|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |

|  |
| --- |
| Project Information |
| Project Name: |  |
| Submitting Contractor: |  |
| Engineer: |  |
| Manufacturer’s Rep: |  |

 |
|  |

**Mechanical Specifications**

**GENERAL DESCRIPTION – VERTICAL CLASSIC FAN COIL UNITS**

**FHA** – Vertical Hideaway

**FSA** – Vertical Sloped Top Cabinet

**FXA** – Vertical Cabinet

**PART 1 – GENERAL**

1.1 SUMMARY

A. This section includes fan coil units and accessories.

1.2 SYSTEM DESCRIPTION

A. [FHA Vertical Hideaway] [FSA Vertical Sloped Top Cabinet] [FXA Vertical Cabinet]

B. [2-pipe cooling only] [2-pipe heating only] [2-pipe heat/cool] [2-pipe heat/cool auxiliary electric heat], [2-pipe cool total electric heat], [4-pipe heat/cool] [2-pipe R-410a DX cooling only] [2-pipe R-410a DX cooling only] [4-pipe R-410a DX cooling/ Hydronic Heat]

C. [Floor mount concealed] [Floor mount exposed] [Wall mounted concealed] [Wall mount exposed] cabinet

1.3 QUALITY ASSURANCE

A. Fan coils shall be Certified and Listed in accordance with AHRI Standard 440-2019.

B. [Each hydronic coil shall be factory tested for leakage at [350] [400] [450] psig air pressure with coil submerged in water] [IEC performs hydronic coil testing for leakage air pressure with coil submerged in water where applicable.]

C. Base or “standard” units shall be ETL listed.

D. IEC certified as an ISO 9001:2015 quality management system and ISO14001:2015 environmental management system organization.

1.4 DELIVERY, STORAGE AND HANDLING

A. Unit shall be handled and stored in accordance with the manufacturer’s instructions.

**PART 2 – PRODUCTS**

2.1 MANUFACTURER

A. Basis of design shall be fan coils by International Environmental Corporation.

2.2 CONFIGURATION

A. General:

1. Factory assembled vertical fan coil units complete with coil, fan, motor, drain pan, and all required wiring, piping and controls.

2. Cabinet shall be made of heavy [18][16][14] gauge galvanized steel.

3. The interior surfaces in the airstream shall be lined with [1/2˝ thick standard fiberglass] [1/2˝ thick Premium IAQ fiberglass] [1/2˝ foil faced] [1/2˝ closed cell] insulation. Insulation and adhesive shall meet NFPA-90A requirements for flame spread and smoke generation.

4. Adhesive shall be certified according to the GREENGUARD Indoor Air Quality (IAQ) Certification for Low Emitting Products. Reference Standard: GGPS.001 GREENGUARD IAQ Standard for Building Materials, Finishes, and Furnishings. Reference Standard: GGPS.002 GREENGUARD Children & SchoolsSM Standard.

5. Units shall have a decoupled interior drain pan and fan deck. The fan deck shall be constructed of 18-gauge galvanized steel extending the entire width of the coil.

6. Stainless steel pans shall be externally coated with 2-part closed cell foam insulation.

7. Units shall have [non-woven synthetic throwaway] [framed permanent washable non-metallic] [pleated MERV 8] filter.

8. Units shall be supplied with [no] [1”] [2.5”] leveling legs

B. FHA Floor Hideaway Units:

1. Units shall be supplied with a 1” duct collar for supply duct connection.

2. Units shall be configured for [top supply] [front supply] as indicated on the plans.

3. [18ga wall panels, painted with specified color, shall be furnished for [top discharge] [front discharge] recessed unit.]

4. [Wall panel shall be fastened with hex-style quarter-turn fasteners.]

C. FXA Floor Exposed Units:

1. [Top panel shall be supplied with a [stamped] [double deflection, aluminum finish] [double deflection, steel construction, painted to match cabinet] supply grille.]

2. [Front panel with supply grille shall be stamped, painted to match cabinet]

3. Cabinet shall be free standing with [two access doors] [one access door] [no access doors].

4. Cabinet shall be painted with an [Arctic White] [Polar White] [Flat Black] [Ermine Gray] [Champagne Beige] [Toffee Brown] [color determined by Architect] powder-coat finish.

5. Front panel shall be fastened with [hex-style] [Torx® tamper proof] quarter-turn fasteners.

6. Top panel on the FXA unit shall be flat.

7. [Floor mounted units shall be configured for [top supply] [front supply] and front return as indicated on the plans.] [Wall mounted units shall be configured for [top supply] [front supply] [front return] [bottom return] as indicated on the plans.]

8. [Cabinet shall have [1”] [1.75”] [2”] [3”] [4”] [5”] [6”] [7”] [8”] [9”] [10”] [11”] [12”] [13”] [14”] [1/2” closed cell insulated] rear cabinet extension.]

9. [Cabinet shall have [1”] [2”] [3”] [4”] [5”] [6”] [7”] [8”] [9”] [10”] [11”] [12] [No] left cabinet extension.]

10. [Cabinet shall have [1”] [2”] [3”] [4”] [5”] [6”] [7”] [8”] [9”] [10”] [11”] [12] [No] right cabinet extension.]

11. [Cabinet shall have [1”] [2”] [3”] [4”] [5”] [6”] cabinet height extension.]

D. FSA Floor Exposed Units:

1. [Top panel shall be supplied with a [stamped] [double deflection, aluminum finish] [double deflection, steel construction, painted to match cabinet] supply grille.]

2. Front panel with supply grille shall be stamped, painted to match cabinet.

3. Cabinet shall be free standing with [two access doors] [one access door] [no access doors].

4. Cabinet shall be painted with an [Arctic White] [Polar White] [Flat Black] [Ermine Gray] [Champagne Beige] [Toffee Brown] [color determined by Architect] powder-coat finish.

5. Front panel shall be fastened with quarter-turn fasteners.

6. Top panel on the FSA unit shall slope down from back to front at an angle of 25 degrees.

7. [Floor mounted units shall be configured for [top supply] [front supply] and front return as indicated on the plans.] [Wall mounted units shall be configured for [top supply] [front supply] [front return] [bottom return] as indicated on the plans.]

8. [Cabinet shall have [1”] [1.75”] [2”] [3”] [4”] [5”] [6”] [7”] [8”] [9”] [10”] [11”] [12”] [13”] [14”] [1/2” closed cell insulated] rear cabinet extension.]

9. [Cabinet shall have [1”] [2”] [3”] [4”] [5”] [6”] [7”] [8”] [9”] [10”] [11”] [12] [No] left cabinet extension.]

10. [Cabinet shall have [1”] [2”] [3”] [4”] [5”] [6”] [7”] [8”] [9”] [10”] [11”] [12] [No] right cabinet extension.]

11. [Cabinet shall have [1”] [2”] [3”] [4”] [5”] [6”] cabinet height extension.]

2.3 CERTIFICATION

A. Safety Agency:

Units shall be listed by ETL indicating the units comply with the minimum requirements of the U.S. and Canadian national product safety standard, ANSI/UL Standard 1995, and with CAN/CSA C22.2 No. 236.

B. Capacities:

Fan coil capacities are tested and certified in accordance with AHRI Standard 440-2019.

2.4 MATERIALS

A. Coils:

1. All coils shall have ½” copper tubes, [manual] [automatic] air vent(s), and [aluminum fins, galvanized end sheets] [aluminum fins, galvanized end sheet and anti-corrosion epoxy coating] [aluminum fins, stainless steel end sheets], 10 fins per inch spacing. Coil fins shall be mechanically bonded to copper tubes.

2. Copper tubes must comply with ASTM B-75.

3. Fin thickness shall be 0.0045˝

4. Tube thickness shall be [0.016˝] [0.025”]

5. Coil rows shall be as indicated on the drawings.

B. Valves:

1. For installation in a [2-pipe] [4-pipe] system, unit shall be equipped with:

A. Valve size shall be [1/2”] [3/4”], as shown on the drawings. [Heating valve size shall be ½”.]

B. [2] [4] manual ball valves for service

C. [1] [2] motorized control valve, 300 psig service:

a. Primary - [25 psid close-off paddle-type] [150 psid normally closed ball-type] [150 psid normally open ball-type] [35 psid floating] [35 psid proportional] with quick-release actuator.

b. Secondary - [25 psid close-off paddle-type] [150 psid normally closed ball-type] [150 psid normally open ball-type] [35 psid floating] [35 psid proportional] with quick-release actuator.

2. Valve package shall be equipped with specialty devices as indicated on the drawings.

 A. Coil connections – [unions at the coil] [standard factory arrangement]

B. Flow Controls

a. Primary - [Return fixed flow control shall be specified on the equipment schedule.] [Circuit setter pressure ports] [Circuit setter P-T ports] [Not supplied]

b. Secondary - [Return fixed flow control shall be specified on the equipment schedule.] [Circuit setter pressure ports] [Circuit setter P-T ports] [Not supplied]

C. Hoses - [24” braided stainless hoses manufactured of EPDM with integral internal Kevlar fabric reinforcement. Hoses shall be rated to fire and smoke standard per ASTM E 84-00 and (NFPA 255, ANSI/UL 723 & UBC 8-1).] [Not supplied]

D. Service Fittings

a. Primary - [Supply P-T port] [Return P-T port] [Supply and Return P-T port] [Pressure port] [Not supplied]

b. Secondary - [Supply P-T port] [Return P-T port] [Supply and Return P-T port] [Pressure port] [Not supplied]

E. Strainer

 a. Primary - [Y- Strainer] [Y-Strainer with blowdown] [Not supplied]

 b. Secondary - [Y- Strainer] [Y-Strainer with blowdown] [Not supplied]

F. Balance Valve

 a. Primary - [Return line only] [3-way bypass] [Not supplied]

 b. Secondary - [Return line only] [3-way bypass] [Not supplied]

C. Fans:

1. Fans shall be direct-drive, double-width fan wheels with forward-curved blades.

2. Blower wheels shall be statically and dynamically balanced.

3. Scrolls and fan wheels shall be constructed of galvanized steel.

4. Shall be easily removable.

D. Motors:

1. Motors shall be 3-speed, single phase, [60] [50] Hz permanent split capacitor type for [115] [208] [230] [277] [220] volts, permanently lubricated ball bearings.

2. Alternate: Motors shall be 3-speed, single phase, [60] [50] Hz constant-torque ECM motors with means for [potentiometer field adjustment of each speed] [4 speed solid state potentiometer field adjustment], for [115] [208] [230] [277] [220] volts, permanently lubricated ball bearings.

3. Motors shall be connected with quick connect electrical plugs.

4. Motors shall have internal thermal overload protection with automatic reset.

E. Controls and Safeties:

1. Controls Voltage:

a. Unit shall be equipped with [24VAC] control.

2. Control Package shall be equipped with specialty devices listed below:

 a. [24VAC condensate overflow switch.]

b. [Thermostat]

i. 24VAC [digital thermostat] [Wi-Fi] [7-day programmable] [BACnet] [Thermostat control by others]

c. [3-speed, 4-position fan switch on a wall plate for field installation.]

F. Operating Characteristics:

1. [A 2-pipe system shall be capable of providing heating or cooling as determined by the operating mode of the central water supply system. [Pipe temperature sensor shall control the sequence of the thermostat, as indicated on the drawings.]] [A 4-pipe system shall be capable of providing heating and cooling on demand.]

G. Electrical Requirements

1. Standard unit shall operate on [115] [208] [230] [277] volts, single phase, [60] [50] Hz electrical power.

I. Options and Accessories:

1. Unit shall be equipped with nichrome wire strip electric heaters for total or auxiliary electric heat as specified on the equipment schedule.

a. Heaters shall be protected by an automatic reset safety cutout switch and a fusible link.

b. Heater capacity shall be as specified on the equipment schedule.

c. Heaters shall be single phase [120] [208] [240] [277] [220] volts as specified on the equipment schedule.

d. [For total electric heat, unit controls shall include a sequenced heating and cooling thermostat in lieu of the heating/cooling thermostat and automatic changeover device.] [For auxiliary electric heat, unit controls shall include an aquastat to verify system mode.]

2. [Service switch with lock-out & tag-out features shall be factory installed. Circuit shall be [non-fused] [fused].] [No Service Switch furnished.]

3. [[24 VAC bipolar ionizer] [No bipolar ionizer supplied.]

4. [Factory installed outside air damper shall be [motorized] [controlled manually].] [Outside air damper not supplied.]

5. [Outside air wall box shall be furnished for field installation.] [Outside air wall box not supplied.]

6. [[Floor][Wall] Mount finishing trim kit][No Trim Kit supplied.]

7. [Finished back panel with [hex-style] [Torx® tamper proof] quarter-turn fasteners.][No Finished back panel supplied]

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |
| --- | --- |
| A picture containing drawing  Description automatically generated |  |
|  |
| 5000 West I-40 Service Road |
| Oklahoma City, OK 73128 |
| IEC Part Number: I100-90045536 | P: 405.605.5000 |
| MS-034 Revision 2 (01/2023) | F: 405.605.5001 |
| ©2022 International Environmental Corporation (IEC®) | [www.iec-okc.com](http://www.iec-okc.com) |

 |
|  |