

## **Mechanical Specifications**

### **GENERAL DESCRIPTION – MODULAR HI-RISE FAN COIL UNITS**

- MPY** – Concealed Modular Hi-Rise
- MUY** – Concealed Universal Modular Hi-Rise
- MAY** – Concealed “Ditto” Modular Hi-Rise – “A” Unit
- MBY** – Concealed “Ditto” Modular Hi-Rise – “B” Unit
- MMY** – Concealed “Master” Modular Hi-Rise
- MSY** – Concealed “Slave” Modular Hi-Rise
- MXY** – Exposed Modular Hi-Rise

### **PART 1 – GENERAL**

#### 1.1 SUMMARY

- A. This section includes fan coil units and accessories.

#### 1.2 SYSTEM DESCRIPTION

- A. Modular Hi-Rise Fan Coil Units, 2-pipe, 4-pipe, or 2-pipe with electric heat, concealed cabinets that are floor mounted; directly connected to optional factory supplied risers.

#### 1.3 QUALITY ASSURANCE

- A. Coils shall be tested in accordance with AHRI Standard 440-2008. Each coil shall be factory tested for leakage at 300 psig air pressure with coil submerged in water.
- B. Base or “standard” units shall be ETL listed.

#### 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 Modular Hi-Rise fan coil units complete with water coil, integrated motorized control valve, fan, motor, drain pan, and all required wiring, piping and controls.
2. Cabinet shall be made of heavy gauge galvanized steel.
3. Units shall be designed to have wallboard applied directly to the unit surface.
4. The interior surfaces shall be lined with [1/2” thick standard fiberglass] [1/2” thick Premium IAQ fiberglass] [1/2” foil faced] [1/4” closed cell] insulation. Insulation shall meet NFPA-90A requirements for flame spread and smoke generation.
5. Insulation adhesive shall be solvent-free and UL recognized. Adhesive shall comply with UL 1995, and be performance verified to UL 723 Test for Surface Burning Characteristics of Building Materials.
6. Removable return air / access panel shall provide access to all internal components.
7. Return air / access panel shall be painted with an [Arctic White] [color determined by Architect] powder-coat finish.
8. Controls shall be provided with a quick connect plug for field-mounting of thermostat on the front of unit.
9. Units shall have a [galvanized] [stainless steel] [removable] drain pan extending the entire width of the cabinet.
10. [Galvanized drain pans shall be internally coated] [Stainless steel pans shall be externally coated] with 2-part closed cell foam insulation.

11. Drain pan shall be factory piped to the drain riser port with a removable/cleanable “p-trap”.

12. All valve package piping to coil(s) and risers shall be factory installed.

13. Units shall have [non-woven synthetic throwaway] [permanent] [pleated MERV 8] filter.

14. Units shall have an optimal double deflection aluminum discharge grille(s) and painted, stamped steel return air grille / access panel.

B. MPY Concealed Modular Hi-Rise Units:

1. Units shall be supplied with dry-wall stop collar(s) for return panel and supply grille installation in locations indicated on the plans.

C. MUY Concealed Universal Modular Hi-Rise Units:

1. Units shall be supplied with knock-outs for supply grille installation in three side locations and cabinet top. Contractor shall determine proper supply grille location for each unit as indicated on the plans.

D. MAY/MBY Ditto Concealed Modular Hi-Rise Units:

1. Two Concealed Modular Hi-Rise units shall share a common riser set and will be shipped joined together by a common UL one-hour fire-rated riser chase.

E. MMY/MSY Master/Slave Concealed Modular Hi-Rise Units:

1. Two Concealed Modular Hi-Rise units share a riser set, but are shipped separately.

F. MXY Exposed Modular Hi-Rise Units:

1. Outside panels shall be multi-bend and made of 18-gauge galvanized steel.

2. Cabinet shall be painted with an [Arctic White] [color determined by Architect] powder-coat finish.

## 2.3 CERTIFICATION

A. Safety:

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:

Coil capacities are tested in accordance with AHRI Standard 440-2008.

## 2.4 MATERIALS

A. Coils:

All coils shall have 1/2" copper tubes, [manual] [automatic] air vent(s), and [aluminum] [copper] fins, 14 fins per inch spacing. Coil fins shall be mechanically bonded to copper tubes. Copper tubes must comply with ASTM B-75. Fin thickness shall be 0.0045" and tube thickness shall be 0.016". All coils shall be leak tested with air at 300 psig under water.

B. Valves:

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

- a. 3-row or 4-row coil as indicated on the plans
- b. 2 manual ball valves for service
- c. 1 motorized control valve, 300 psig service, [25 psid close-off paddle-type] [150 psid ball-type] with quick-release actuator
- d. 1 [circuit setter] [automatic flow regulator valve]

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

- a. 3/1, 3/2 or 4/1 row-split coil, as indicated on the plans
- b. 4 manual ball valves for service
- c. 2 motorized control valves, 300 psig service, [25 psid close-off paddle-type] [150 psid ball-type] with quick-release actuator
- d. 2 [circuit setters] [automatic flow regulator valves]

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. Fan Speed and Temperature Control:

1. Three speed (high, medium, low) control, (off, on, auto), wall mounted (auto / manual changeover) thermostat as indicated on the plans.

E. Motors:

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

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

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

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

F. Controls and Safeties:

1. Controls:

a. [Unit shall be furnished with a 3-speed, 4-position fan switch [unit mounted] [on a wall plate for field installation.] [Reference Fan Coil Unit Controls section.]

2. Safeties:

a. Unit fan motor shall be equipped with integral motor protection.

G. 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.

2. A 4-pipe system shall be capable of providing heating and cooling on demand.

H. Electrical Requirements

1. Standard unit shall operate on [115] [208] [230] [277] volts, single phase, 60 Hz electrical power, and all exposed wiring shall be in flexible conduit.

I. Options and Accessories:

1. Risers (included standard on Ditto):

a. Supply risers shall be 1 to 2½ in. diameter as shown on the equipment drawings.

b. Length of the risers shall be as specified on the equipment drawings.

c. Supply and return risers shall be [Type M] [Type L] copper.

d. Drain riser shall be minimum 1 in. diameter Type M copper.

e. Insulation on the risers shall be [1/2"] [3/4"] closed cell insulation or [1/2"] [1"] fiberglass insulation.

2. Supply Grille:

a. Double-deflection aluminum finish supply grille(s) shall be furnished for field installation.

b. Double-deflection aluminum finish supply grille(s) with opposed blade damper shall be furnished for field installation on units with two or more discharge positions.

3. Return Air Panels:

1. Shall be supplied as shown on the drawings.

4. Unit shall be supplied with sight and acoustical baffle in the supply air plenum in units with two discharge grilles.

5. 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] 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.

e. For auxiliary electric heat, unit controls shall include an aquastat to verify system mode.

f. A junction box and fuse shall be factory furnished and installed to protect the motor and control circuit when electric heaters are installed.

6. Service switch with lock-out & tag-out features shall be factory installed.
7. Equipment shall be supplied with unit fusing.
8. Units shall be equipped with 24V controls.
9. Units shall be equipped with 24V controls and high level condensate switch.
10. A fresh air opening shall be provided as shown on the equipment drawings.