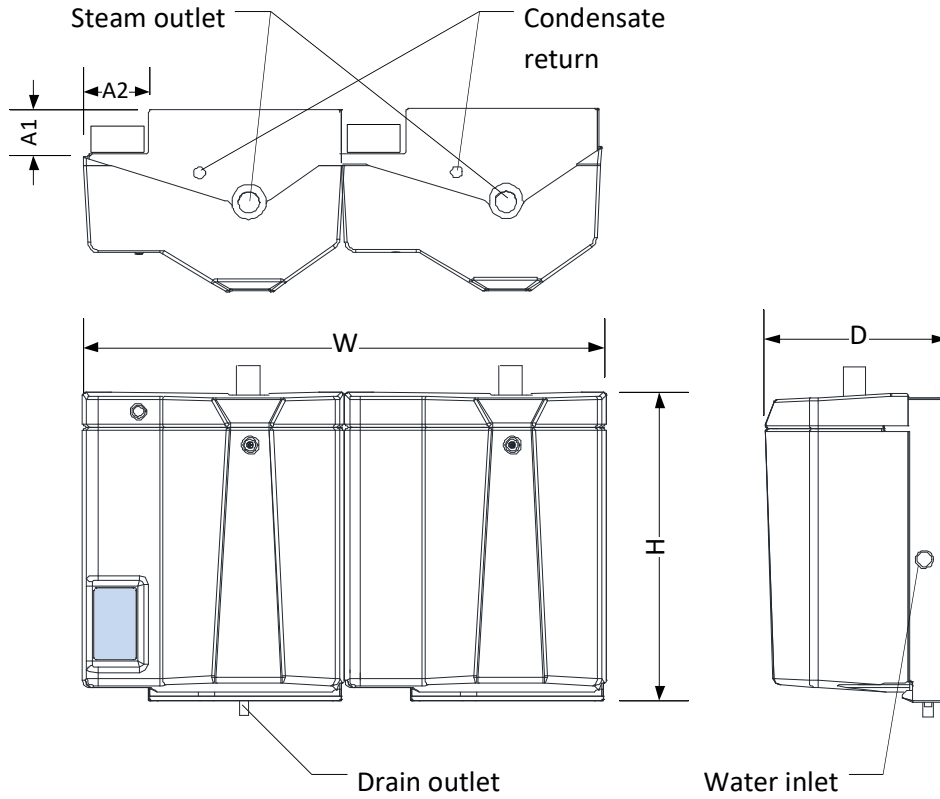


Figure 3 – IER dimensions, IER44 & IER62

Zone	Humidifier tag	Model	Steam Capacity	Nb Steam Outlet + Ø	Dimensions		
					W	H	D
		<b>IER04</b>	10lb/h [4.5kg/h]	1x 1.5in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]
		<b>IER05</b>	15lb/h [6.8kg/h]	1x 1.5in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]
		<b>IER09</b>	24lb/h [11.4kg/h]	1x 1.5in [DN40]	20in [510mm]	23in [585mm]	13in [330mm]
		<b>IER12</b>	35lb/h [15.9kg/h]	1x 2in [DN50]	23in [585mm]	27in [686mm]	17in [432mm]
		<b>IER17</b>	50lb/h [22.7kg/h]	1x 2in [DN50]	23in [585mm]	27in [686mm]	17in [432mm]
		<b>IER22</b>	65lb/h [29.5kg/h]	1x 2in [DN50]	23in [585mm]	27in [686mm]	17in [432mm]
		<b>IER31</b>	93lb/h [42.3kg/h]	1x 2.5in [DN65]	23in [585mm]	27in [686mm]	17in [432mm]
		<b>IER44</b>	130lb/h [59.1kg/h]	2x 2in [DN50]	42in [1067mm]	27in [686mm]	17in [432mm]
		<b>IER62</b>	185lb/h [84.1kg/h]	2x 2.5in [DN65]	42in [1067mm]	27in [686mm]	17in [432mm]

**IER SUBMITTAL**

Zone	Humidifier tag	Model	Weigth	
			Net	Operating
		<b>IER04</b>	45lb [21kg]	74lb [34kg]
		<b>IER05</b>	45lb [21kg]	74lb [34kg]
		<b>IER09</b>	45lb [21kg]	74lb [34kg]
		<b>IER12</b>	68lb [31kg]	118lb [54kg]
		<b>IER17</b>	68lb [31kg]	118lb [54kg]
		<b>IER22</b>	68lb [31kg]	118lb [54kg]
		<b>IER31</b>	68lb [31kg]	118lb [54kg]
		<b>IER44</b>	136lb [62kg]	236lb [107kg]
		<b>IER62</b>	136lb [62kg]	236lb [107kg]

**IER maximum ambient conditions & IP rating**

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

Relative Humidity: 90%RH max (non condensing)

Ingress Protection for **IER** standard enclosure: IP20

# Typical installation

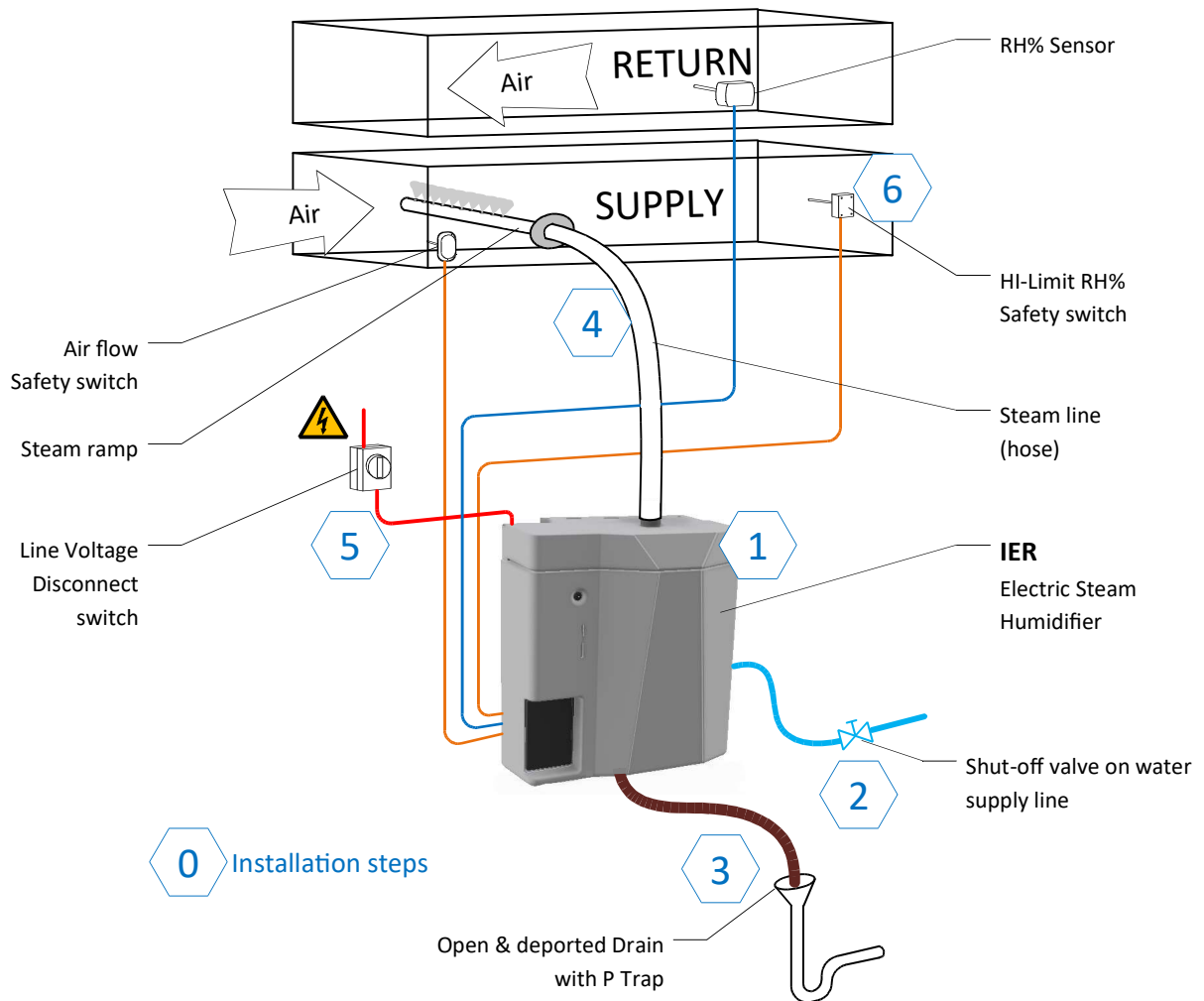


Figure 4 –IER typical installation

## Typical 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 Space blower

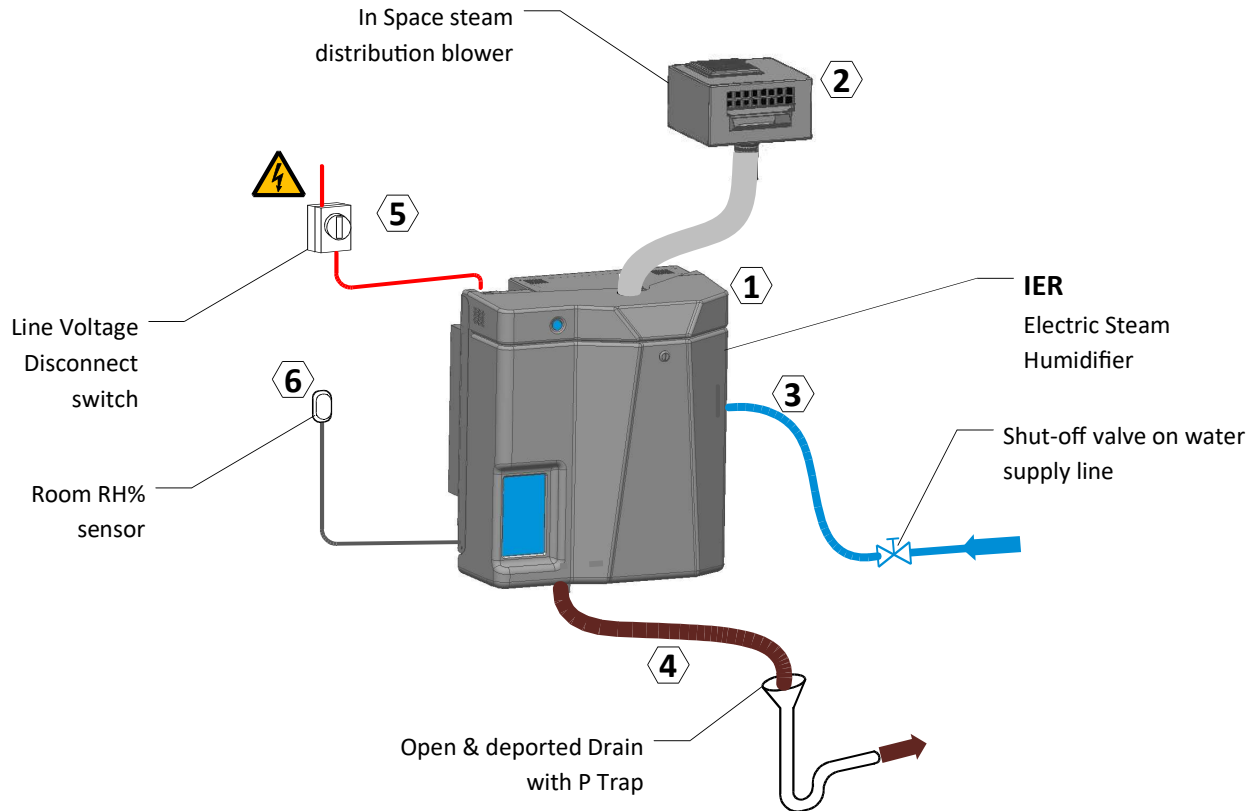


Figure 5 – IER with remote Space blower typical installation

### Typical installation steps :

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

# Water supply specification

Zone	Humidifier tag	Model	Water supply inlet Qty	Water supply inlet dimension
1	H-1	IER04 to 62	1x	G 3/4in

## Water supply specification & quality:

Water supply pressure: 30 to 80PSI [2 to 5bar] – hammer free

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 CaCO<sub>3</sub>/l]

Water supply PH: 6.5 to 7.5

Water supply chloride content: 0 to 50ppm

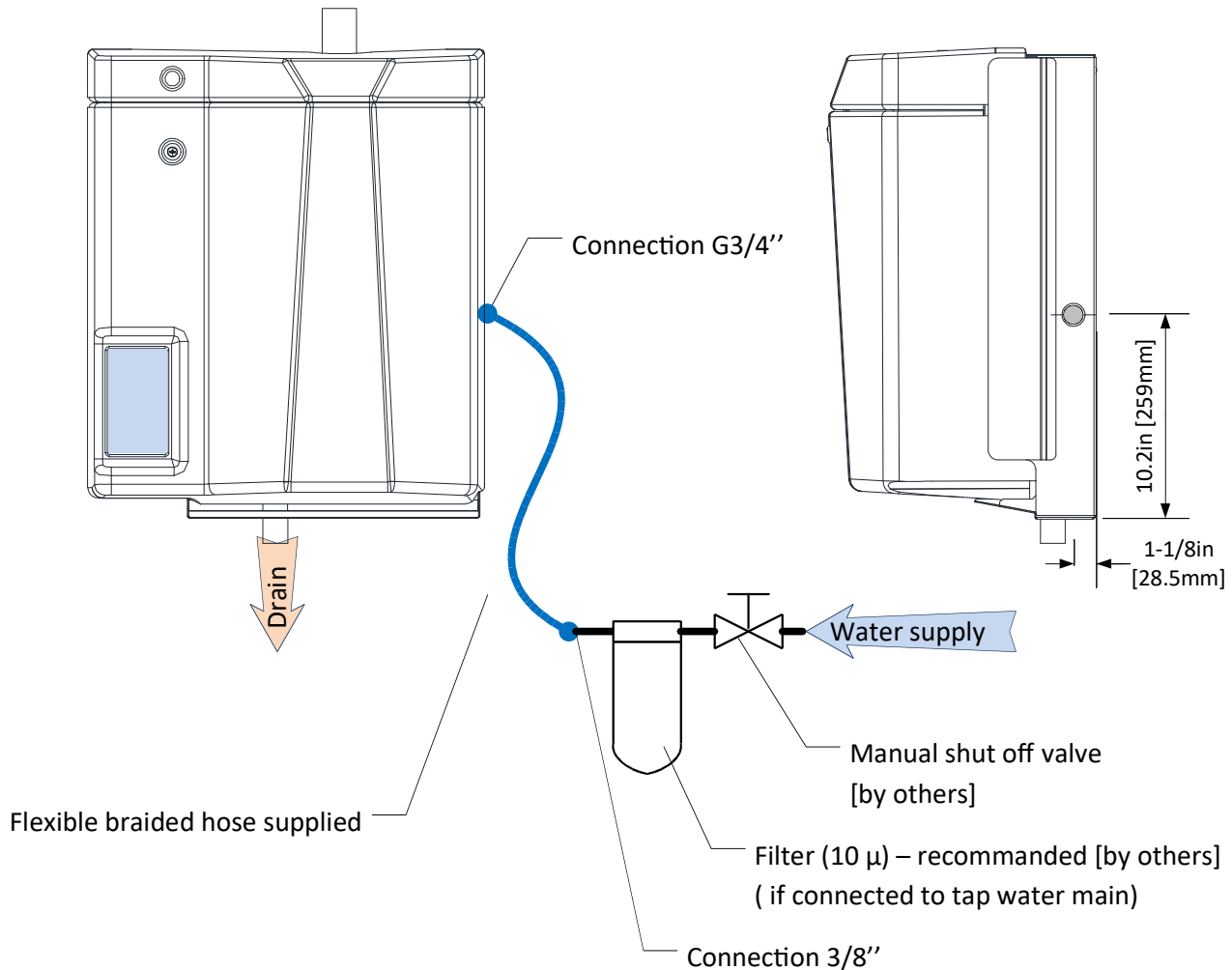




Figure 6– water supply connection, IER04 to IER31

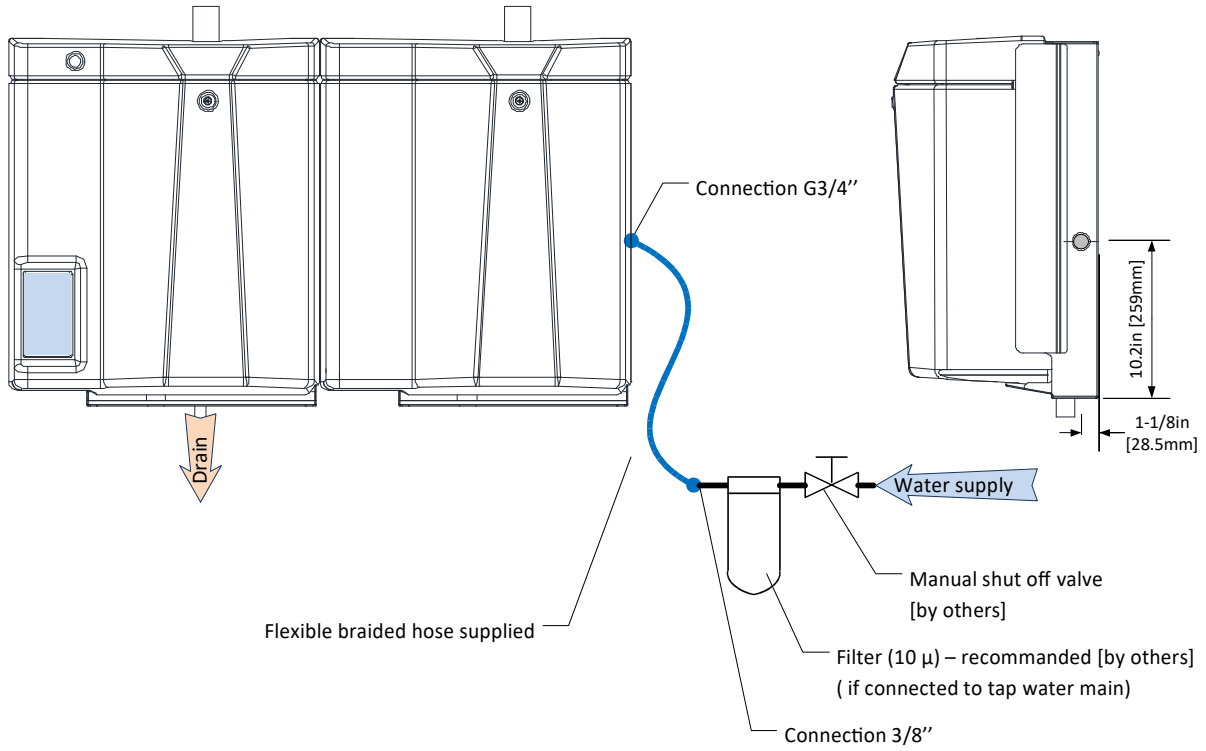


Figure 7– water supply connection, IER044 & 62

# Drain specification

Zone	Humidifier tag	Model	Drain outlet Qty	Drain outlet dimension
		IER04 to 31	1x	1-1/4in [32mm]
		IER44 & 62	2x	1-1/4in [32mm]

Drained water maximum temperature: 120°F [60°C]

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

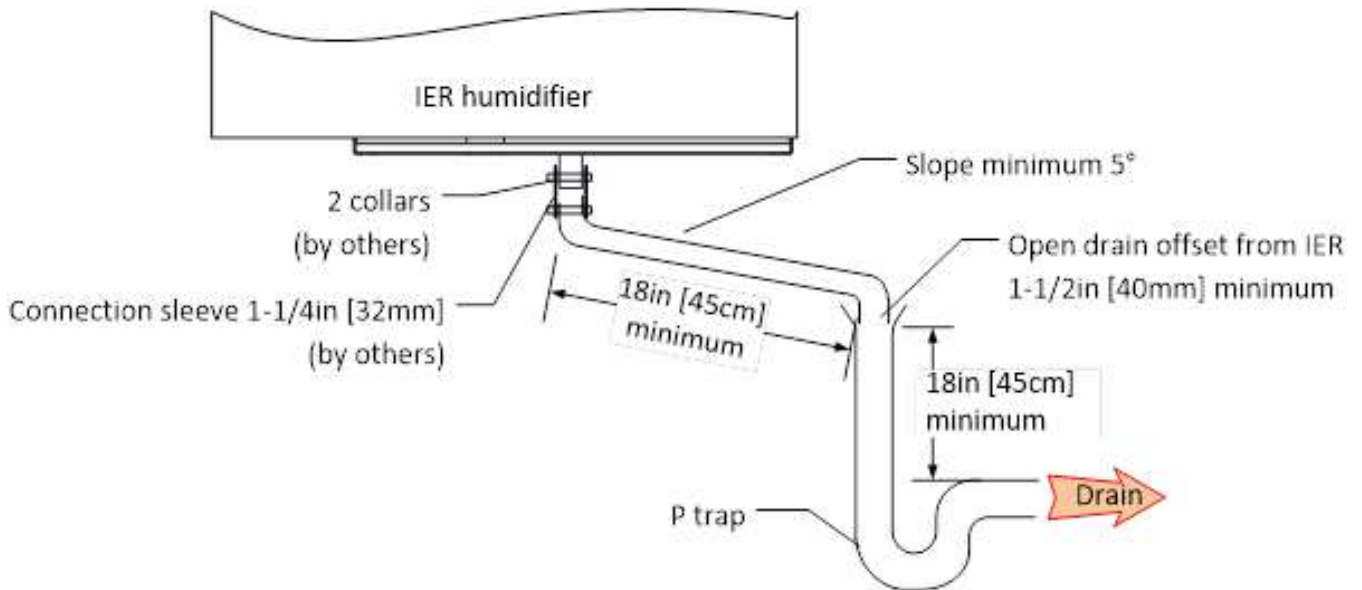


Figure 8 – water drain connection, IER04 to 31

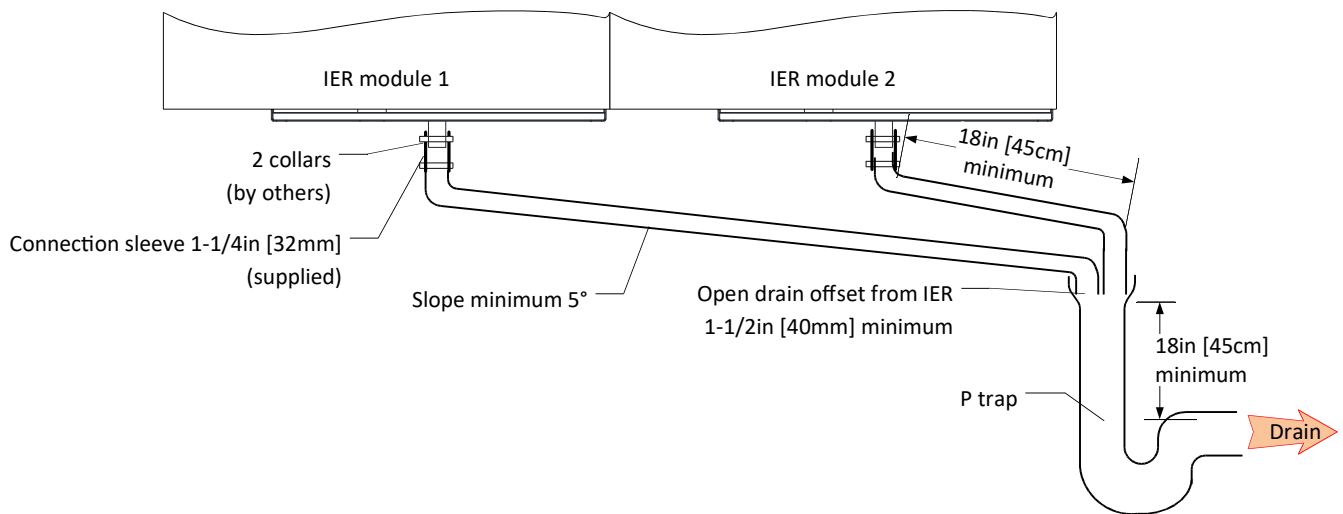


Figure 9 – water drain connection, IER44 & 62

# Steam ramp specification

Zone	Humidifier tag	Model	Steam outlet Qty	Steam outlet dimension
		IER04 to IER09	1x	1-1/2in
		IER12 to IER22	1x	2in
		IER31	1x	2-1/2in
		IER44	2x	2in
		IER62	2x	2-1/2in

## Horizontal duct

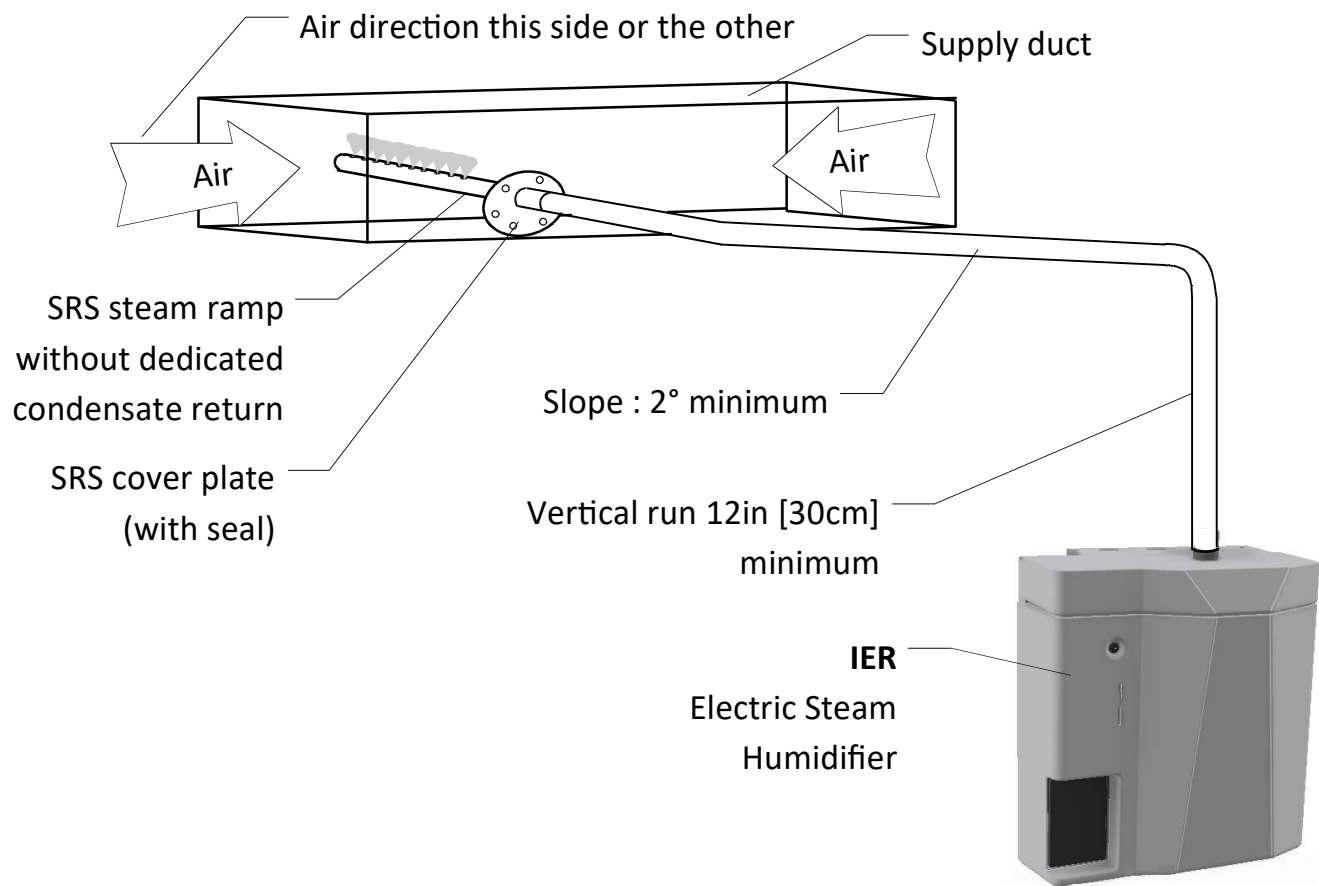
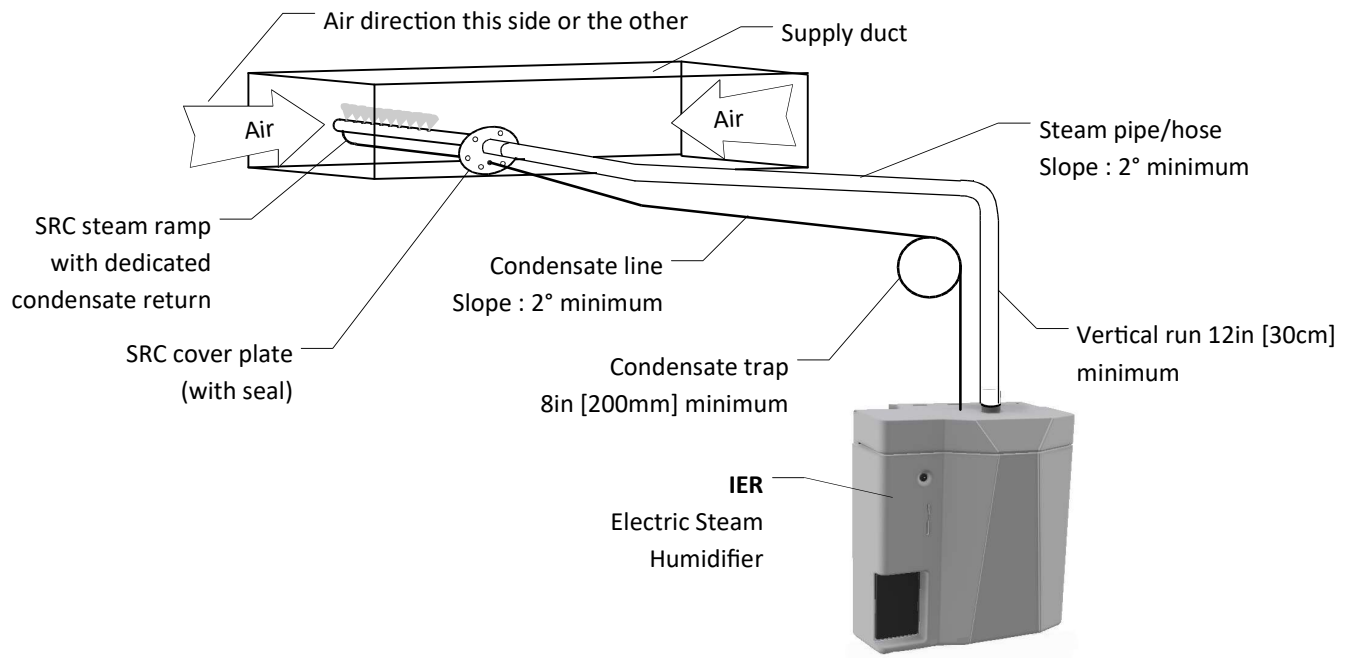



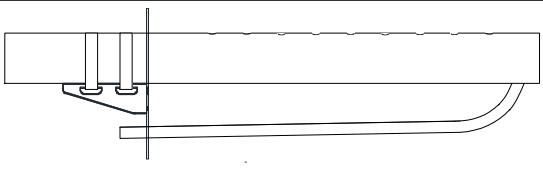
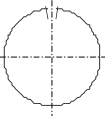
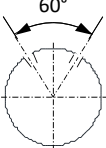
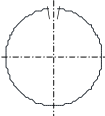
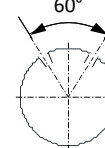
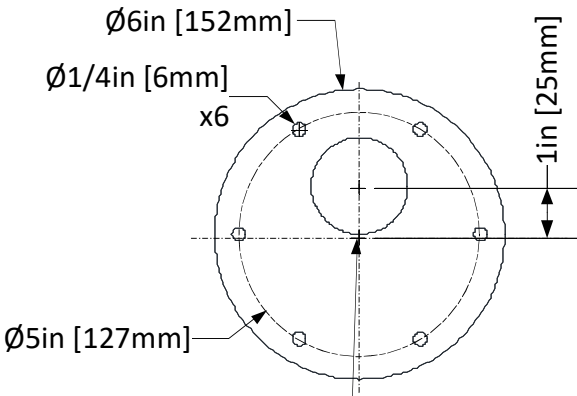
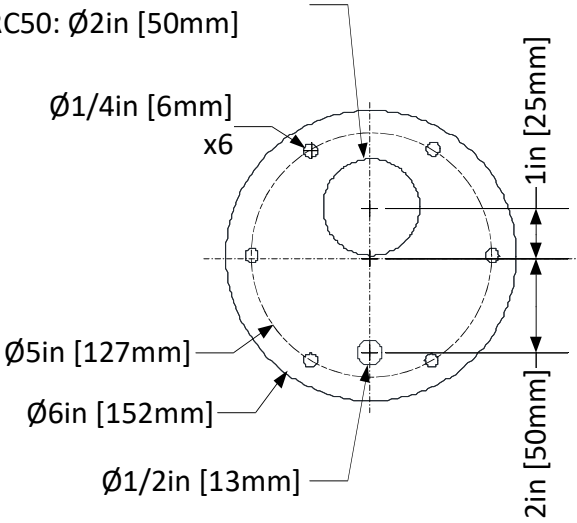
Figure 10 – SRS & SRSX installation – no dedicated condensate return line

**IER SUBMITTAL**



*Figure 11– SRC & SRCX installation – with dedicated condensate return line to IER*

# Steam ramp description

SRS - Steam ramp without dedicated condensate return		SRC - Steam ramp with dedicated condensate return	
 <p>Figure 12 – SRS</p>		 <p>Figure 13 – SRC</p>	
<p>Simpler to install, but not recommended when large quantity of condensate is produced (in case of long steam line run or large duct with low air temperature).</p>		<p>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</p>	
Standard absorption	Short absorption	Standard absorption	Short absorption
 <p>Figure 14 – SRS</p>	 <p>Figure 15 – SRSX</p>	 <p>Figure 16 – SRC</p>	 <p>Figure 17 – SRCX</p>
 <p>SRS40: Ø1-1/2in [40mm] SRS50: Ø2in [50mm]</p> <p>Figure 18 – SRS &amp; SRSX cover plate dimension</p>		 <p>SRC40: Ø1-1/2in [40mm] SRC50: Ø2in [50mm]</p> <p>Figure 19 – SRC &amp; SRCX cover plate dimension</p>	

## Minimum distances for SRS & SRSX

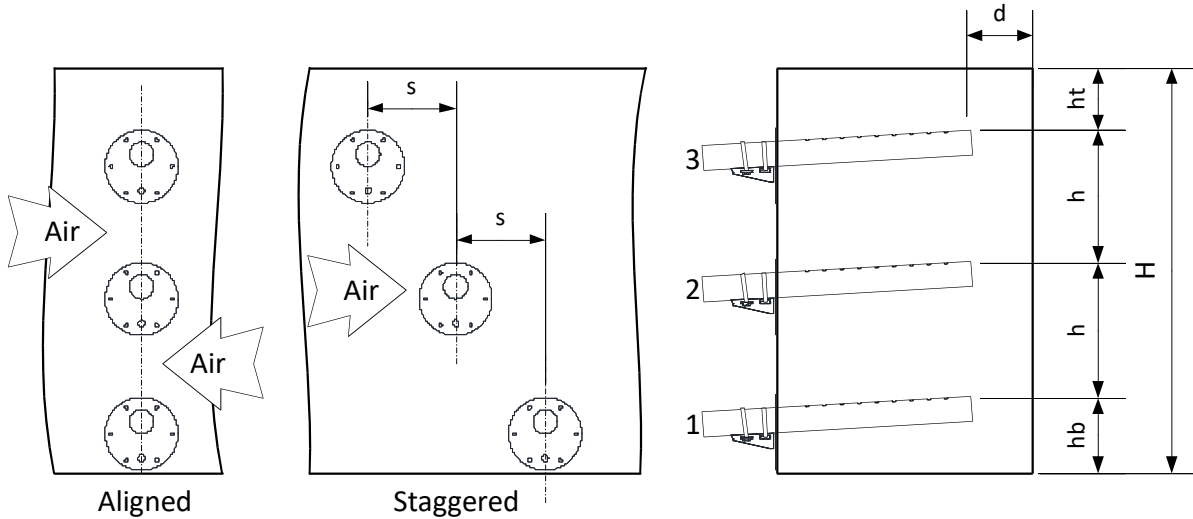


Figure 20 – SRS & SRSX minimum distances

In order to avoid condensing on the duct surface or on ramps, steamOvap recommends the following minimum distances:

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

If ramps are aligned  
 $h(\text{min}) = 8\text{in} [200\text{mm}]$   
Air flow can be one or the other direction.

If ramps are staggered  
 $h(\text{min}) = 4.5\text{in} [115\text{mm}]$   
Important: the air flow direction should be as indicated on above drawing.  
 $s(\text{min})$  minimum distance between ramps  
 $s(\text{min}) = 4\text{in} [100\text{mm}]$

## Minimum distances for SRC & SRCX

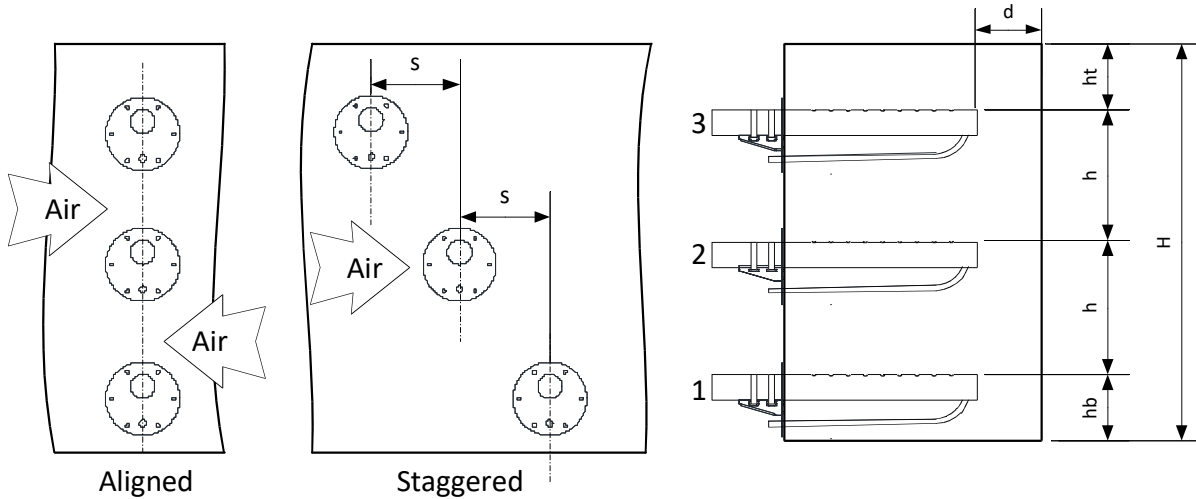


Figure 21 – SRC & SRCX minimum distances

In order to avoid condensing on the duct surface or on ramps, steamOvap recommends the following minimum distances:

- **ht(min)**  
Minimum height distance between end of top ramp (#3) and top of the duct.  
 $ht(\text{min}) = 5\text{in} [130\text{mm}]$
- **d(min)**  
Minimum depth distance between top ramp and side wall of the duct.  
 $d(\text{min}) = 4.5\text{in} [115\text{mm}]$
- **hb(min)**  
There is no minimum height distance required for the bottom ramp (#1) and the bottom of the duct. However we recommend a minimum:  $hb(\text{min})=4\text{in} [100\text{mm}]$
- **h(min)**  
Height in between ramps (h) should be equal / even.  
 $h = H - (ht + hb) / (\text{nb of ramps} - 1)$   
If ramps are aligned  
 $h(\text{min}) = 8\text{in} [200\text{mm}]$   
Air flow can be one or the other direction.

If ramps are staggered

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

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

$s(\text{min})$  minimum distance between ramps

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

**steamOsorb information**

Zone	Humidifier tag	Model	Header Diam.	Header Length	Steam ramp qty	Steam ramp Diam.	Steam ramp length

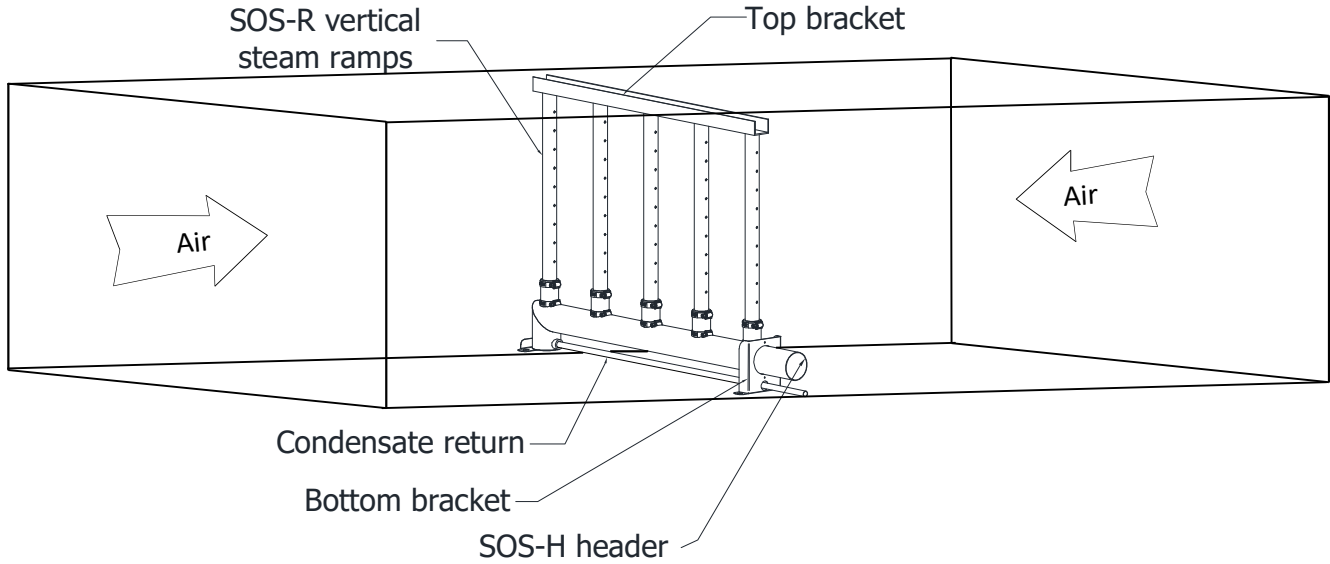


Figure 22– steamOsorb multiramp installation

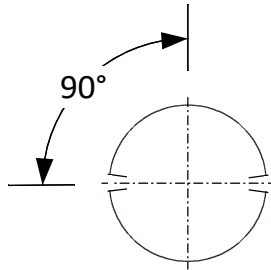


Figure 23– steam ramp profile and outlets position



## Thermal insulation, high efficiency steam ramps

High efficiency thermal insulation is made of 2 components:

- A fiber glass sleeve in direct contact with stainless steel ramp ensuring the best thermal resistance.
- An external layer of high temperature red oxide silicon resistant to UV, abrasion, humidity, chemical agents and fire, offering a robust and damage free solution

Thickness : 0.142in [3.6mm]

Maximum operating temperature: 500°F [260°C]

certified to ASTM E84 (equivalent to UL723).

Nozzles are made of polymeric material, they are condensate free.

No risk of damage during installation and during the life of the steam ramp.

Made with no longitudinal joint that can result in thermal bridge and premature loss of performance.

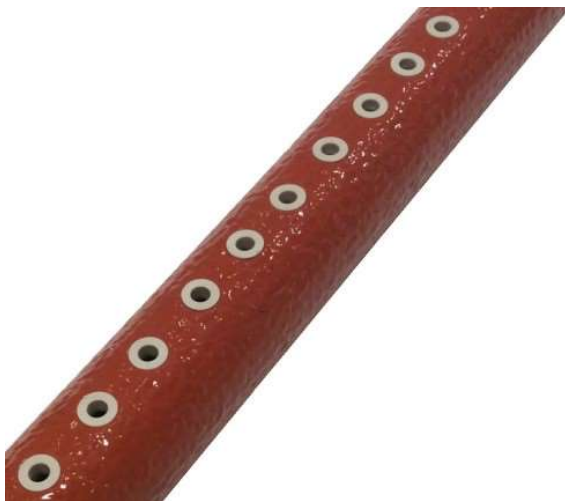


Figure 24 - Nozzle detail



Figure 25 – Model SOE

# Space blower information

## SB ratings

Model	Steam Capacity	Airflow	Power	Voltage		Current
				Remote	Built-in	
SBS	26lb/h [12kg/h]	220CFM [375m <sup>3</sup> /h]	34W	120Vac	Same as IER	0.3A @ 120Vac
SBM	65lb/h [29.5kg/h]	330CFM [560m <sup>3</sup> /h]	60W	120Vac	Same as IER	0.6A @ 120Vac
SBL	96lb/h [44kg/h]	330CFM [560m <sup>3</sup> /h]	60W	120Vac	Same as IER	0.6A @ 120Vac

## Dimensions

### Built-in

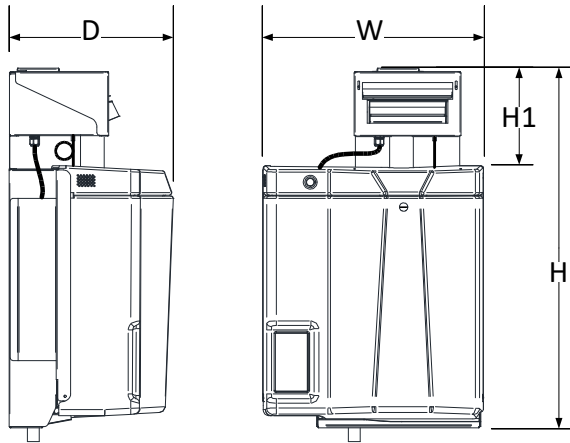


Figure 26 – Built-in SB dimensions

### Remote

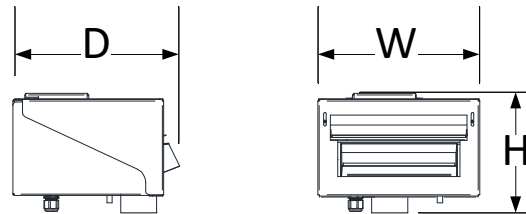


Figure 27 – Remote SB dimensions

Model	Dimensions				Steam Inlet Ø	Net weight
	W	H	H1	D		
SBS Built-in	20in [510mm]	23in [585mm]	8.5in [216mm]	13in [330mm]	1.5in [DN40]	8lb [3.6kg]
SBS Remote	9.25in [235mm]	7in [178mm]	/	9in [229mm]		
SBM / SBL Built-in	23.5in [590mm]	38in [965mm]	10.5in [267mm]	17.5in [445mm]	2in [DN50]	10lb [4.5kg]
SBM / SBL Remote	11.25in [292mm]	9in [229mm]	/	12in [305mm]		

## Remote Space Blower recommendations

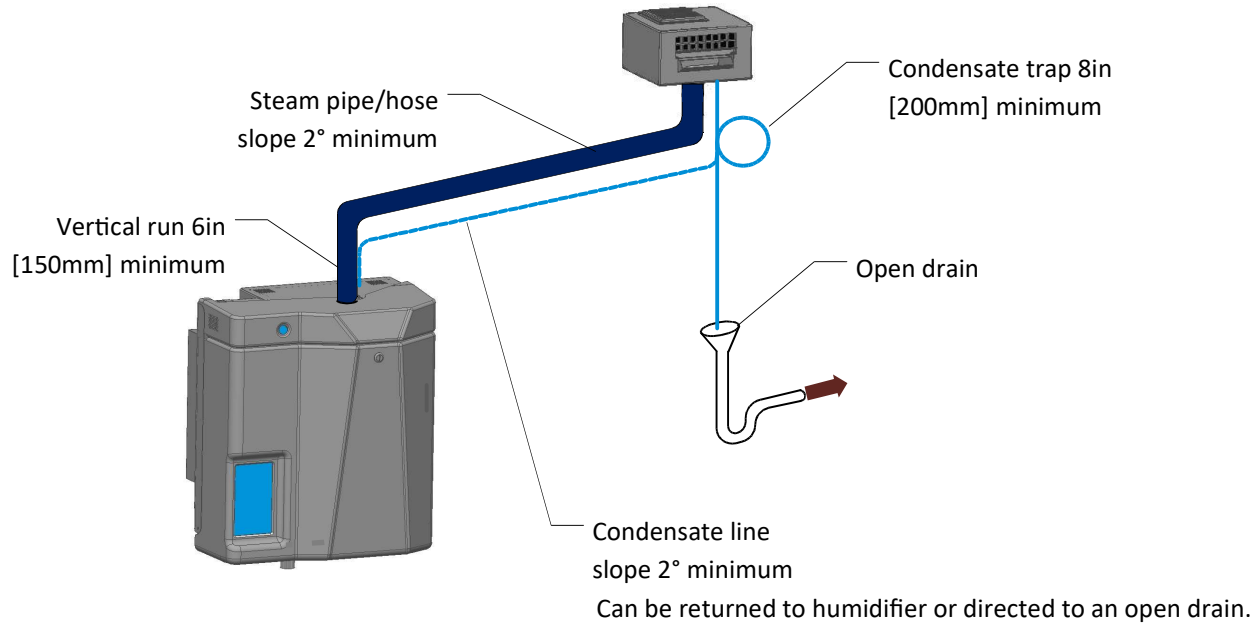


Figure 28 – Steam & condensate line for Remote SB

# Power supply specification

Model	Power	Current				
		208Vac/1p	240Vac/1p	208Vac/3p	480Vac/3p	600Vac/3p
IER04	3.3kW	16.0A	13.9A	9.3A	4.0A	3.2A
IER05	5.0kW	24.0A	20.8A	13.9A	6.0A	4.8A
IER09	8.3kW	40.1A	34.7A	23.1A	10.0A	8.0A
IER12	11.7kW	-	44.2A	32.4A	14.0A	11.2A
IER17	16.7kW	-	-	46.3A	20.0A	16.0
IER22	21.7kW	-	-	-	26.1A	20.8A
IER31	31.0kW	-	-	-	37.3A	29.8A
IER44	43.3kW	-	-	-	52.1A	41.7A
IER62	61.7kW	-	-	-	74.2A	59.3A

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.

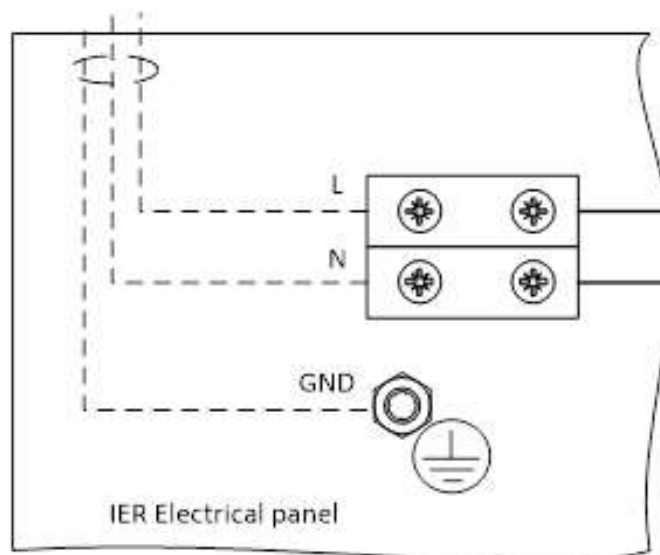


Figure 29 – Power supply connection- 1ph

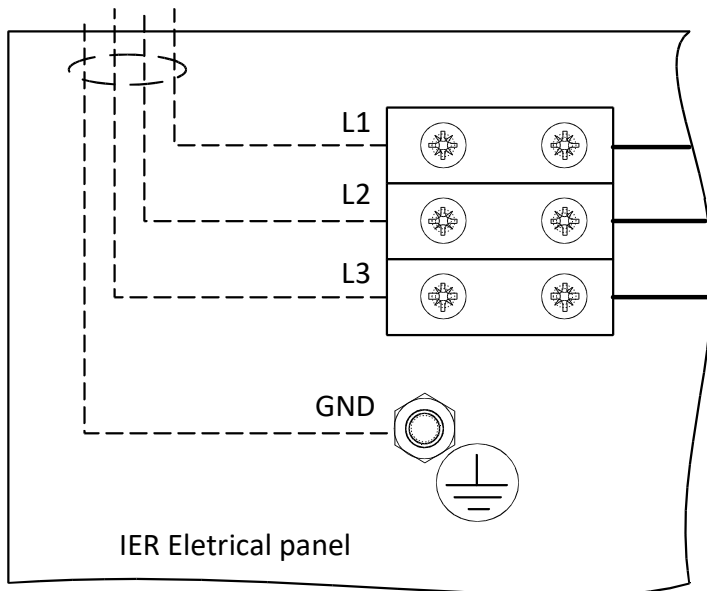


Figure 30 – Power supply connection- 3ph, IER04 to 31

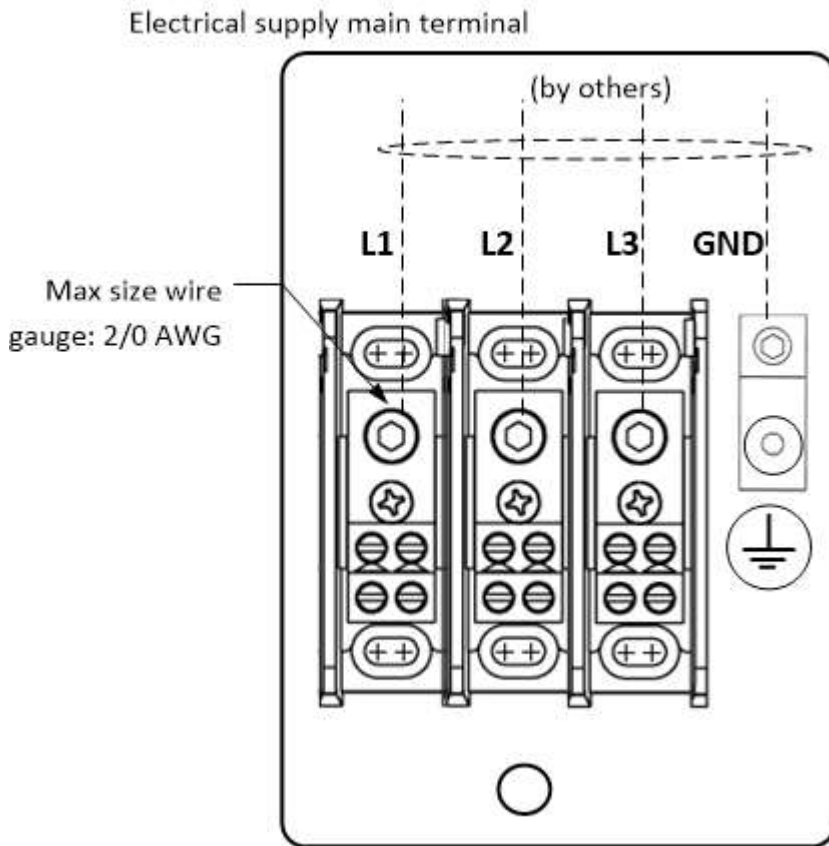


Figure 31 – Power supply connection- 3ph, IER44 & IER62

## Control circuit specification

Zone	Humidifier tag	Model	Control signal	Feedback signal	BMS remote communication
		IER04 to 62	0-10Vdc	0-10Vdc	n/a

### Recommended safety control specification

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.
- A high limit humidistat 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 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.

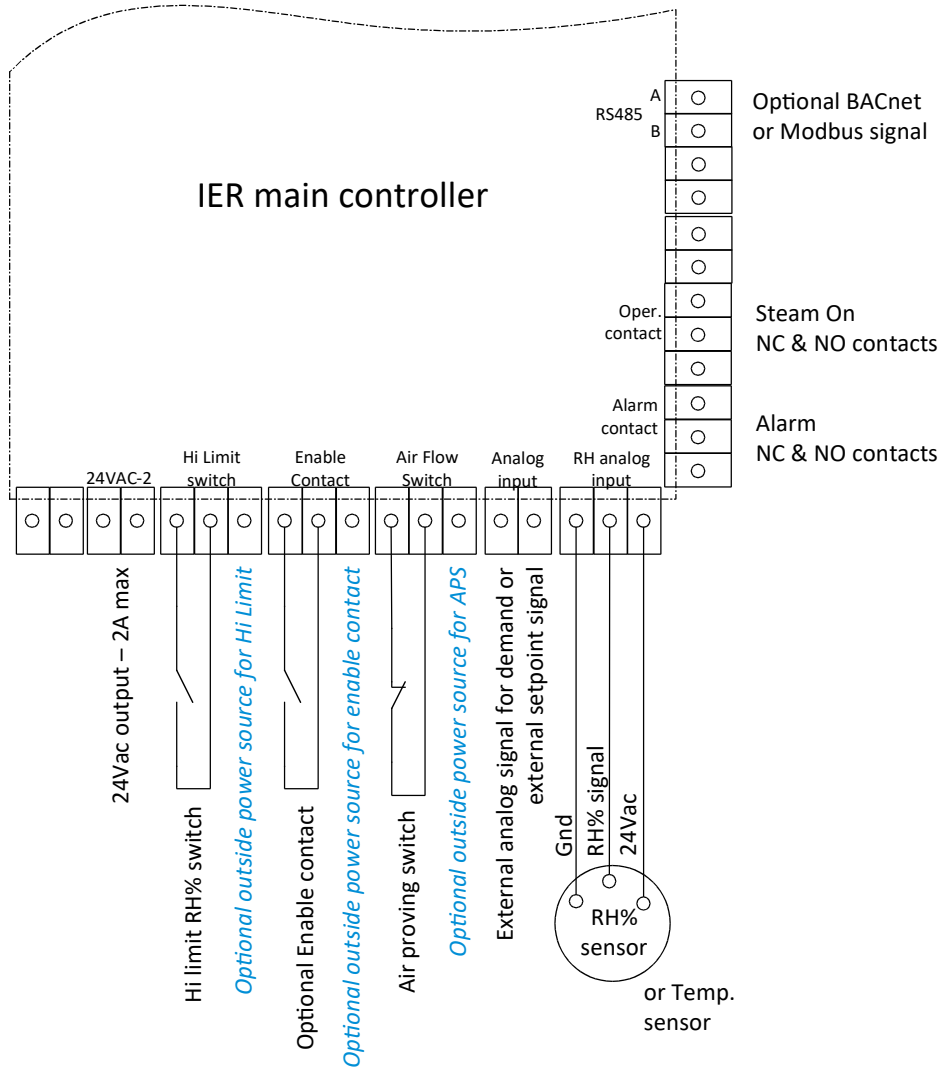


Figure 32 – Control connection

### Admissible control signal

IER electric steam humidifier can be controlled by one of the following signal:

Control	Admissible signals
Proportional External demand Analog input	0-10Vdc, 0-5Vdc, 1-5Vdc, 2-10Vdc or 4-20mA
On-Off external signal Enable contact	Dry contact
Proportional RH% sensor RH% (or temperature) analog input	0-10Vdc, 0-5Vdc, 1-5Vdc, 2-10Vdc or 4-20mA
BACnet or Modbus signal (optional)	BACnet MS/TP or Modbus through RS485 terminal

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

Steam 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.

# Accessories

List of accessories to be delivered with the humidifier

## A. Electrical safeties & Controls

Zone	Humidifier tag	Model	Duct Air Proving switch	Duct Hi Limit switch	Control



Figure 33 – DAP

### DAP specifications

Pressure range : 0.2 to 2 inH2O

Contact SPDT 2A, 250Vac



Figure 34 – DHL

### DHL specifications

Set point range : 15 to 95%RH

Contact 5A, 24Vac/Vdc



Figure 35 – DHS

### DHS specifications

Range : 0 to 100%RH

Output: 0-10VDC

Accuracy:  $\leq 3\%RH$  (at 25°C, 20 to 80%RH)

Hysteresis:  $\leq \pm 1\%RH$

Response time: :  $\leq 10s$  (25°C no air movement)

Drift:  $\leq \pm 0.5\%RH$

Voltage: 15 to 28Vac or 15 to 36Vdc



Figure 36 – RHS

### RHS specifications

Range : 0 to 100%RH

Output: 0-10VDC

Accuracy:  $\leq 3\%RH$  (at 25°C, 20 to 80%RH)

Hysteresis:  $\leq \pm 1\%RH$

Response time: :  $\leq 10s$  (25°C no air movement)

Drift:  $\leq \pm 0.5\%RH$

Voltage: 15 to 28Vac or 15 to 36Vdc



## B. Water treatment

Zone	Humidifier tag	Model	Water filters	Softener	RO treatment
			WF-105	/	/



Figure 37 – WF-105

### WF 105 specifications

**1st stage :** 10 microns sediment

**2nd stage :** 5 microns sediment

**Cartridge Dimensions:** 10in

**Water flow :** 1GPM

**Max pressure :** 100 PSI

**Fittings:** ½" NPT