



EC Series

Standard Water Electric Humidifier

SHEET NO.

EC-1



The “EC” Series Electric Humidifier from PURE Humidifier Co. is loaded with features and options. All you need is tap water, electricity, and a sanitary drain. The humidifier does the rest.

Each humidifier is supplied with an INTAC® PLC control system mounted within the enclosure. The INTAC® PLC microprocessor control system provides constant monitoring of the water level and safety systems. This will prevent operation, should any of the safety circuits open.

All this is contained within an aesthetically pleasing cabinet that is constructed of 18-gauge steel with a baked enamel paint finish. The cabinet floor is designed as a drain pan with plumbing connections for drain piping. The cabinet is designed to be compact for easy installation and maintenance. The internal stainless steel evaporating chamber is mounted on slides for easy removal. The electrical compartment is isolated from the evaporating chamber and is supplied with a key-locked door.

Insty-Pac or Fast-Pac dispersion grids can be provided to custom fit any built-up or manufactured air handling system. An optional Blower Pack can be mounted directly on top of the “EC” humidifier or mounted remotely, and contains an adjustable speed fan to disperse the steam directly into the space without the use of ductwork.

Our results are comforting



Capacity, Weights, & Electrical Specifications

EC Series

SHEET NO.

EC-2

Capacity & Weights

EC Series

Standard Water Unit Model No.	Steam Output Capacity †		Humidifier Weight			
	lbs/hr	kg/hr	Empty		Full	
			lbs	kg	lbs	kg
EC-5	15.0	6.8	139.0	63.1	223.0	101.2
EC-10	30.0	13.6	140.0	63.5	224.0	101.6
EC-15	45.0	20.4	141.0	64.0	225.0	102.1
EC-20	60.0	27.2	142.0	64.4	226.0	102.5
EC-25	75.0	34.0	143.0	64.9	227.0	103.0
EC-35	102.0	46.3	146.0	66.2	230.0	104.3

Electrical Specification

EC Series

Standard Water Unit Model No.	KW	Single Phase Amperage						Three Phase Amperage				CONTROL CIRCUIT VOLTAGE	
		No. of Heaters	120V	208V	240V	480V	600V	No. of Heaters	208V	240V	480V		600V
EC-5	5	Single	41.7*	24.0	20.8	10.4	8.3	Triple	13.9	12.0	6.0	4.8	24 vac
EC-10	10	Double			41.7	20.8	16.7	Triple	27.8	24.1	12.0	9.6	24 vac
EC-15	15	Triple				31.3	25.0	Triple	41.7	36.1	18.1	14.4	24 vac
EC-20	20	Triple				41.7	33.3	Triple			24.1	19.2	24 vac
EC-25	25	Triple					41.7	Triple			30.1	24.1	24 vac
EC-35	34	Triple						Triple			40.9	32.7	24 vac

* EC-5 at 120/1 requires 3 heating elements.

† The above capacities are based on 100% efficiency. Actual humidifier capacity may vary due to the heat loss from the humidifier reservoir. The ambient air temperature, air velocity, and injection tube system will affect the rate of heat loss from the humidifier reservoir.

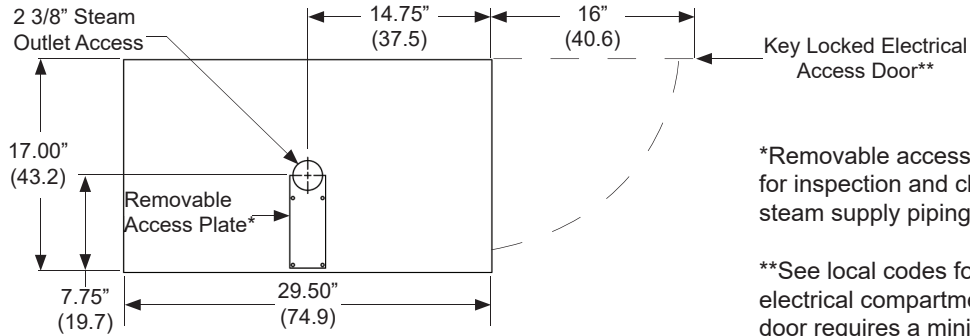


Dimensions & Layout

EC Series

SHEET NO.

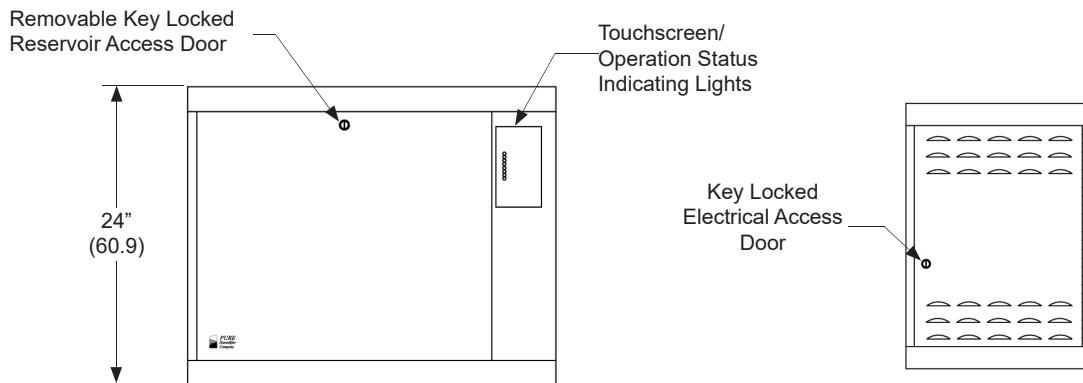
EC-3



*Removable access plate allows reservoir to slide out for inspection and cleaning without disconnecting the steam supply piping.

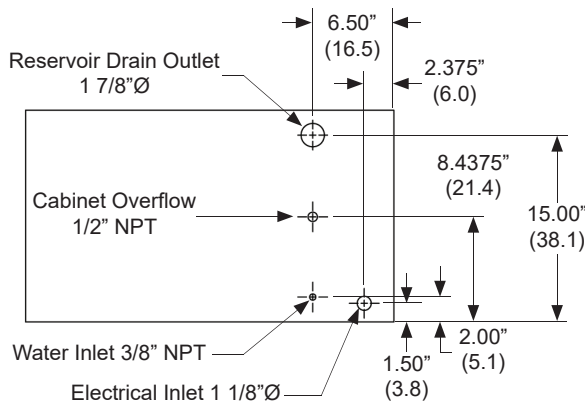
**See local codes for minimum clearance to electrical compartment. The electrical access door requires a minimum clearance of 16" to fully open.

TOP VIEW



FRONT VIEW

RIGHT SIDE VIEW



BOTTOM VIEW

Note: Dimensions are typical for all EC models.

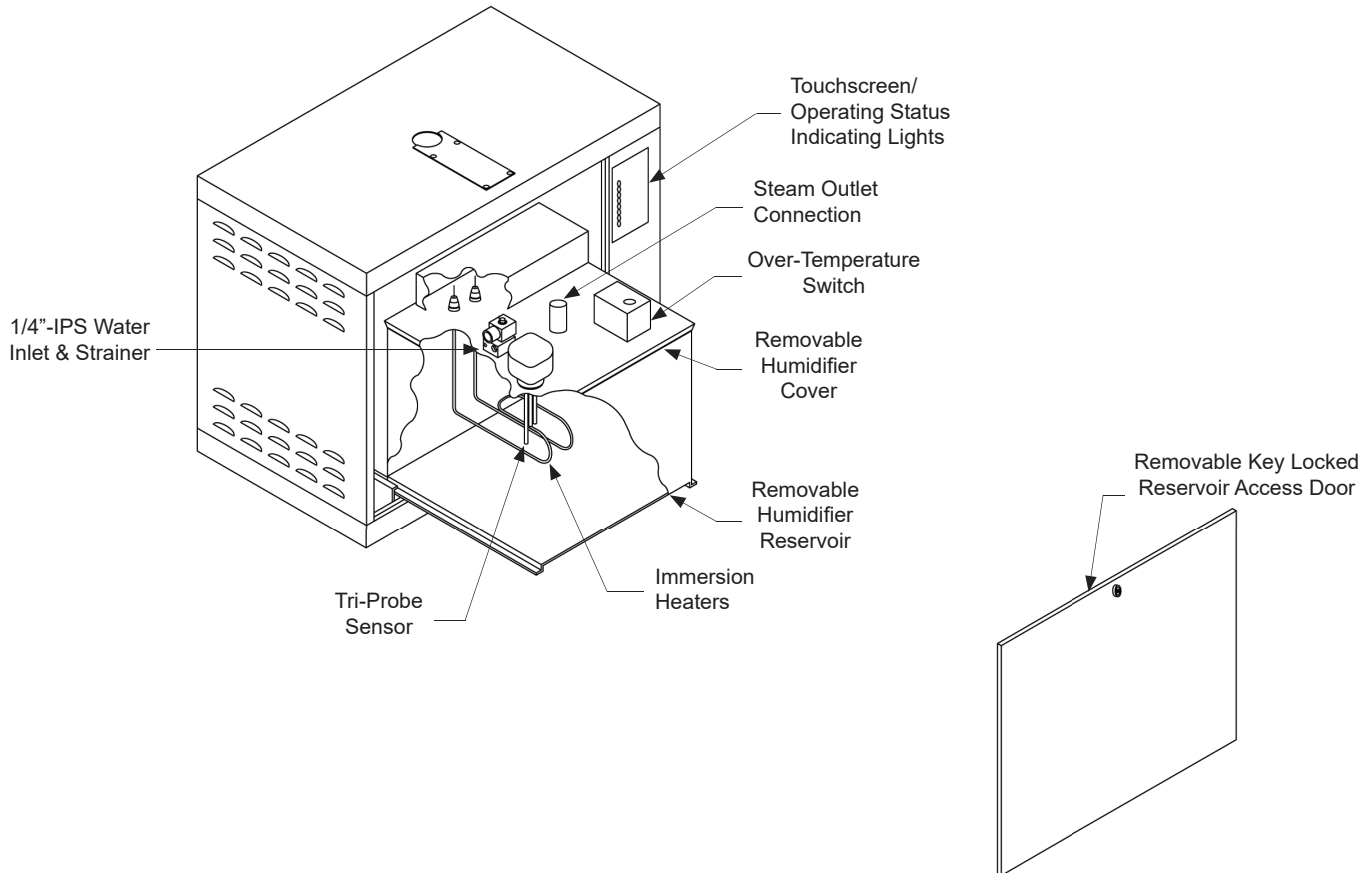


Humidifier Layout

EC Series

SHEET NO.

EC-4



Humidifier Features

- SCR modulating control
- Electronic water level control system
- Accumulative automatic timed drain system
- Seasonal end-of-use drain system
- High efficiency incoloy immersion water heaters
- 18-gauge steel cabinet with powder coated paint finish
- Internal stainless steel evaporating reservoir mounted on slides for easy removal
- Key locked doors for both reservoir and electrical access
- Easy and simple installation options
- Dispersion methods include Insty-Pac*, Fast-Pac, Injection Tube*, or Blower Pack assembly* for room distribution
- Manual reset over-temperature safety switch
- INTAC® PLC control system
- VAV dual modulating control system*

* Optional features

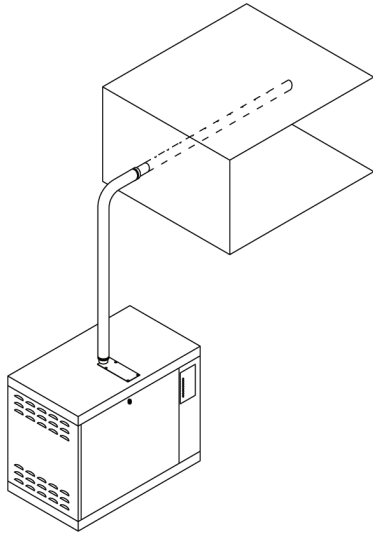


Dispersion Methods

EC Series

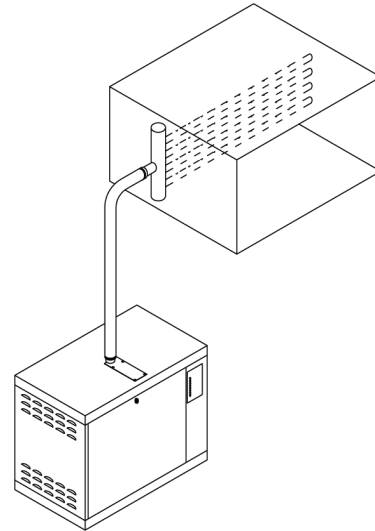
SHEET NO.

EC-5



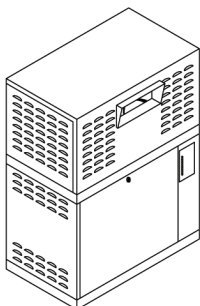
Injection Tube and Flexible Hose Kit

Allows remote mounting of the humidifier reservoir from the duct. Also allows the humidifier to be located below a wall-mounted duct. See page 8 for details.



Insty-Pac and Fast-Pac Multiple Injection Tube Assemblies

For applications where you need a short dissipation distance. Allows remote mounting of the humidifier reservoir from the duct. Also allows the humidifier to be located below a wall-mounted duct. See page 9 for details.



Blower Pack for Direct Room Humidification

Allows humidifier to be mounted directly on the wall within the space to be humidified. See page 11 and 12 for details.



Blower Pack

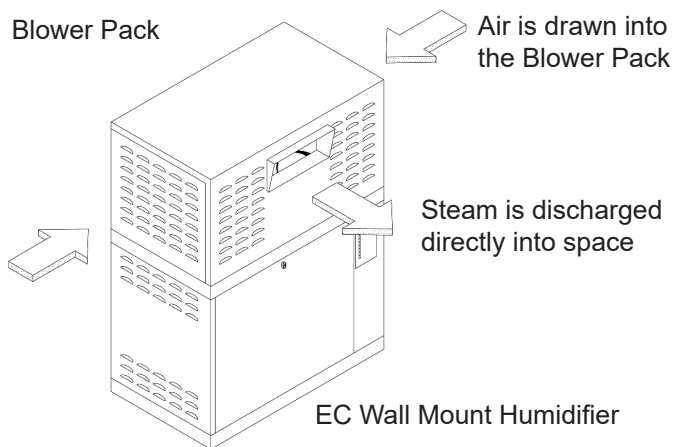
EC Series

SHEET NO.

EC-6A

Optional Blower Pack

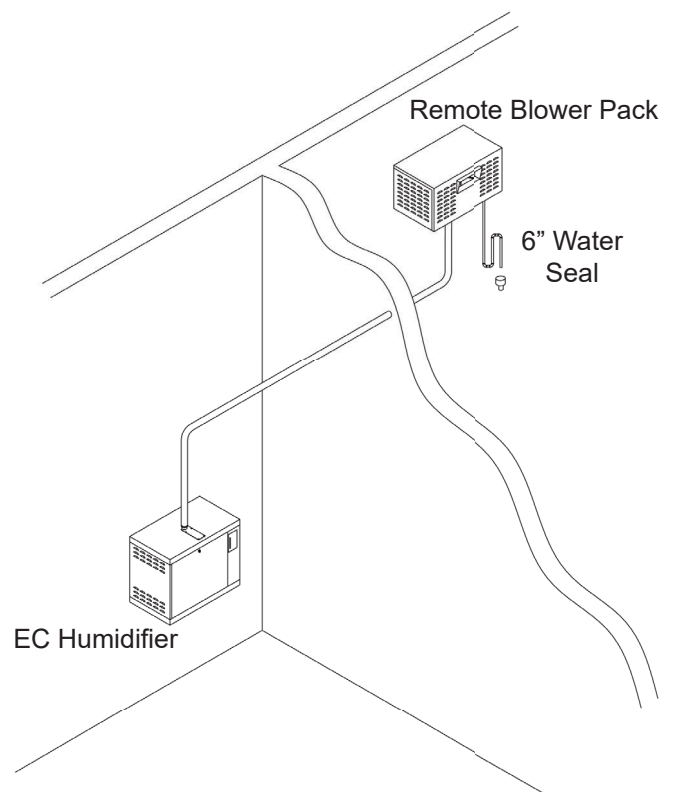
In applications where a ducted air system is not available, PURE offers the optional Blower Pack. The Blower Pack contains a two-speed adjustable blower that moves the air over the steam discharge outlet and disperses the steam directly into the space (see Fig. 1). The Blower Pack mounts directly on top of the EC humidifier or can be remote mounted (see Fig. 2).



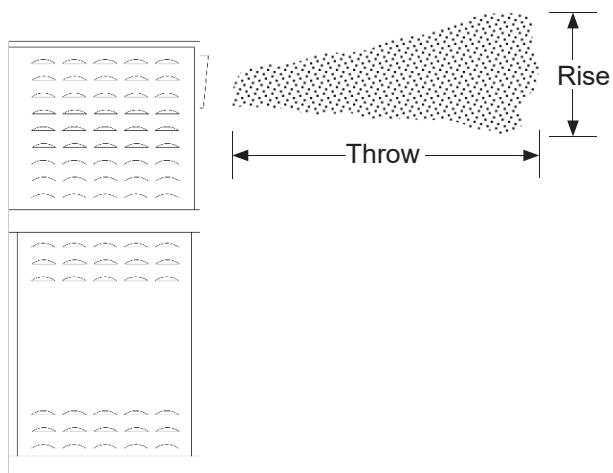
EC w/Optional Blower Pack
Fig. 1

Remote Mounting

The Blower Pack may be remote-mounted up to ten feet away from the EC wall mount humidifier (see Fig. 2).



Remote-Mounted Blower Pack
Fig. 2



Visible Rise and Throw
Fig. 3



Blower Pack

EC Series

SHEET NO.

EC-6B

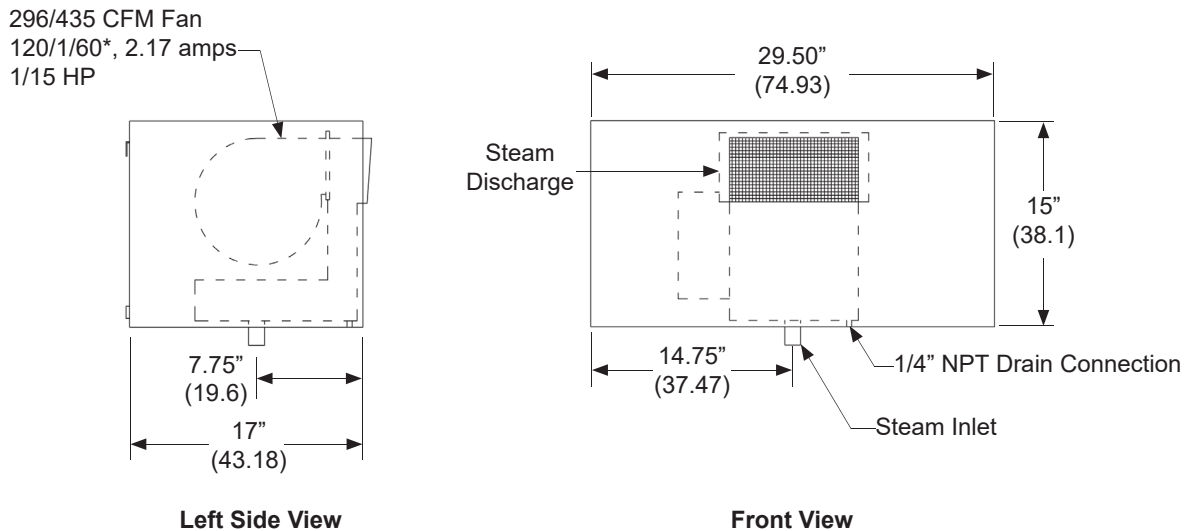
Locating Blower Pack

The distance that visible steam will travel after leaving the Blower Pack is dependent upon the relative humidity in the room and the capacity of the humidifier. If this visible steam comes in contact with any solid object (walls, beams, machinery, etc.) it may form condensate and drip. Refer to Fig. 3 (Fig. 3 is located on page 6A) and Table 4 for data on visible steam travel. This will aid you in planning the location of the Blower Pack.

Visible Steam Rise & Throw		Humidifier Model					
		EC-5	EC-10	EC-15	EC-20	EC-25	EC-35
50% RH	Rise (ft)	1'	2'	3'	4'	5.5'	8'
	Throw (ft)	8'	10'	13'	16'	18'	23'
60% RH	Rise (ft)	2'	3'	4'	5'	6'	8'
	Throw (ft)	13'	14'	16'	18'	20'	25'

Throw is the horizontal distance the visible steam travels from the steam discharge.
Rise is the vertical distance the visible steam travels from the steam discharge.
 Objects in the direct line of the visible steam or objects that are cooler than the ambient temperature may accumulate condensation.
NOTE: Data above based on 70°F room temperature.

Table 4



Optional Blower Pack Dimensions
 Fig. 5

Blower Pack weight is 60 lbs (27.2 kg)

* Blower requires a separate 120/1 circuit (by others)



Specification Sample

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SHEET NO.

EC-7

1. The humidifier shall be an electrically heated immersion heater type manufactured by PURE Humidifier Co. of Chaska, Minnesota.
2. The humidifier shall be tested and approved by ETL/ ETL-C Testing Laboratories, Inc.
3. The humidifier shall have an evaporating reservoir with a gasket sealed cover which is capable of operating at pressures of at least 19"-48 cm (W.C.) without steam or water leaks. The reservoir shall be made of type 304L stainless steel with welded joints. Reservoir shall be mounted on slide rails for easy removal from the cabinet.
4. The reservoir shall be contained within a cabinet that is constructed of 18-gauge steel with a powder coat finish. The cabinet floor shall be designed as a drain pan with plumbing connections for drain piping.
5. A surface water flusher shall be included to drain away a portion of the water upon each refill cycle. This is to allow mineral deposits produced by earlier evaporation cycles to be removed.
6. The immersion heater(s) shall be incoloy sheathed and designed for a maximum of 80 watts per square inch. They shall be attached to the reservoir cover and be easily removed for cleaning and inspection. Expansion and contraction of the heater(s) sheath allows mineral buildup to flake off.
7. A solenoid-operated water fill valve with internal strainer shall be factory mounted on the cover of the humidifier reservoir. A bottom fill system shall be utilized to prevent any collapse of the steam head during the fill process. The fill valve shall be located to allow a minimum air gap of 1½" (3.81 cm).
8. The humidifier shall have a manual reset over- temperature switch factory installed on the humidifier reservoir. The temperature switch shall provide humidifier over-temperature protection.
9. The INTAC® Programmable Logic Controller (PLC) shall be factory mounted within the control panel and shall electronically control the automatic refilling, low water cut-off, high water cut-off, manual surface water flushing, and safety switch interlock functions. The INTAC® PLC performs self-diagnostics and controls all water level, fill, drain and safety circuit interlocks with fault indication.
10. The INTAC® PLC has an adjustable tank water temperature control to maintain a set temperature when the humidifier is not actively humidifying.
11. The INTAC® PLC shall perform Automatic drain downs. The drain period is field adjustable from 0.1 to 500 hours with the drain duration adjustable from 0.01-120 minutes. During the drain period, the humidifier reservoir will drain, and the fill valve will be energized to provide a thorough rinsing action. After the drain period is completed, the drain valve will close, and the humidifier will refill to provide humidity on demand.
12. The INTAC® PLC shall perform a Seasonal "End-Of-Use" humidifier drain. The humidifier will automatically drain the reservoir after a non-use time period, which is field adjustable. Upon receiving a call for humidity, the system automatically refills the reservoir and allows the humidifier to operate in "Normal Mode".
13. The INTAC® PLC has a local HMI display to indicate Drain Valve Open, Safety Circuit Open, Over-temp Open, Fill Valve Status, Water Level Status, Drain Valve Status and Power Output. The INTAC® PLC shall control all water level control functions through a Tri-Probe sensor mounted on the cover of the humidifier reservoir. The Tri-Probe sensor with stainless steel shield shall electrically sense the water level within the reservoir.
14. The INTAC® PLC also employs an intuitive color touchscreen interface, comes with BACnet communications, contains a webserver, is capable of data logging, maintains a fault history and uses a real time clock.
15. SCR Modulation, 100% solid state power controller shall be provided in the control panel. The SCR power controller will modulate the humidifier between 0-100% of its rated capacity according to humidistat demand.
16. The electrical compartment shall be isolated and watertight from the reservoir compartment. The electrical compartment shall be accessible by a hinged and key locked door. The panel shall include a factory wired subpanel with a magnetic contactor, INTAC PLC, fused control circuit transformer, numbered terminal blocks and heater fuses. The high voltage wiring shall be shielded to prevent shock hazard. The modulating control voltage shall be field adjustable to match the controlling input signal.
17. The humidifier shall be supplied with a wall mount channel bracket for easy wall mounting. The bracket shall be load tested to a 600-pound capacity.

Reference the "Options" page for a description of the options which can be added to the base specification.



Options

EC Series

SHEET NO.

EC-8

Humidifier

Insulation. Unit shall be covered (except top cover) with $\frac{3}{4}$ " (1.9 cm) thick fiberglass duct insulation. Insulation material shall have aluminum foil facing.

Modulating Fill. For applications that require RH staying above a minimum threshold, a smaller fluctuation allows you to set the set point lower. Not only does this create a cost savings, but also saves on energy and water usage, making it a more economical option than the constant overflow method. Field-retrofitable on units that use our Tri-Probe water sensor.

Injection Tubes

Injection Tube(s) and Flexible Hose. Each unit shall include one or more 10-foot (305 cm) sections of $1\frac{1}{2}$ " (3.8 cm) I.D. flexible hose and a $1\frac{1}{2}$ " (3.8 cm) O.D. stainless steel injection tube long enough to extend across the duct. Steam ports shall direct steam upward into the airflow. The reservoir cover shall have a matching connection so the flexible hose can be connected with two stainless steel hose clamps. A two-piece duct plate shall be provided to seal the duct opening.

Fast-Pac Multiple Tube Assembly. Tube assembly consists of a stainless steel supply/condensate header with a $\frac{3}{4}$ "-NPT drain connection and horizontal $1\frac{1}{2}$ " \varnothing stainless steel injection tubes.

Insty-Pac Tube Assembly. Tube assembly consists of a steam supply/separator header constructed of stainless steel with steam inlet, condensate drain outlet, and steam jacketed injection tubes welded to header. Steam jacketed injection tubes constructed of stainless steel with punched steam ports of the proper size and spacing to deliver the maximum specified capacity.

High-Efficiency Insulated Tubes. Thermoplastic wrap reduces condensate loss and unwanted heat gain during cooling mode.

Blower Pack. Unit shall allow for direct space humidification without the use of ductwork. Unit shall be contained within a cabinet that is constructed of 18-gauge steel with a powder coated paint finish. Unit shall have a two-speed field adjustable fan. The fan is controlled by a thermostat interlock mounted on the steam distributor, it shall activate the fan before steam is discharged and deactivate the fan after all residual steam has been discharged. The blower shall be designed to mount directly on top of the "EC" humidifier or remote wall mounting.

Controls and Safety Devices

VAV Control. A supply duct humidity sensor shall be supplied to control critical variable air volume (VAV) air handling systems. The system shall automatically determine if the supply air or the room/return/control by others signal is dominant and slowly reduces the humidifier output capacity, thus preventing over-saturation of the supply air when the air volume changes.

Outdoor Air Temperature Setback. Provides automatic reduction of RH set point to prevent condensation on windows during extreme cold weather.

Airflow Proving Switch. A diaphragm operated airflow proving switch with adjustable control range of .05" W.C. to 12.0" W.C. shall be provided for field installation. Switch rating shall be 2.5 amps at 120V.

Duct High-Limit. An on/off high-limit safety humidistat shall be provided for duct installation. The high-limit shall be field set to prevent over saturation within the supply duct.

Miscellaneous Accessories

DCT-927 Drain Tempering Kit. Provides cold water mixing of the 212°F drain water.

Condensate Pump. Used to lift condensate from the humidifier or tube assembly.

Reference the "Specification Sample" page for the humidifier base specification.