

## Guide Specifications

### Horizontal Mini Air Handling Ducted Fan Coils

#### HVAC Guide Specifications

Size Range: 33,000 to 200,000 BTU/H, Nominal Cooling

30,000 to 310,000 BTU/H, Nominal Heating

Polar Air Models: HAHU-V/P-X-AECM

#### Part 1 — GENERAL INFORMATION

##### **1.1 UNIT DESCRIPTION**

HAHU is an ideal air handling terminal unit for suspended ceiling installation and suitable for ducted air distribution. Appropriate for connection to air-to-water or water-to-water heat pumps, boilers, and chillers.

##### **1.2 QUALITY ASSURANCE**

Unit shall be certified by ETL. Each coil shall be factory tested for leakage by water pressure test at 500 psi for 3 minutes. Completed unit shall be air tested for leakage at 116 psi for 3 minutes. The maximum working pressure is 300 psi. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation. Insulation shall be rated to UL94VO. All equipment wiring shall comply with NEC requirements. Fan coils shall meet compliance requirements of ETL, ISO9001, and CE. All claims of capacity and sound performance shall be verified by an internationally recognized third-party testing agency.

##### **1.3 DELIVERY, STORAGE, AND HANDLING**

Unit shall be stored and handled per manufacturer's instructions.

#### Part 2 — PRODUCTS EQUIPMENT AND CONFIGURATION

##### **A: General**

Indoor, concealed ceiling mounted, horizontal, 2 or 4 pipe console fan coil unit complete with cooling coil or cooling and heating coils. Unit shall include EC fan motor control with on-off and modulating speed, single point primary electrical power connection (unless provided with optional electric heater), NPT, integral controller, heating, cooling, and entering coil air temperature sensors, transformer. 2 control methods will be available as I type full unit control or W type flexi unit control with 24Vac/12Vac transformer for external thermostat. Infra-

red receiver display for remote control, valves, and electric heater shall be available as optional items.

##### **B: Unit Casing**

Casing structure shall be constructed of double skinned RAL 9010 electrostatic coating steel and consists of two panels with internal high-pressure PU foam insulation and resistant to rust, corrosion, chemical agents, solvents, aliphatic compounds and alcohols. The casing shall be provided with thermal and acoustic insulation and mounting feet.

##### **C: Drain Pan**

Condensate drain pan shall be constructed of electrostatic coating steel. Stainless steel pan shall be available as an option.

##### **D: Coil**

1. Standard unit shall be equipped with a cooling coil for installation in a 2-pipe system.
2. Additional coil shall be provided for installation in a 4-pipe system.
3. Cooling coils shall be 5 and 6 rows selected to meet project requirements.
4. Heating coils shall be 2 rows, independently circuited specifically designed for hot water application.
5. Coils shall be TP2 seamless copper tubes 5/8" outside diameter, mechanically expanded into corrugated hydrophilic coating aluminum fins for a permanent primary to secondary surface bond. Fin spacing shall be 10 fins per inch. Coil connectors shall be 1-1/4 inch for cooling and 1 inch for heating male NPT.
6. Each coil shall be provided with factory installed manual air vent and water purge valve.

##### **E: Insulation**

3/8" thick NBR plastic foam. Sandwich panel 1" with polyurethane.

##### **F: Motors**

Fan coils shall be provided with high efficiency EC motors provided with thermal overload protection and sealed, permanently lubricated bearings. Motors shall be controlled via a factory installed electronic controller. Motors shall constant torque, permanent magnet, brushless DC motor with variable speed modulation functionality.

### **G: Fan Section**

The fan section shall include 1 or 2 galvanized steel centrifugal fans consisting of forward curved, double air inlet blades directly attached to the EC motor.

### **H: Controls Options**

Controllers shall provide on-off or modulating fan control and auxiliary electric heater control. Controls shall include coil temperature sensors which will allow fans to operate when coil is chilled (during cooling mode) and heated (during heating mode) and provide alarm configurations.

1. I Type Controller (Modbus): Intelligent control board is controlled via Infra-red handset and/or Intelligent wired wall pad, is field programmable and easy to be configured through the wired wall pad or open Modbus protocol with VWV and VAV control logics, provides variable speed indoor fan control, integrates with Intelligent modulating valves to allow Auto Dynamic Balancing and Intelligent Constant Delta T management systems. It controls 2-pipe, 2-pipe with electric heater (optional), 2-pipe with 6-way valve (optional) and 4-pipe systems. Controller shall be capable of changing temperature settings, fan speed and other control functions using either infrared wireless handset or programmable wired wall pad. Controller shall provide coil freeze and overheat protection using factory installed sensors, occupancy or economy mode contacts, auto restart, and error diagnostics.
2. W control box: Microprocessor controller shall be suitable to use with standalone 24/12 VAC thermostat or 0-10 VDC signal from external source. Controller shall be capable of providing on-off or modulating 0-10 VDC signal for water control valve(s), zone control product operation and control of optional electric heater. Controller will provide simplified error diagnostics.

### **I: Filters**

Nylon Filters shall be 1" thick. 1" MERV 8 or 2" MERV 14 filters shall be offered as options.

### **J: Electrical Requirements**

Unit shall be available for 208-240V/1ph/60Hz power supply. Nominal voltage rating shall be 220v/60Hz with +/- 15% operating tolerance.

### **K: Electric Heat Module (Optional)**

Removable module included PTC type stainless steel electric heaters shall be provided with thermal protection switches. Heater Modules shall be suitable for factory or field installation and controlled via onboard controller.

### **L: Disconnect Switch**

Factory installed disconnect switch shall be located outside the electric box of the unit and shall be sized for the full load ampere of the unit to enable the unit to be disconnected from the power supply prior to any maintenance.

### **M: Safety Ratings and Performance Verification**

Fan Coil Unit shall be ETL Listed. Performance shall be confirmed by accepted third party (AHRI for performance or Eurovent for performance and sound).

### **N: Wall Mounted Wired Pad**

A wired wall pad for communication shall be available as an optional accessory for the 'I' controller.

### **O: Thermostat**

A thermostat shall be available as an optional accessory for the "W" controller.

## **Part 3 – MAINTENANCE**

Maintenance access shall be done by removal of cabinet for all unit components.

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