Guide Specifications

Console Type Hydronic Fan Coils (Universal Floor, Wall, or Under-ceiling Mounted)

HVAC Guide Specifications

Size Range: 3,700 to 38,000 BTU/H, Nominal Cooling

4,200 to 60,000 BTU/H, Nominal Heating

Polar Air Models: PFWB(C)-V/P-X/ Y-AECM

Part 1 — GENERAL INFORMATION

1.1 UNIT DESCRIPTION

Indoor, floor standing, low wall, or under ceiling mounted, chilled or chilled and hot water coil, suitable for installation without duct. Appropriate for connection to air-to-water or water-to-water heat pumps, boilers, and chillers with water supply temperatures up to 176 ^{o}F.

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.

1.4 WARRANTY *(See Appendix A).*

Part 2 — PRODUCTS EQUIPMENT AND CONFIGURATION

A: General

Indoor, top discharge (end if ceiling mounted), horizontal or vertical return, 2 or 4 pipe console fan coil unit complete with cooling coil or cooling and heating coils. Unit shall include EC fan motor with on-off 3 speeds or 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, capable of operating and capable of accommodating integrated, factory installed condensate pump. 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. Fan coil shall be suitable for surface mounting or concealed. Surface mount units shall be provided with a finished external cabinet.

B: Unit Cabinet

Cabinet structure shall be constructed of galvanized steel. Decorative cover shall be cold-rolled steel with fire retardant ABS plastic rated to UL94VO intake and discharge grilles. Steel cover shall be painted and resistant to rust, corrosion, chemical agents, solvents, aliphatic compounds and alcohols. The cabinet shall be provided with thermal and acoustical internal insulation and mounting holes.

C: Drain Pan

Condensate drain pan shall be single slope, "V" type, constructed of galvanized steel. Stainless steel pan shall be available as an option.

D: Air Delivery Grilles

Supply and return air grilles shall be white color RAL9010 ABS with fixed louvers.

E: 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 3 or 4 rows selected to meet project requirements.
4. Heating coils shall be single row, independently circuited specifically designed for hot water application.
5. Coils shall be TP2 seamless copper tubes 3/8" outside diameter, mechanically expanded into corrugated hydrophilic coating aluminum fins for a permanent primary to secondary surface bond. Fin spacing shall be 12.7 fins per". Coil connectors shall be 3/4" male NPT.
6. Each coil shall be provided with factory installed manual air vent and water purge valve.

F: Insulation

1/8" thick NBR plastic foam.

G: Motors

1. 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 3 speed or variable speed modulation functionality.
2. Fan motor shall be IP40 Class B.

H: Fan Section

The fan section shall include 1, 2 or 4 galvanized steel centrifugal fans consisting of forward curved, double air inlet blades directly attached to the EC motor. Fans shall be statically and dynamically balanced.

I: Control Options

Controllers shall provide on-off or modulating fan control, integral condensate pump 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 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), optional drain pump control, zone control product operation and control of optional electric heater. Controller will provide simplified error diagnostics.

J: Condensate Pump and Float Switch (Optional)

Fan coil units shall be available with factory-installed condensate pumps and float switches controlled by onboard controllers.

K: Filters

Nylon Filters shall be 1/8" thick for PFWBC-HAR and 3/8" for PFWBC-VAR. 1/4" 3M MERV 8 filters for PFWBC-VAR shall be offered as an option.

L: Electrical Requirements

Unit shall be available for 110-120V/1ph/60Hz (PFWBC-Y-AECM) or 208-240V/1ph/60Hz (PFWBC-X-AECM) power supply. Unit shall be available for 110-120V/1ph/60Hz (PDWA-Y-AECM) or 208-240V/1ph/60Hz (PDWA-X-AECM) power supply. Nominal voltage rating shall be 115v/60Hz or 220v/60Hz with +/- 15% operating tolerance.

M: Electric Heat (Optional)

PTC type stainless steel electric heaters shall be provided with two thermal protection switches, one manual fuse type and one automatic reset type. Heaters shall be suitable for factory or field installation and controlled via onboard controller.

N: 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.

O: 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).

P: Wall Mounted Wired Pad

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

Q: Infrared Remote Handset

An infrared handset for remote communication shall be available as an optional accessory for the 'I' controller.

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R: 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.