SECTION 23 84 13

Ultra-sorb® Model MP Steam Dispersion Panel Humidifiers

**Specifier: Please edit sections in blue based on project requirements**

### PART 1 – GENERAL

#### 1.1 Summary

##### Section includes:

###### DriSteem Corporation, Ultra-sorb steam dispersion panels

#### 1.2 References

##### Certifications

###### ISO 9001:2015 for Design and Manufacture of Systems for HVAC Applications

###### HCAI Seismic Certification preapproval

#### 1.3 Submittals

##### Comply with Submittal Procedures and Execution and Closeout Requirements in General Requirements.

##### Submit product data (manufacturer’s specifications and technical data including performance, construction, and fabrication) for each manufactured component.

#### 1.4 Warranty

##### Product shall be warranted to be free from defects in materials and fabrication for a period of two years after installation or 27 months from ship date, whichever comes first.

### PART 2 – PRODUCTS

#### 2.1 Humidifier shall be DriSteem Ultra-sorb Steam Dispersion Panel or engineer-approved equal.

##### The Ultra-sorb steam dispersion panel shall directly inject pressurized boiler steam or evaporative, non-pressurized steam into ducted air for humidification.

##### Steam dispersion panels shall be factory-assembled and include the following components:

###### Steam supply and condensate collection header

###### Galvanized metal frame panel sized as specified in the humidifier schedule

###### Steam dispersion tubes spanning the distance between the steam header and top of framed panel

##### Each dispersion tube shall be fitted with two rows of steam discharge tubelets inserted into the tube wall, to meet specified absorption distances. The two rows of tubelets in each dispersion tube shall discharge steam in diametrically opposite directions, perpendicular to airflow.

##### Each tubelet shall extend through the wall of and into the center of the dispersion tube and contain a steam orifice sized for its required steam capacity.

##### The humidifier shall provide absorption characteristics that preclude water accumulation on any in-duct surface within \_\_\_\_\_" (\_\_\_\_\_ mm) of the humidifier tube panel while maintaining conditions of \_\_\_\_\_% maximum relative humidity (RH) at a minimum of ­­­­\_\_\_\_\_°F (\_\_\_\_\_°C) in the duct airstream.

##### Air pressure loss across the humidifier panel shall not exceed \_\_\_\_\_" water column (\_\_\_\_\_ Pa) at a duct air velocity of \_\_\_\_\_fpm (\_\_\_\_\_m/s).

##### Steam supply and condensate drain piping connections to panel shall both be provided within 6” of the humidifier panel bottom corner, on common side of AHU or duct designated on drawing, to minimize exterior piping runs.

##### Provide any blank-off plates required to prevent airflow bypassing humidifier face area.

##### Each packaged humidifier panel assembly of steam header and tubes shall be contained within a galvanized metal casing to expedite duct mounting, or to facilitate the stacking of and/or the end-to-end mounting of multiple humidifier panels in ducts or air handler casings. When so designated, the humidifier panel shall be shipped unassembled.

##### All tubes and header shall be 304 stainless steel unless otherwise noted in Humidifier Options below, and welded joints shall be Heli-arc welded.

##### Tubes shall be fitted to the steam header utilizing compression-fit sealing grommets to facilitate easy removal. The top of dispersion tubes shall be attached to humidifier frame, and allow for removal with common tools.

#### 2.2 Humidifier Options

##### Optional stainless steel components:

###### Inlet strainer shall be stainless steel.

###### Entire control valve shall be stainless steel.

###### Casing assembly shall be 304 stainless steel.

###### Casing assembly shall be 316 stainless steel.

###### Tube and header shall be 316 stainless steel.

##### Pressurized steam components for use with boiler steam:

###### Valve options: (choose 1, or 2 & optionally 3)

Modulating electronic humidification steam control valve: Valve shall be a normally closed with an electronic actuator. Valve trim shall be stainless steel, and sized to meet humidification requirements. Actuator shall respond to a variable electronic signal of 2 to 10 VDC or 4 to 20 mA.

Modulating pneumatic humidification steam control valve and actuator: Valve shall be a normally closed modulating type with modified linear flow. Valve trim shall be stainless steel, and sized to meet humidification requirements. Actuator shall be a pneumatic type to modulate the steam valve in response to a variable pneumatic signal demand, and be direct acting.

Pilot positioner: The valve pneumatic actuator shall be equipped with an adjustable pilot positioner.

###### Steam trap(s):

Humidifier shall be provided with one float and thermostatic (F&T) trap for use with steam supply line.

###### Steam strainer(s):

Humidifier shall be provided with one wye strainer for use with steam supply line.

##### High-efficiency dispersion tubes: (option)

###### Dispersion tubes shall be insulated with a plenum-approved insulating material for in-duct installation and have an R-value not less than 0.5.

###### Airstream heat gain shall not exceed values specified on the humidifier schedule; the values shall be supported by manufacturer's published data.

###### Insulating material shall meet the following criteria at 0.125" (3.2 mm) thickness:

Fire/smoke index shall be 0/0 per any of the following test procedures:
- UL 723 fire/smoke index (Test for Surface Burning Characteristics of Building Materials)
- NFPA 255 (Standard Method of Test of Surface Burning Characteristics of Building Materials)
- ASTM E84 (Surface Burning Characteristics for Materials Used in Plenums)

Stable up to 300 °F (148 °C) continuous exposure

Insulation shall not absorb water or support microbial growth

Will not degrade when exposed to UVC light

Continuous, seam-welded, and held in place without bands or clamps, to minimize surfaces for the accumulation of particulate matter

##### Seismic Certification

###### Humidifier shall meet HCAI Special Seismic Pre-approval for building code CBC 2022 for duct and AHU applications.

###### Humidifier shall meet IBC 2022 Seismic Qualification for building code CBC 2022 for duct and AHU applications.

##### Control input options

###### Humidistat, electronic, room: Electronic humidistat with internal sensor and modulating output (0-10 VDC or 4-20 mA) and digital display showing both current humidity and humidity setpoint shall be wall-mounted. Accuracy to be +/-3% or better in operating range (0 to 90% RH and 32 to 122 F). 24 VAC/VDC power input required.

###### Humidistat, electronic, duct: Electronic humidistat, 2-piece kit includes digital wall controller showing both current humidity and humidity setpoint, and duct sensor that shall be installed in the duct. It has modulating output 0-10 VDC or 4-20 mA. Accuracy to be +/-3% or better in operating range (0 to 90% RH and 32 to 122 F). 24 VAC/VDC power input required

###### Humidistat, electronic, BACnet, room: Electronic humidistat, includes BACnet MSTP interoperability protocol, with internal sensor and modulating output (0-10 VDC or 4-20 mA) and touchscreen digital display showing both current humidity and humidity setpoint shall be wall-mounted. Accuracy to be +/-3% or better in operating range (0 to 90% RH and 32 to 122 F). 24 VAC/VDC power input required

###### Humidistat, electronic, BACnet duct: Electronic humidistat, includes BACnet MSTP and BACnet IP interoperability protocol, 2-piece kit includes digital wall controller showing both current humidity and humidity setpoint, and duct sensor that shall be installed in the duct. It has modulating output 0-10 VDC or 4-20 mA. Accuracy to be +/-3% or better in operating range (0 to 90% RH and 32 to 122 F). 24 VAC/VDC power input required

###### Airflow proving switch, pressure type: Airflow proving switch shall be diaphragm-operated with pitot tube for field installation. Switch shall have an adjustable control point range of 0.05" to 12" wc (12.5 to 2988 Pa). Operating temperature range of -40 to 180 °F (-40 to 82 °C). Compatible with 24, 120, and 240 VAC.

###### Airflow proving switch, sail type: Airflow switch shall be a sail-operated electric switch for field installation. Switch makes at 250 fpm (1.3 m/s), and breaks at 75 fpm (0.4 m/s). Maximum operating temperature for sail: 170 °F (77 °C). Maximum operating temperature for switch: 125 °F (52 °C).

###### Humidistat, pneumatic, room: The pneumatic room humidistat shall provide a pneumatic modulating output in response to humidity changes, range 10% to 95% RH, maximum inlet pressure 25 psi (172 kPa). Operating temperature range 40 to 150 °F (4 to 66 °C). Provide with mounting bracket and cover.

###### Humidistat, pneumatic, duct: The pneumatic duct humidistat shall provide a pneumatic modulating output in response to humidity changes. Preset at 35% RH set point. Maximum inlet pressure 25 psi (172 kPa). Maximum air velocity 2000 fpm (10 m/s). Operating temperature range 20 to 150 °F (-7 to 66 °C).

###### Humidistat, pneumatic high limit, duct: The pneumatic duct high limit humidistat shall provide a pneumatic modulating output in response to humidity changes. Preset at 85% RH set point. Maximum inlet pressure 25 psi (172 kPa). Maximum air velocity 2000 fpm (10 m/s). Operating temperature range 20 to 150 °F (-7 to 66 °C).

###### Airflow proving switch, pneumatic type: The pneumatic airflow switch shall detect the presence or absence of airflow. Field-installed in duct. Maximum air velocity 2000 fpm (10 m/s). Switch action vents air on no-flow. Maximum pneumatic inlet pressure 20 psi (138 kPa). Operating temperature range 32 to 180 °F (0 to 82 °C).

#### 2.4 Humidifier Accessories

##### Condensate cooler: A thermostatically controlled water valve shall meter an amount of cold water into a stainless steel mixing chamber to temper 212 °F (100 °C) water with a 6 gpm (0.38 L/s) in-flow rate to a 140 °F (60 °C) discharge temperature to sanitary system.

### PART 3 – EXECUTION

#### 3.1 Installation

##### Install per manufacturer's printed instructions and as indicated on drawings.

##### Coordinate electrical connections specified in Division 26.

END OF SECTION